Computer algebra independent integration tests

6-Hyperbolic-functions/6.1-Hyperbolic-sine/6.1.1-c+d-x-^m-a+b-sinh-^n

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Contents

Chapter 1

Introduction

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

The number of integrals in this report is [502]. This is test number [160].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

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

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

Sympy was called directly using Python.

1.2 Results

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

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

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

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

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

System	solved	Failed
Rubi	% 100.00 (502)	% 0.00 (0)
Mathematica	% 92.83 (466)	% 7.17 (36)
Maple	% 67.73 (340)	% 32.27 (162)
Maxima	% 58.57 (294)	% 41.43 (208)
Fricas	% 90.84 (456)	% 9.16 (46)
Sympy	% 23.51 (118)	% 76.49 (384)
Giac	% 39.64 (199)	% 60.36 (303)
Mupad	% 41.63 (209)	% 58.37 (293)

Table 1.1: Percentage solved for each CAS

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

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

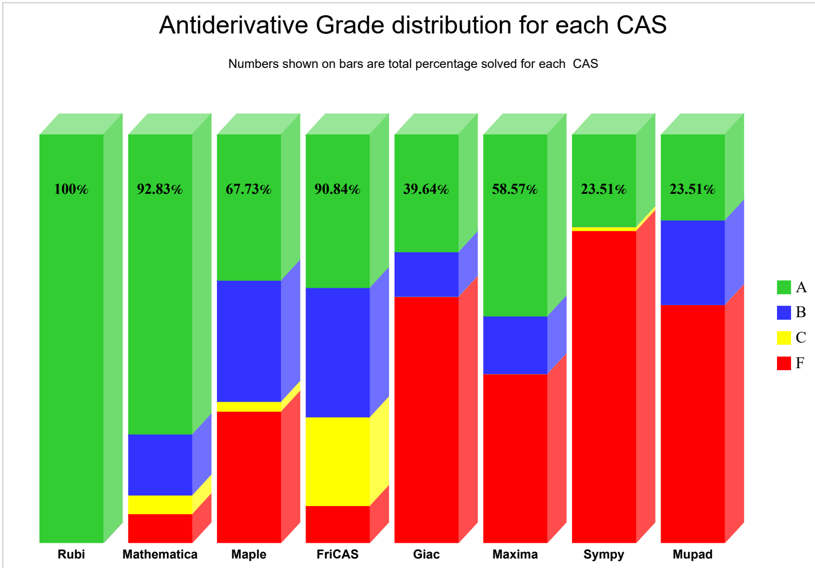
Table 1.2: Description of grading applied to integration result

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

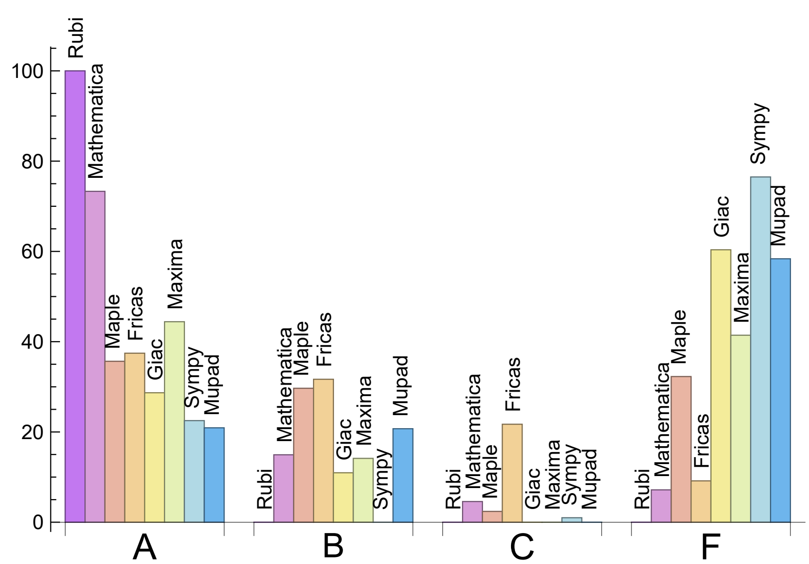
System	% A grade	% B grade	% C grade	% F grade
Rubi	100.00	0.00	0.00	0.00
Mathematica	73.31	14.94	4.58	7.17
Maple	35.66	29.68	2.39	32.27
Maxima	44.42	14.14	0.00	41.43
Fricas	37.45	31.67	21.71	9.16
Sympy	22.51	0.00	1.00	76.49
Giac	28.69	10.96	0.00	60.36
Mupad	20.92	20.72	0.00	58.37

Table 1.3: Antiderivative Grade distribution of each CAS

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



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



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

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

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

System	Number failed	Percentage normal failure	Percentage timeout failure	Percentage exception failure
Rubi	0	0.00 %	0.00 %	0.00 %
Mathematica	36	0.00 %	100.00 %	0.00 %
Maple	162	97.53 %	0.00 %	2.47 %
Maxima	208	94.23 %	0.00 %	5.77 %
Fricas	46	19.57 %	21.74 %	58.70 %
Sympy	384	55.47 %	40.89 %	3.65 %
Giac	303	60.73 %	38.94 %	0.33 %
Mupad	293	100.00 %	0.00 %	0.00 %

Table 1.4: Time and leaf size performance for each CAS

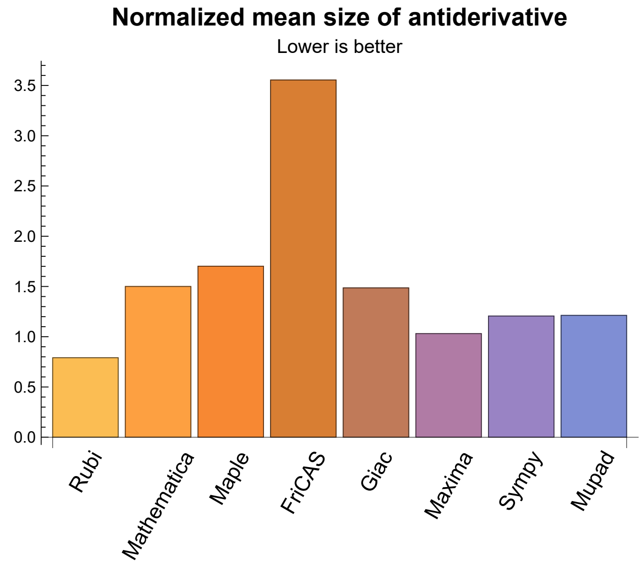
1.3 Performance

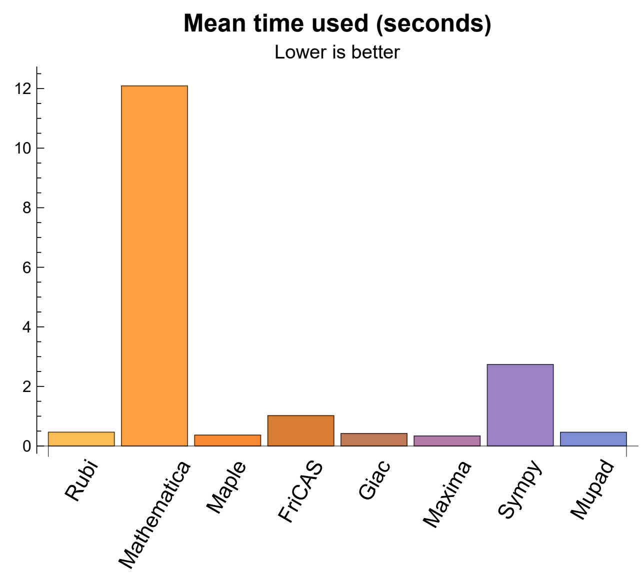
The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.46	267.92	0.79	139.00	1.00
Mathematica	12.09	676.56	1.50	172.00	0.98
Maple	0.36	389.55	1.70	150.50	1.61
Maxima	0.34	140.61	1.03	95.00	0.93
Fricas	1.02	1488.82	3.55	355.00	2.33
Sympy	2.74	128.72	1.21	0.00	0.00
Giac	0.42	167.74	1.49	98.00	1.34
Mupad	0.46	115.33	1.21	-1.00	-0.02

Table 1.5: Time and leaf size performance for each CAS

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





1.4 list of integrals that has no closed form antiderivative

{26, 27, 31, 32, 36, 37, 65, 66, 67, 72, 76, 77, 111, 112, 116, 117, 139, 140, 144, 145, 149, 150, 151, 155, 156, 172, 173, 176, 177, 179, 180, 181, 185, 186, 191, 192, 197, 198, 203, 204, 209, 210, 215, 216, 221, 222, 227, 232, 237, 242, 247, 252, 257, 258, 275, 276, 281, 282, 287, 288, 293, 298, 303, 308, 313, 317, 318, 319, 320, 337, 342, 347, 352, 357, 361, 366, 371, 376, 381, 386, 390, 395, 400, 405, 410, 415, 419, 424, 429, 434, 439, 444, 448, 453, 458, 463, 468, 472, 475, 480, 485, 490, 495, 499, 502}

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi {}

Mathematica {23, 29, 45, 205, 217, 238, 248, 271, 277, 283, 284, 306, 310, 314, 329, 332, 338, 339, 340, 343, 344, 350, 354, 358, 362, 363, 372, 373, 377, 379, 383, 387, 391, 392, 396, 397, 398, 401, 408, 412, 416, 425, 430, 435, 436, 440, 441, 449, 459, 464, 466, 469, 470, 476, 477, 481, 486, 491, 492, 493, 496, 497, 500}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

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

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

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

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

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

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

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

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

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

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

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

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

1.9.2 Important note about FriCAS and Giac/XCAS results

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

These will fail With error `Exception raised: NotImplementedError`

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

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

1.9.3 Important note about finding leaf size of antiderivative

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

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

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

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

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

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

  except Exception as ee:
         leafCount =1
```

1.9.4 Important note about Mupad results

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

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

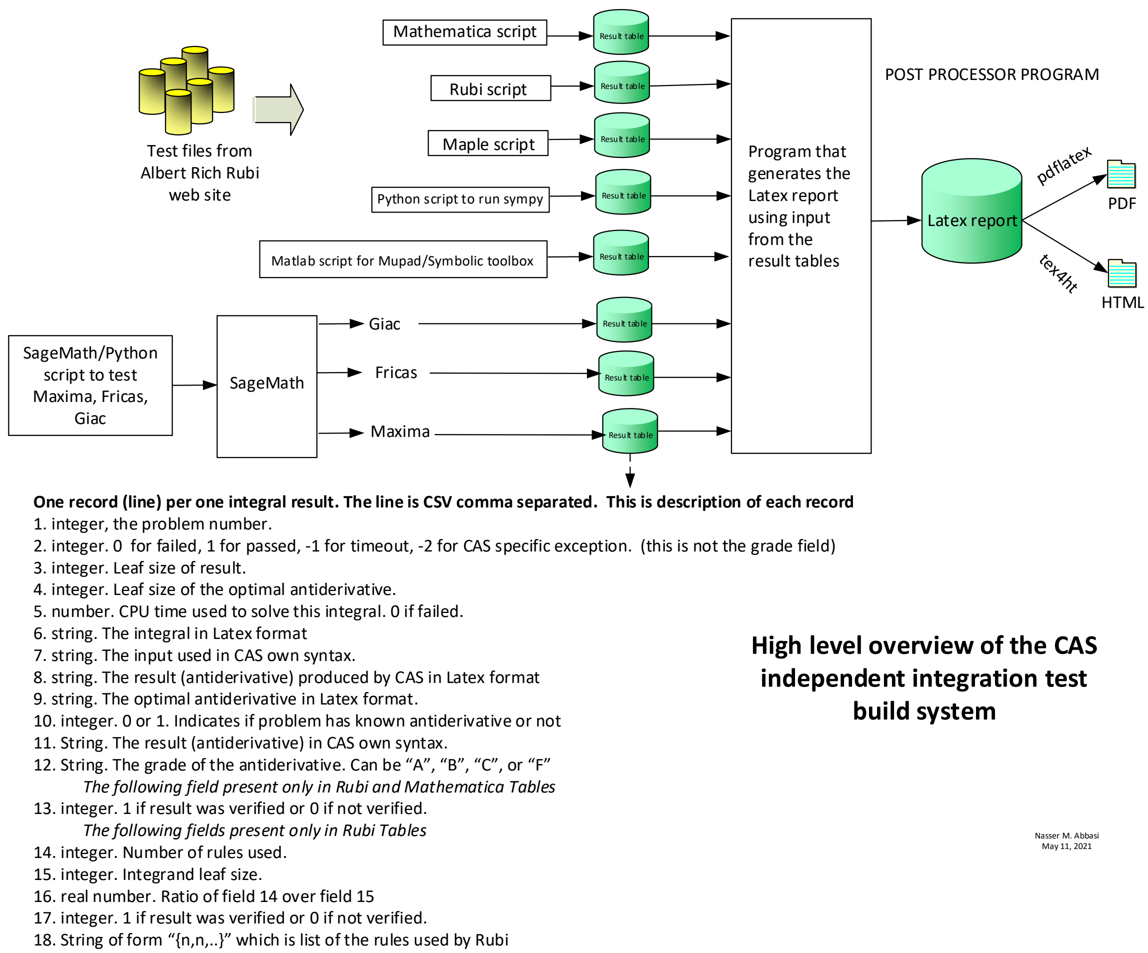
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

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

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

1.10 Design of the test system

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



Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502 }

B grade: { }

C grade: { }

F grade: { }

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 30, 31, 32, 33, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 50, 52, 53, 54, 55, 56, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 131, 132, 133, 134, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 190, 191, 192, 194, 195, 196, 199, 201, 202, 205, 206, 208, 209, 210, 214, 215, 220, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 251, 253, 254, 255, 256, 257, 258, 259, 260, 261, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 274, 275, 278, 279, 280, 281, 286, 287, 289, 290, 291, 292, 293, 294, 295, 296, 298, 301, 302, 303, 306, 307, 308, 309, 310, 311, 312, 313, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 330, 335, 336, 337, 341, 345, 346, 349, 350, 351, 352, 353, 354, 355, 356, 357, 359, 360, 361, 364, 365, 367, 368, 369, 370, 374, 375, 378, 379, 382, 383, 384, 385, 388, 393, 394, 399, 402, 403, 404, 406, 407, 408, 411, 412, 413, 414, 417, 422, 423, 424, 425, 426, 427, 428, 429, 432, 433, 439, 440, 441, 442, 443, 446, 447, 448, 451, 452, 454, 455, 456, 457, 458, 461, 462, 466, 467, 468, 471, 472, 473, 478, 479, 484, 488, 489, 493, 494, 495, 498 }

B grade: { 34, 49, 51, 57, 59, 110, 130, 135, 189, 193, 200, 207, 211, 212, 213, 217, 218, 219, 248, 249, 262, 273, 277, 283, 284, 285, 299, 300, 304, 305, 314, 328, 329, 331, 332, 333, 334, 343, 344, 348, 358, 362, 363, 372, 373, 377, 387, 391, 392, 401, 416, 420, 421, 430, 431, 435, 436, 437, 445, 449, 450, 459, 460, 464, 465, 469, 476, 477, 482, 486, 487, 491, 492, 496, 500 }

C grade: { 25, 29, 35, 71, 250, 297, 338, 339, 340, 380, 389, 396, 397, 398, 409, 418, 438, 470, 474, 481, 483, 497, 501 }

F grade: { 197, 198, 203, 204, 216, 221, 222, 237, 252, 276, 282, 288, 342, 347, 366, 371, 376, 381, 386, 390, 395, 400, 405, 410, 415, 419, 434, 444, 453, 463, 475, 480, 485, 490, 499, 502 }

2.1.3 Maple

A grade: { 4, 5, 6, 12, 13, 19, 20, 21, 25, 26, 27, 30, 31, 32, 36, 37, 65, 66, 72, 76, 77, 99, 100, 104, 105, 106, 110, 111, 112, 114, 115, 116, 117, 118, 119, 120, 121, 139, 140, 144, 145, 149, 150, 151, 155, 156, 160, 161, 165, 166, 167, 172, 173, 176, 177, 179, 180, 181, 185, 186, 189, 190, 191, 192, 195, 197, 198, 200, 201, 203, 204, 207, 208, 209, 210, 214, 215, 216, 220, 221, 222, 226, 227, 231, 232, 235, 237, 241, 242, 246, 247, 251, 252, 256, 257, 258, 261, 263, 264, 266, 267, 268, 269, 270, 273, 275, 276, 278, 279, 280, 281, 282, 287, 288, 292, 293, 298, 303, 307, 308, 312, 313, 317, 318, 319, 320, 336, 337, 342, 347, 351, 352, 356, 357, 361, 365, 366, 371, 376, 381, 385, 386, 390, 394, 395, 400, 405, 410, 414, 415, 419, 423, 424, 429, 434, 438, 439, 443, 444, 448, 452, 453, 458, 463, 467, 468, 471, 472, 475, 479, 480, 484, 485, 490, 494, 495, 498, 499, 502 }

B grade: { 1, 2, 3, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 22, 23, 24, 28, 29, 33, 34, 35, 96, 97, 98, 101, 102, 103, 107, 108, 109, 113, 157, 158, 159, 162, 163, 164, 168, 171, 175, 178, 187, 188, 193, 194, 196, 199, 202, 205, 206, 211, 212, 213, 217, 218, 219, 225, 230, 236, 240, 245, 250, 253, 254, 255, 259, 260, 262, 265, 271, 272, 274, 277, 283, 284, 285, 286, 291, 296, 297, 301, 302, 306, 311, 315, 316, 321, 322, 324, 325, 327, 328, 330, 331, 335, 340, 341, 345, 346, 350, 355, 359, 360, 364, 369, 370, 374, 375, 379, 380, 384, 388, 389, 393, 398, 399, 403, 404, 408, 409, 413, 417, 418, 422, 427, 428, 432, 433, 437, 442, 446, 447, 451, 456, 457, 461, 462, 466, 470, 473, 474, 478, 483, 488, 489, 493, 497, 500, 501 }

C grade: { 60, 61, 62, 63, 64, 78, 79, 80, 81, 82, 83, 84 }

F grade: { 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 67, 68, 69, 70, 71, 73, 74, 75, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 141, 142, 143, 146, 147, 148, 152, 153, 154, 169, 170, 174, 182, 183, 184, 223, 224, 228, 229, 233, 234, 238, 239, 243, 244, 248, 249, 289, 290, 294, 295, 299, 300, 304, 305, 309, 310, 314, 323, 326, 329, 332, 333, 334, 338, 339, 343, 344, 348, 349, 353, 354, 358, 362, 363, 367, 368, 372, 373, 377, 378, 382, 383, 387, 391, 392, 396, 397, 401, 402, 406, 407, 411, 412, 416, 420, 421, 425, 426, 430, 431, 435, 436, 440, 441, 445, 449, 450, 454, 455, 459, 460, 464, 465, 469, 476, 477, 481, 482, 486, 487, 491, 492, 496 }

2.1.4 Maxima

A grade: { 5, 6, 7, 10, 11, 12, 13, 14, 15, 20, 21, 22, 26, 27, 31, 32, 36, 37, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 63, 64, 65, 66, 67, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 98, 99, 100, 101, 104, 105, 106, 107, 110, 111, 112, 116, 117, 139, 140, 144, 145, 149, 150, 151, 152, 153, 154, 155, 156, 159, 160, 161, 162, 164, 165, 166, 167, 168, 172, 173, 176, 177, 179, 180, 181, 182, 183, 184, 185, 186, 189, 190, 191, 192, 196, 197, 198, 202, 206, 208, 209, 210, 215, 216, 220, 221, 222, 226, 227, 231, 232, 236, 237, 241, 242, 246, 247, 251, 252, 254, 256, 257, 258, 263, 264, 268, 271, 272, 275, 276, 277, 279, 281, 282, 287, 288, 292, 293, 297, 298, 303, 307, 308, 312, 313, 316, 317, 318, 319, 320, 337, 341, 342, 347, 351, 352, 356, 357, 360, 361, 366, 370, 371, 376, 380, 381, 385, 386, 389, 390, 395, 399, 400, 405, 409, 410, 414, 415, 418, 419, 424, 428, 429, 434, 438, 439, 443, 444, 447, 448, 453, 457, 458, 463, 467, 468, 471, 472, 474, 475, 480, 485, 490, 494, 495, 498, 499, 502 }

B grade: { 1, 2, 3, 4, 8, 9, 16, 17, 18, 19, 23, 24, 28, 30, 33, 34, 38, 39, 40, 41, 60, 61, 62, 96, 97, 102, 103, 108, 113, 115, 157, 158, 163, 187, 193, 195, 205, 211, 212, 214, 217, 218, 253, 259, 260, 261, 262, 274, 280, 283, 284, 286, 302, 321, 324, 327, 330, 336, 346, 365, 375, 394, 404, 423, 433, 452, 462, 479, 484, 489, 501 }

C grade: { }

F grade: { 25, 29, 35, 68, 69, 70, 71, 90, 91, 92, 93, 94, 95, 109, 114, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 141, 142, 143, 146, 147, 148, 169, 170, 171, 174, 175, 178, 188, 194, 199, 200, 201, 203, 204, 207, 213, 219, 223, 224, 225, 228, 229, 230, 233, 234, 235, 238, 239, 240, 243, 244, 245, 248, 249, 250, 255, 265, 266, 267, 269, 270, 273, 278, 285, 289, 290, 291, 294, 295, 296, 299, 300, 301, 304, 305, 306, 309, 310, 311, 314, 315, 322, 323, 325, 326, 328, 329, 331, 332, 333, 334, 335, 338, 339, 340, 343, 344, 345, 348, 349, 350, 353, 354, 355, 358, 359, 362, 363, 364, 367, 368, 369, 372, 373, 374, 377, 378, 379, 382, 383, 384, 387, 388, 391, 392, 393, 396, 397, 398, 401, 402, 403, 406, 407, 408, 411, 412, 413, 416, 417, 420, 421, 422, 425, 426, 427, 430, 431, 432, 435, 436, 437, 440, 441, 442, 445, 446, 449, 450, 451, 454, 455, 456, 459, 460, 461, 464, 465, 466, 469, 470, 473, 476, 477, 478, 481, 482, 483, 486, 487, 488, 491, 492, 493, 496, 497, 500 }

2.1.5 FriCAS

A grade: { 1, 2, 3, 4, 5, 9, 10, 11, 12, 18, 19, 20, 26, 27, 31, 32, 36, 37, 41, 48, 56, 62, 65, 66, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 98, 99, 100, 101, 104, 105, 106, 110, 111, 112, 115, 116, 117, 139, 140, 144, 145, 149, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 172, 173, 176, 177, 179, 180, 181, 182, 183, 184, 185, 186, 189, 190, 191, 192, 195, 196, 197, 198, 201, 202, 203, 204, 208, 209, 210, 215, 216, 221, 222, 227, 232, 237, 242, 247, 252, 255, 256, 257, 258, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 275, 276, 279, 280, 281, 282, 287, 288, 293, 298, 303, 306, 307, 308, 313, 317, 318, 319, 320, 337, 342, 347, 350, 351, 352, 357, 361, 366, 371, 376, 379, 380, 381, 386, 390, 395, 400, 405, 410, 415, 419, 423, 424, 429, 434, 438, 439, 444, 448, 453, 458, 463, 468, 472, 480, 485, 490, 495, 499 }

B grade: { 6, 7, 8, 13, 14, 15, 16, 17, 21, 22, 25, 29, 30, 35, 38, 39, 40, 42, 43, 44, 45, 46, 47, 49, 50, 51, 52, 53, 54, 55, 57, 58, 59, 60, 61, 63, 64, 69, 96, 97, 102, 103, 107, 109, 114, 162, 168, 171, 175, 178, 188, 194, 200, 207, 213, 214, 219, 220, 225, 226, 230, 231, 235, 236, 240, 241, 245, 246, 250, 251, 259, 260, 273, 274, 278, 285, 286, 291, 292, 296, 297, 301, 302, 311, 312, 315, 316, 321, 322, 324, 325, 327, 328, 330, 331, 335, 336, 340, 341, 345, 346, 355, 356, 359, 360, 364, 365, 369, 370, 374, 375, 384, 385, 388, 389, 393, 394, 398, 399, 403, 404, 408, 409, 413, 414, 417, 418, 422, 427, 428, 432, 433, 437, 442, 443, 446, 447, 451, 452, 456, 457, 461, 462, 466, 467, 470, 471, 474, 478, 479, 483, 484, 488, 489, 493, 494, 497, 498, 501 }

C grade: { 23, 24, 28, 33, 34, 108, 113, 169, 170, 174, 187, 193, 199, 205, 206, 211, 212, 217, 218, 223, 224, 228, 229, 233, 234, 238, 239, 243, 244, 249, 253, 254, 271, 272, 277, 283, 284, 289, 290, 294, 295, 299, 300, 304, 305, 309, 310, 314, 323, 326, 329, 332, 333, 334, 338, 339, 343, 344, 348, 349, 353, 354, 358, 362, 363, 367, 368, 372, 373, 377, 378, 382, 383, 387, 391, 392, 396, 397, 402, 406, 407, 411, 412, 416, 420, 421, 425, 426, 430, 431, 435, 436, 440, 441, 449, 450, 454, 455, 459, 460, 464, 465, 469, 476, 477, 481, 482, 487, 492 }

F grade: { 67, 68, 70, 71, 92, 93, 94, 95, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 141, 142, 143, 146, 147, 148, 150, 248, 401, 445, 473, 475, 486, 491, 496, 500, 502 }

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 8, 9, 10, 11, 16, 17, 18, 19, 26, 27, 31, 32, 36, 37, 65, 66, 67, 72, 76, 77, 96, 97, 98, 102, 103, 104, 110, 111, 112, 115, 139, 140, 144, 145, 149, 150, 155, 156, 157, 158, 159, 163, 164, 165, 172, 173, 185, 186, 189, 190, 191, 192, 195, 196, 201, 202, 209, 215, 226, 242, 247, 252, 256, 257, 258, 259, 260, 261, 262, 265, 266, 267, 268, 275, 276, 281, 282, 287, 288, 292, 297, 308, 313, 317, 318, 319, 320, 336, 352, 357, 361, 365, 381, 386, 390, 394, 410, 415, 419, 424, 429, 434, 439, 453, 458, 463, 480, 485, 490 }

B grade: { }

C grade: { 60, 61, 62, 63, 64 }

F grade: { 5, 6, 7, 12, 13, 14, 15, 20, 21, 22, 23, 24, 25, 28, 29, 30, 33, 34, 35, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 68, 69, 70, 71, 73, 74, 75, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 99, 100, 101, 105, 106, 107, 108, 109, 113, 114, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 141, 142, 143, 146, 147, 148, 151, 152, 153, 154, 160, 161, 162, 166, 167, 168, 169, 170, 171, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 187, 188, 193, 194, 197, 198, 199, 200, 203, 204, 205, 206, 207, 208, 210, 211, 212, 213, 214, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 243, 244, 245, 246, 248, 249, 250, 251, 253, 254, 255, 263, 264, 269, 270, 271, 272, 273, 274, 277, 278, 279, 280, 283, 284, 285, 286, 289, 290, 291, 293, 294, 295, 296, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 309, 310, 311, 312, 314, 315, 316, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 353, 354, 355, 356, 358, 359, 360, 362, 363, 364, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 382, 383, 384, 385, 387, 388, 389, 391, 392, 393, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 411, 412, 413, 414, 416, 417, 418, 420, 421, 422, 423, 425, 426, 427, 428, 430, 431, 432, 433, 435, 436, 437, 438, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 454, 455, 456, 457, 459, 460, 461, 462, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 481, 482, 483, 484, 486, 487, 488, 489, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502 }

2.1.7 Giac

A grade: { 4, 5, 10, 11, 12, 19, 20, 26, 27, 31, 32, 36, 38, 39, 40, 41, 48, 60, 61, 62, 65, 66, 67, 72, 76, 77, 98, 99, 104, 105, 110, 111, 112, 115, 116, 117, 139, 140, 144, 145, 149, 150, 151, 155, 156, 159, 160, 165, 166, 172, 173, 176, 177, 179, 181, 185, 186, 190, 191, 192, 196, 197, 198, 202, 203, 204, 208, 209, 214, 220, 226, 227, 231, 232, 236, 237, 241, 246, 251, 256, 257, 258, 263, 268, 269, 275, 276, 279, 280, 281, 292, 293, 297, 298, 302, 303, 307, 308, 312, 318, 319, 320, 336, 337, 341, 342, 346, 347, 351, 356, 357, 360, 365, 366, 370, 371, 375, 376, 380, 385, 389, 394, 395, 399, 400, 404, 405, 409, 414, 418, 423, 424, 433, 434, 438, 439, 443, 452, 462, 467, 471, 479, 490, 498 }

B grade: { 1, 2, 3, 6, 7, 8, 9, 13, 14, 15, 16, 17, 18, 21, 22, 30, 96, 97, 100, 101, 102, 103, 106, 107, 157, 158, 161, 162, 163, 164, 167, 168, 189, 195, 201, 259, 260, 261, 262, 264, 265, 266, 267, 270, 274, 286, 316, 428, 447, 457, 474, 484, 489, 494, 501 }

C grade: { }

F grade: { 23, 24, 25, 28, 29, 33, 34, 35, 37, 42, 43, 44, 45, 46, 47, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 63, 64, 68, 69, 70, 71, 73, 74, 75, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 108, 109, 113, 114, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 141, 142, 143, 146, 147, 148, 152, 153, 154, 169, 170, 171, 174, 175, 178, 180, 182, 183, 184, 187, 188, 193, 194, 199, 200, 205, 206, 207, 210, 211, 212, 213, 215, 216, 217, 218, 219, 221, 222, 223, 224, 225, 228, 229, 230, 233, 234, 235, 238, 239, 240, 242, 243, 244, 245, 247, 248, 249, 250, 252, 253, 254, 255, 271, 272, 273, 277, 278, 282, 283, 284, 285, 287, 288, 289, 290, 291, 294, 295, 296, 299, 300, 301, 304, 305, 306, 309, 310, 311, 313, 314, 315, 317, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 338, 339, 340, 343, 344, 345, 348, 349, 350, 352, 353, 354, 355, 358, 359, 361, 362, 363, 364, 367, 368, 369, 372, 373, 374, 377, 378, 379, 381, 382, 383, 384, 386, 387, 388, 390, 391, 392, 393, 396, 397, 398, 401, 402, 403, 406, 407, 408, 410, 411, 412, 413, 415, 416, 417, 419, 420, 421, 422, 425, 426, 427, 429, 430, 431, 432, 435, 436, 437, 440, 441, 442, 444, 445, 446, 448, 449, 450, 451, 453, 454, 455, 456, 458, 459, 460, 461, 463, 464, 465, 466, 468, 469, 470, 472, 473, 475, 476, 477, 478, 480, 481, 482, 483, 485, 486, 487, 488, 491, 492, 493, 495, 496, 497, 499, 500, 502 }

2.1.8 Mupad

A grade: { 26, 27, 31, 32, 36, 37, 65, 66, 67, 72, 76, 77, 111, 112, 116, 117, 139, 140, 144, 145, 149, 150, 151, 155, 156, 172, 173, 176, 177, 179, 180, 181, 185, 186, 191, 192, 197, 198, 203, 204, 209, 210, 215, 216, 221, 222, 227, 232, 237, 242, 247, 252, 257, 258, 275, 276, 281, 282, 287, 288, 293, 298, 303, 308, 313, 317, 318, 319, 320, 337, 342, 347, 352, 357, 361, 366, 371, 376, 381, 386, 390, 395, 400, 405, 410, 415, 419, 424, 429, 434, 439, 444, 448, 453, 458, 463, 468, 472, 475, 480, 485, 490, 495, 499, 502 }

B grade: { 1, 2, 3, 4, 8, 9, 10, 11, 16, 17, 18, 19, 30, 68, 69, 70, 96, 97, 98, 102, 103, 104, 110, 115, 118, 119, 120, 121, 157, 158, 159, 163, 164, 165, 189, 190, 195, 196, 201, 202, 208, 214, 220, 226, 231, 236, 241, 246, 251, 256, 259, 260, 261, 262, 265, 266, 267, 268, 274, 279, 280, 286, 292, 297, 302, 307, 312, 316, 321, 324, 336, 341, 346, 351, 356, 360, 365, 370, 375, 380, 385, 389, 394, 399, 404, 409, 414, 418, 423, 428, 433, 443, 452, 457, 462, 467, 471, 474, 479, 484, 489, 494, 498, 501 }

C grade: { }

F grade: { 5, 6, 7, 12, 13, 14, 15, 20, 21, 22, 23, 24, 25, 28, 29, 33, 34, 35, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 71, 73, 74, 75, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 99, 100, 101, 105, 106, 107, 108, 109, 113, 114, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 141, 142, 143, 146, 147, 148, 152, 153, 154, 160, 161, 162, 166, 167, 168, 169, 170, 171, 174, 175, 178, 182, 183, 184, 187, 188, 193, 194, 199, 200, 205, 206, 207, 211, 212, 213, 217, 218, 219, 223, 224, 225, 228, 229, 230, 233, 234, 235, 238, 239, 240, 243, 244, 245, 248, 249, 250, 253, 254, 255, 263, 264, 269, 270, 271, 272, 273, 277, 278, 283, 284, 285, 289, 290, 291, 294, 295, 296, 299, 300, 301, 304, 305, 306, 309, 310, 311, 314, 315, 322, 323, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 338, 339, 340, 343, 344, 345, 348, 349, 350, 353, 354, 355, 358, 359, 362, 363, 364, 367, 368, 369, 372, 373, 374, 377, 378, 379, 382, 383, 384, 387, 388, 391, 392, 393, 396, 397, 398, 401, 402, 403, 406, 407, 408, 411, 412, 413, 416, 417, 420, 421, 422, 425, 426, 427, 430, 431, 432, 435, 436, 437, 438, 440, 441, 442, 445, 446, 447, 449, 450, 451, 454, 455, 456, 459, 460, 461, 464, 465, 466, 469, 470, 473, 476, 477, 478, 481, 482, 483, 486, 487, 488, 491, 492, 493, 496, 497, 500 }

2.2 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	76	547	326	169	311	324	215
normalized size	1	1.00	0.84	6.01	3.58	1.86	3.42	3.56	2.36
time (sec)	N/A	0.120	0.350	0.055	0.693	2.190	2.406	0.549	0.452

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	61	308	222	109	202	204	143
normalized size	1	1.00	0.87	4.40	3.17	1.56	2.89	2.91	2.04
time (sec)	N/A	0.079	0.185	0.018	0.395	0.404	1.147	0.286	0.142

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	44	147	134	62	112	112	82
normalized size	1	1.00	0.90	3.00	2.73	1.27	2.29	2.29	1.67
time (sec)	N/A	0.050	0.133	0.014	0.470	0.382	0.523	0.345	0.120

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	27	53	68	29	46	46	35
normalized size	1	1.00	0.96	1.89	2.43	1.04	1.64	1.64	1.25
time (sec)	N/A	0.020	0.053	0.014	0.434	0.388	0.207	0.206	0.096

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	49	82	57	94	0	57	-1
normalized size	1	1.00	0.96	1.61	1.12	1.84	0.00	1.12	-0.02
time (sec)	N/A	0.109	0.072	0.119	0.568	0.411	0.000	0.192	0.000

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	65	133	80	148	0	615	-1
normalized size	1	1.00	0.92	1.87	1.13	2.08	0.00	8.66	-0.01
time (sec)	N/A	0.127	0.191	0.059	0.442	0.390	0.000	0.314	0.000

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	88	277	94	254	0	301	-1
normalized size	1	1.00	0.85	2.66	0.90	2.44	0.00	2.89	-0.01
time (sec)	N/A	0.166	0.446	0.060	0.509	0.391	0.000	0.190	0.000

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	132	910	382	312	660	374	334
normalized size	1	1.00	0.81	5.62	2.36	1.93	4.07	2.31	2.06
time (sec)	N/A	0.105	0.583	0.036	0.465	0.403	4.750	0.301	0.693

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	104	523	263	209	456	243	229
normalized size	1	1.00	0.78	3.90	1.96	1.56	3.40	1.81	1.71
time (sec)	N/A	0.074	0.335	0.017	0.642	0.404	2.560	0.201	0.376

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	75	262	165	123	264	136	127
normalized size	1	1.00	0.79	2.76	1.74	1.29	2.78	1.43	1.34
time (sec)	N/A	0.054	0.245	0.014	0.479	0.382	1.213	0.198	0.181

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	52	103	88	64	126	63	60
normalized size	1	1.00	0.95	1.87	1.60	1.16	2.29	1.15	1.09
time (sec)	N/A	0.026	0.137	0.014	0.447	0.391	0.516	0.181	0.093

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	66	97	72	104	0	68	-1
normalized size	1	1.00	0.85	1.24	0.92	1.33	0.00	0.87	-0.01
time (sec)	N/A	0.165	0.106	0.181	0.472	0.419	0.000	0.381	0.000

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	75	152	88	166	0	574	-1
normalized size	1	1.00	0.93	1.88	1.09	2.05	0.00	7.09	-0.01
time (sec)	N/A	0.155	0.359	0.138	0.532	0.412	0.000	0.362	0.000

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	102	299	99	280	0	330	-1
normalized size	1	1.00	0.91	2.67	0.88	2.50	0.00	2.95	-0.01
time (sec)	N/A	0.195	0.767	0.151	0.705	0.384	0.000	0.183	0.000

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	123	555	110	411	0	537	-1
normalized size	1	1.00	0.76	3.43	0.68	2.54	0.00	3.31	-0.01
time (sec)	N/A	0.187	0.756	0.157	0.468	0.400	0.000	0.224	0.000

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	150	1139	639	528	772	654	532
normalized size	1	1.00	0.67	5.06	2.84	2.35	3.43	2.91	2.36
time (sec)	N/A	0.360	0.872	0.140	0.408	0.399	7.855	0.222	0.547

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	127	634	435	345	495	414	364
normalized size	1	1.00	0.73	3.62	2.49	1.97	2.83	2.37	2.08
time (sec)	N/A	0.226	0.836	0.016	0.496	0.410	4.221	0.197	0.349

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	86	302	269	199	284	230	184
normalized size	1	1.00	0.70	2.46	2.19	1.62	2.31	1.87	1.50
time (sec)	N/A	0.131	0.329	0.019	0.433	0.401	2.226	0.184	0.408

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	59	109	141	97	126	98	79
normalized size	1	1.00	0.79	1.45	1.88	1.29	1.68	1.31	1.05
time (sec)	N/A	0.058	0.161	0.019	0.448	0.593	0.928	0.199	0.162

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	102	166	117	188	0	113	-1
normalized size	1	1.00	0.84	1.37	0.97	1.55	0.00	0.93	-0.01
time (sec)	N/A	0.282	0.188	0.152	0.464	0.772	0.000	0.194	0.000

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	160	271	145	301	0	1076	-1
normalized size	1	1.00	1.10	1.87	1.00	2.08	0.00	7.42	-0.01
time (sec)	N/A	0.262	0.968	0.157	0.578	0.769	0.000	0.296	0.000

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	220	562	145	529	0	601	-1
normalized size	1	1.00	1.20	3.05	0.79	2.88	0.00	3.27	-0.01
time (sec)	N/A	0.425	0.690	0.177	0.467	0.720	0.000	0.484	0.000

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	191	541	333	396	0	0	-1
normalized size	1	1.00	1.28	3.63	2.23	2.66	0.00	0.00	-0.01
time (sec)	N/A	0.136	2.648	0.106	0.636	0.473	0.000	0.000	0.000

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	118	306	195	242	0	0	-1
normalized size	1	1.00	1.19	3.09	1.97	2.44	0.00	0.00	-0.01
time (sec)	N/A	0.090	1.964	0.049	0.465	0.494	0.000	0.000	0.000

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	174	60	0	119	0	0	-1
normalized size	1	1.00	3.48	1.20	0.00	2.38	0.00	0.00	-0.02
time (sec)	N/A	0.046	0.056	0.007	0.000	0.611	0.000	0.000	0.000

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	17	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.024	10.708	0.096	0.000	0.563	0.000	0.000	0.000

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	17	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.022	10.523	0.080	0.000	0.483	0.000	0.000	0.000

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	185	473	320	1159	0	0	-1
normalized size	1	1.00	1.80	4.59	3.11	11.25	0.00	0.00	-0.01
time (sec)	N/A	0.227	1.972	0.180	0.798	0.611	0.000	0.000	0.000

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	198	240	0	623	0	0	-1
normalized size	1	1.00	2.68	3.24	0.00	8.42	0.00	0.00	-0.01
time (sec)	N/A	0.148	4.798	0.047	0.000	0.571	0.000	0.000	0.000

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	52	56	91	166	0	80	49
normalized size	1	1.00	1.79	1.93	3.14	5.72	0.00	2.76	1.69
time (sec)	N/A	0.030	0.077	0.039	0.424	0.590	0.000	0.188	0.077

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.040	16.998	0.104	0.000	0.483	0.000	0.000	0.000

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.038	17.622	0.109	0.000	0.460	0.000	0.000	0.000

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	440	876	605	4008	0	0	-1
normalized size	1	1.00	1.72	3.42	2.36	15.66	0.00	0.00	-0.00
time (sec)	N/A	0.274	8.919	0.178	0.600	0.757	0.000	0.000	0.000

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	420	444	393	2218	0	0	-1
normalized size	1	1.00	2.73	2.88	2.55	14.40	0.00	0.00	-0.01
time (sec)	N/A	0.166	10.273	0.069	1.041	0.546	0.000	0.000	0.000

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	313	197	0	1026	0	0	-1
normalized size	1	1.00	3.40	2.14	0.00	11.15	0.00	0.00	-0.01
time (sec)	N/A	0.081	2.311	0.065	0.000	0.444	0.000	0.000	0.000

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.040	68.903	0.722	0.000	0.516	0.000	0.000	0.000

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.037	74.372	1.073	0.000	0.483	0.000	0.000	0.000

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	108	0	308	521	0	232	-1
normalized size	1	1.00	0.63	0.00	1.80	3.05	0.00	1.36	-0.01
time (sec)	N/A	0.370	0.056	0.093	0.474	0.491	0.000	0.612	0.000

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	106	0	268	385	0	202	-1
normalized size	1	1.00	0.73	0.00	1.84	2.64	0.00	1.38	-0.01
time (sec)	N/A	0.248	0.086	0.092	0.346	0.439	0.000	1.107	0.000

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	104	0	230	301	0	168	-1
normalized size	1	1.00	0.85	0.00	1.87	2.45	0.00	1.37	-0.01
time (sec)	N/A	0.187	0.074	0.085	0.322	0.440	0.000	0.413	0.000

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	104	0	181	122	0	90	-1
normalized size	1	1.00	1.00	0.00	1.74	1.17	0.00	0.87	-0.01
time (sec)	N/A	0.135	0.034	0.083	0.441	0.467	0.000	0.325	0.000

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	120	0	103	339	0	0	-1
normalized size	1	1.00	1.02	0.00	0.87	2.87	0.00	0.00	-0.01
time (sec)	N/A	0.200	0.138	0.084	0.618	0.463	0.000	0.000	0.000

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	161	0	114	532	0	0	-1
normalized size	1	1.00	1.08	0.00	0.77	3.57	0.00	0.00	-0.01
time (sec)	N/A	0.251	0.725	0.086	0.844	0.573	0.000	0.000	0.000

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	168	0	114	855	0	0	-1
normalized size	1	1.00	0.97	0.00	0.66	4.91	0.00	0.00	-0.01
time (sec)	N/A	0.308	0.536	0.085	0.784	0.511	0.000	0.000	0.000

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	239	239	190	0	281	1001	0	0	-1
normalized size	1	1.00	0.79	0.00	1.18	4.19	0.00	0.00	-0.00
time (sec)	N/A	0.449	6.294	0.122	0.700	0.529	0.000	0.000	0.000

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	163	0	239	755	0	0	-1
normalized size	1	1.00	0.77	0.00	1.13	3.58	0.00	0.00	-0.00
time (sec)	N/A	0.321	2.122	0.118	0.408	0.510	0.000	0.000	0.000

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	129	0	189	590	0	0	-1
normalized size	1	1.00	0.78	0.00	1.14	3.55	0.00	0.00	-0.01
time (sec)	N/A	0.296	0.559	0.111	0.412	0.502	0.000	0.000	0.000

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	142	0	107	155	0	115	-1
normalized size	1	1.00	1.02	0.00	0.77	1.12	0.00	0.83	-0.01
time (sec)	N/A	0.241	0.116	0.127	0.497	1.186	0.000	0.580	0.000

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	570	0	116	571	0	0	-1
normalized size	1	1.00	4.01	0.00	0.82	4.02	0.00	0.00	-0.01
time (sec)	N/A	0.253	4.584	0.117	0.699	1.164	0.000	0.000	0.000

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	156	0	118	864	0	0	-1
normalized size	1	1.00	0.90	0.00	0.68	4.97	0.00	0.00	-0.01
time (sec)	N/A	0.321	1.123	0.119	0.465	0.780	0.000	0.000	0.000

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	825	0	118	1352	0	0	-1
normalized size	1	1.00	3.75	0.00	0.54	6.15	0.00	0.00	-0.00
time (sec)	N/A	0.322	8.583	0.121	0.852	0.907	0.000	0.000	0.000

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	251	222	0	118	1827	0	0	-1
normalized size	1	1.00	0.88	0.00	0.47	7.28	0.00	0.00	-0.00
time (sec)	N/A	0.395	0.539	0.125	0.519	0.576	0.000	0.000	0.000

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	381	381	243	0	513	2090	0	0	-1
normalized size	1	1.00	0.64	0.00	1.35	5.49	0.00	0.00	-0.00
time (sec)	N/A	1.066	9.045	0.171	0.702	0.509	0.000	0.000	0.000

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	325	325	243	0	430	1543	0	0	-1
normalized size	1	1.00	0.75	0.00	1.32	4.75	0.00	0.00	-0.00
time (sec)	N/A	0.799	3.717	0.155	0.463	0.547	0.000	0.000	0.000

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	275	275	209	0	333	1216	0	0	-1
normalized size	1	1.00	0.76	0.00	1.21	4.42	0.00	0.00	-0.00
time (sec)	N/A	0.522	0.278	0.171	0.543	0.468	0.000	0.000	0.000

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	228	228	191	0	178	252	0	0	-1
normalized size	1	1.00	0.84	0.00	0.78	1.11	0.00	0.00	-0.00
time (sec)	N/A	0.401	0.173	0.197	0.453	0.525	0.000	0.000	0.000

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	246	246	2058	0	197	1346	0	0	-1
normalized size	1	1.00	8.37	0.00	0.80	5.47	0.00	0.00	-0.00
time (sec)	N/A	0.454	10.110	0.167	0.585	0.493	0.000	0.000	0.000

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	253	0	196	2059	0	0	-1
normalized size	1	1.00	0.91	0.00	0.71	7.43	0.00	0.00	-0.00
time (sec)	N/A	0.673	2.912	0.158	0.632	0.571	0.000	0.000	0.000

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	331	331	3211	0	197	3286	0	0	-1
normalized size	1	1.00	9.70	0.00	0.60	9.93	0.00	0.00	-0.00
time (sec)	N/A	0.775	17.807	0.163	0.535	0.711	0.000	0.000	0.000

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	C	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	50	132	175	189	133	146	-1
normalized size	1	1.00	0.45	1.19	1.58	1.70	1.20	1.32	-0.01
time (sec)	N/A	0.159	0.013	0.078	0.337	0.682	17.774	0.183	0.000

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	C	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	49	120	149	137	99	108	-1
normalized size	1	1.00	0.53	1.30	1.62	1.49	1.08	1.17	-0.01
time (sec)	N/A	0.110	0.015	0.028	0.620	0.623	1.684	0.228	0.000

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	A	C	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	47	71	116	58	70	61	-1
normalized size	1	1.00	0.61	0.92	1.51	0.75	0.91	0.79	-0.01
time (sec)	N/A	0.076	0.008	0.027	0.328	0.668	0.959	0.184	0.000

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	49	120	74	137	94	0	-1
normalized size	1	1.00	0.56	1.38	0.85	1.57	1.08	0.00	-0.01
time (sec)	N/A	0.112	0.019	0.029	0.643	0.571	2.787	0.000	0.000

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	84	132	57	178	129	0	-1
normalized size	1	1.00	0.74	1.16	0.50	1.56	1.13	0.00	-0.01
time (sec)	N/A	0.149	0.078	0.032	0.582	0.575	19.635	0.000	0.000

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.028	22.659	0.084	0.000	0.472	0.000	0.000	0.000

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.030	21.035	0.093	0.000	0.555	0.000	0.000	0.000

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	F(-2)	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	63	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.107	6.037	180.000	0.000	0.000	0.000	0.000	0.000

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F(-2)	F	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	17	0	0	0	0	0	38
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	1.90
time (sec)	N/A	0.058	0.118	180.000	0.000	0.000	0.000	0.000	0.174

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	22	0	0	108	0	0	40
normalized size	1	1.00	0.92	0.00	0.00	4.50	0.00	0.00	1.67
time (sec)	N/A	0.060	0.071	0.122	0.000	0.554	0.000	0.000	0.153

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F(-2)	F	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	33	0	0	0	0	0	111
normalized size	1	1.00	0.70	0.00	0.00	0.00	0.00	0.00	2.36
time (sec)	N/A	0.081	0.123	180.000	0.000	0.000	0.000	0.000	0.291

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F(-2)	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	68	0	0	0	0	0	-1
normalized size	1	1.00	1.17	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.118	1.235	180.000	0.000	0.000	0.000	0.000	0.000

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.046	3.070	0.084	0.000	0.654	0.000	0.000	0.000

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	237	237	206	0	161	340	0	0	-1
normalized size	1	1.00	0.87	0.00	0.68	1.43	0.00	0.00	-0.00
time (sec)	N/A	0.318	0.191	0.150	0.476	0.507	0.000	0.000	0.000

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	131	0	102	241	0	0	-1
normalized size	1	1.00	0.91	0.00	0.71	1.67	0.00	0.00	-0.01
time (sec)	N/A	0.197	0.158	0.115	0.395	0.544	0.000	0.000	0.000

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	101	0	79	168	0	0	-1
normalized size	1	1.00	0.92	0.00	0.72	1.53	0.00	0.00	-0.01
time (sec)	N/A	0.093	0.054	0.087	0.420	0.495	0.000	0.000	0.000

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	17	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.021	6.368	0.086	0.000	0.457	0.000	0.000	0.000

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.037	3.675	0.085	0.000	0.453	0.000	0.000	0.000

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	54	73	55	86	0	0	-1
normalized size	1	1.00	0.92	1.24	0.93	1.46	0.00	0.00	-0.02
time (sec)	N/A	0.078	0.026	0.059	0.390	0.605	0.000	0.000	0.000

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	53	73	55	86	0	0	-1
normalized size	1	1.00	0.90	1.24	0.93	1.46	0.00	0.00	-0.02
time (sec)	N/A	0.073	0.019	0.072	0.724	0.489	0.000	0.000	0.000

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	54	73	55	86	0	0	-1
normalized size	1	1.00	0.92	1.24	0.93	1.46	0.00	0.00	-0.02
time (sec)	N/A	0.074	0.022	0.060	0.477	0.583	0.000	0.000	0.000

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	53	73	55	78	0	0	-1
normalized size	1	1.00	0.90	1.24	0.93	1.32	0.00	0.00	-0.02
time (sec)	N/A	0.070	0.017	0.060	0.769	0.481	0.000	0.000	0.000

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	67	43	78	0	0	-1
normalized size	1	1.00	1.00	1.37	0.88	1.59	0.00	0.00	-0.02
time (sec)	N/A	0.069	0.022	0.065	0.506	0.649	0.000	0.000	0.000

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	51	67	55	86	0	0	-1
normalized size	1	1.00	0.93	1.22	1.00	1.56	0.00	0.00	-0.02
time (sec)	N/A	0.069	0.018	0.067	0.469	0.509	0.000	0.000	0.000

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	54	71	55	86	0	0	-1
normalized size	1	1.00	0.92	1.20	0.93	1.46	0.00	0.00	-0.02
time (sec)	N/A	0.071	0.022	0.046	0.845	0.535	0.000	0.000	0.000

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	79	0	71	136	0	0	-1
normalized size	1	1.00	0.92	0.00	0.83	1.58	0.00	0.00	-0.01
time (sec)	N/A	0.159	0.123	0.092	0.735	0.493	0.000	0.000	0.000

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	78	0	71	136	0	0	-1
normalized size	1	1.00	0.92	0.00	0.84	1.60	0.00	0.00	-0.01
time (sec)	N/A	0.136	0.121	0.080	0.442	0.593	0.000	0.000	0.000

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	79	0	71	136	0	0	-1
normalized size	1	1.00	0.92	0.00	0.83	1.58	0.00	0.00	-0.01
time (sec)	N/A	0.140	0.129	0.131	0.702	0.543	0.000	0.000	0.000

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	76	0	71	122	0	0	-1
normalized size	1	1.00	0.89	0.00	0.84	1.44	0.00	0.00	-0.01
time (sec)	N/A	0.127	0.106	0.087	0.834	0.791	0.000	0.000	0.000

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	63	0	55	117	0	0	-1
normalized size	1	1.00	0.88	0.00	0.76	1.62	0.00	0.00	-0.01
time (sec)	N/A	0.127	0.075	0.118	0.792	0.552	0.000	0.000	0.000

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	72	0	0	136	0	0	-1
normalized size	1	1.00	0.87	0.00	0.00	1.64	0.00	0.00	-0.01
time (sec)	N/A	0.137	0.099	0.090	0.000	0.500	0.000	0.000	0.000

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	77	0	0	136	0	0	-1
normalized size	1	1.00	0.92	0.00	0.00	1.62	0.00	0.00	-0.01
time (sec)	N/A	0.143	0.114	0.086	0.000	0.710	0.000	0.000	0.000

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	17	0	0	0	0	0	-1
normalized size	1	1.00	0.71	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.112	0.098	0.145	0.000	0.000	0.000	0.000	0.000

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	17	0	0	0	0	0	-1
normalized size	1	1.00	0.71	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.118	0.128	0.153	0.000	0.000	0.000	0.000	0.000

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	45	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.130	0.110	0.169	0.000	0.000	0.000	0.000	0.000

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	63	0	0	0	0	0	-1
normalized size	1	1.00	0.83	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.207	0.148	0.151	0.000	0.000	0.000	0.000	0.000

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	128	494	235	279	518	264	196
normalized size	1	1.00	1.31	5.04	2.40	2.85	5.29	2.69	2.00
time (sec)	N/A	0.140	0.821	0.024	0.368	0.557	0.741	0.485	0.383

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	88	249	141	169	316	152	118
normalized size	1	1.00	1.19	3.36	1.91	2.28	4.27	2.05	1.59
time (sec)	N/A	0.097	0.429	0.021	0.493	0.525	0.547	0.284	0.246

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	48	96	66	81	163	71	56
normalized size	1	1.00	0.96	1.92	1.32	1.62	3.26	1.42	1.12
time (sec)	N/A	0.053	0.086	0.022	0.510	0.474	0.381	0.177	0.123

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	60	96	71	79	0	71	-1
normalized size	1	1.00	0.86	1.37	1.01	1.13	0.00	1.01	-0.01
time (sec)	N/A	0.161	0.286	0.085	0.385	0.441	0.000	0.193	0.000

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	83	153	88	134	0	682	-1
normalized size	1	1.00	0.87	1.61	0.93	1.41	0.00	7.18	-0.01
time (sec)	N/A	0.189	0.481	0.100	0.403	1.296	0.000	0.223	0.000

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	109	303	99	222	0	334	-1
normalized size	1	1.00	0.83	2.31	0.76	1.69	0.00	2.55	-0.01
time (sec)	N/A	0.232	0.650	0.096	0.420	0.467	0.000	0.230	0.000

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	220	1082	525	590	1136	584	393
normalized size	1	1.00	0.90	4.42	2.14	2.41	4.64	2.38	1.60
time (sec)	N/A	0.287	1.414	0.032	0.397	0.648	1.440	0.232	1.046

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	189	550	326	347	695	337	217
normalized size	1	1.00	1.09	3.16	1.87	1.99	3.99	1.94	1.25
time (sec)	N/A	0.197	0.688	0.029	0.403	0.437	1.030	0.214	0.676

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	86	215	167	162	359	159	104
normalized size	1	1.00	0.70	1.76	1.37	1.33	2.94	1.30	0.85
time (sec)	N/A	0.105	1.177	0.029	0.390	0.498	0.675	0.224	0.352

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	117	193	150	149	0	139	-1
normalized size	1	1.00	0.79	1.30	1.01	1.00	0.00	0.93	-0.01
time (sec)	N/A	0.352	0.361	0.220	0.485	0.496	0.000	0.164	0.000

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	214	313	183	267	0	1226	-1
normalized size	1	1.00	1.26	1.84	1.08	1.57	0.00	7.21	-0.01
time (sec)	N/A	0.340	0.643	0.239	0.460	0.895	0.000	0.490	0.000

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	236	236	198	625	205	453	0	706	-1
normalized size	1	1.00	0.84	2.65	0.87	1.92	0.00	2.99	-0.00
time (sec)	N/A	0.530	2.205	0.252	0.456	0.745	0.000	0.169	0.000

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	206	435	237	363	0	0	-1
normalized size	1	1.00	1.56	3.30	1.80	2.75	0.00	0.00	-0.01
time (sec)	N/A	0.302	2.932	0.168	0.571	0.499	0.000	0.000	0.000

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	150	227	0	200	0	0	-1
normalized size	1	1.00	1.49	2.25	0.00	1.98	0.00	0.00	-0.01
time (sec)	N/A	0.219	2.229	0.100	0.000	0.565	0.000	0.000	0.000

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	185	66	75	61	68	72	56
normalized size	1	1.00	2.94	1.05	1.19	0.97	1.08	1.14	0.89
time (sec)	N/A	0.074	0.459	0.099	0.380	0.762	0.269	0.195	0.340

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.064	20.663	0.129	0.000	0.675	0.000	0.000	0.000

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.060	21.071	0.201	0.000	0.550	0.000	0.000	0.000

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	305	305	443	723	635	912	0	0	-1
normalized size	1	1.00	1.45	2.37	2.08	2.99	0.00	0.00	-0.00
time (sec)	N/A	0.398	6.193	0.241	0.695	0.581	0.000	0.000	0.000

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	269	374	0	478	0	0	-1
normalized size	1	1.00	1.12	1.55	0.00	1.98	0.00	0.00	-0.00
time (sec)	N/A	0.278	3.615	0.219	0.000	0.533	0.000	0.000	0.000

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	241	113	257	162	184	211	160
normalized size	1	1.00	1.53	0.72	1.63	1.03	1.16	1.34	1.01
time (sec)	N/A	0.109	1.045	0.230	0.353	0.440	0.525	0.221	0.542

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.060	35.246	0.924	0.000	0.633	0.000	0.000	0.000

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.057	37.716	1.377	0.000	1.189	0.000	0.000	0.000

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	141	174	0	0	0	0	149
normalized size	1	1.00	0.78	0.96	0.00	0.00	0.00	0.00	0.82
time (sec)	N/A	0.212	0.216	0.105	0.000	0.000	0.000	0.000	0.722

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	125	151	0	0	0	0	126
normalized size	1	1.00	0.92	1.11	0.00	0.00	0.00	0.00	0.93
time (sec)	N/A	0.172	0.293	0.069	0.000	0.000	0.000	0.000	0.360

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	105	128	0	0	0	0	92
normalized size	1	1.00	0.95	1.15	0.00	0.00	0.00	0.00	0.83
time (sec)	N/A	0.141	0.221	0.066	0.000	0.000	0.000	0.000	0.289

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	87	105	0	0	0	0	80
normalized size	1	1.00	1.32	1.59	0.00	0.00	0.00	0.00	1.21
time (sec)	N/A	0.075	0.162	0.060	0.000	0.000	0.000	0.000	0.267

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	96	0	0	0	0	0	-1
normalized size	1	1.00	0.77	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.146	0.155	0.361	0.000	0.000	0.000	0.000	0.000

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	133	0	0	0	0	0	-1
normalized size	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.175	0.255	0.059	0.000	0.000	0.000	0.000	0.000

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	170	0	0	0	0	0	-1
normalized size	1	1.00	0.83	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.198	0.350	0.056	0.000	0.000	0.000	0.000	0.000

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	377	377	269	0	0	0	0	0	-1
normalized size	1	1.00	0.71	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.351	1.382	0.049	0.000	0.000	0.000	0.000	0.000

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	303	173	0	0	0	0	0	-1
normalized size	1	1.00	0.57	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.251	1.056	0.039	0.000	0.000	0.000	0.000	0.000

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	138	0	0	0	0	0	-1
normalized size	1	1.00	0.75	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.133	0.721	0.041	0.000	0.000	0.000	0.000	0.000

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	261	146	0	0	0	0	0	-1
normalized size	1	1.00	0.56	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.273	0.738	0.042	0.000	0.000	0.000	0.000	0.000

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	302	302	243	0	0	0	0	0	-1
normalized size	1	1.00	0.80	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.290	0.855	0.046	0.000	0.000	0.000	0.000	0.000

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	638	638	2918	0	0	0	0	0	-1
normalized size	1	1.00	4.57	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.640	7.410	0.066	0.000	0.000	0.000	0.000	0.000

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	506	506	300	0	0	0	0	0	-1
normalized size	1	1.00	0.59	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.390	1.633	0.040	0.000	0.000	0.000	0.000	0.000

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	312	312	218	0	0	0	0	0	-1
normalized size	1	1.00	0.70	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.208	1.268	0.041	0.000	0.000	0.000	0.000	0.000

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	403	403	242	0	0	0	0	0	-1
normalized size	1	1.00	0.60	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.418	1.368	0.042	0.000	0.000	0.000	0.000	0.000

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	444	444	347	0	0	0	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.437	2.214	0.046	0.000	0.000	0.000	0.000	0.000

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	536	536	4751	0	0	0	0	0	-1
normalized size	1	1.00	8.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.638	7.475	0.043	0.000	0.000	0.000	0.000	0.000

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	493	493	331	0	0	0	0	0	-1
normalized size	1	1.00	0.67	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.261	1.221	0.215	0.000	0.699	0.000	0.000	0.000

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	349	349	276	0	0	0	0	0	-1
normalized size	1	1.00	0.79	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.202	0.927	0.078	0.000	0.517	0.000	0.000	0.000

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	221	0	0	0	0	0	-1
normalized size	1	1.00	1.07	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.105	0.459	0.069	0.000	0.786	0.000	0.000	0.000

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.078	3.796	0.059	0.000	0.743	0.000	0.000	0.000

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.076	3.846	0.058	0.000	0.469	0.000	0.000	0.000

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	807	807	546	0	0	0	0	0	-1
normalized size	1	1.00	0.68	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.438	3.150	0.048	0.000	0.837	0.000	0.000	0.000

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	506	506	384	0	0	0	0	0	-1
normalized size	1	1.00	0.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.311	1.684	0.048	0.000	0.692	0.000	0.000	0.000

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	288	288	332	0	0	0	0	0	-1
normalized size	1	1.00	1.15	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.169	0.760	0.050	0.000	0.491	0.000	0.000	0.000

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.088	21.100	0.048	0.000	0.597	0.000	0.000	0.000

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.086	24.091	0.053	0.000	0.931	0.000	0.000	0.000

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1016	1016	1200	0	0	0	0	0	-1
normalized size	1	1.00	1.18	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.677	4.374	0.046	0.000	0.546	0.000	0.000	0.000

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	689	689	482	0	0	0	0	0	-1
normalized size	1	1.00	0.70	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.460	2.287	0.047	0.000	0.560	0.000	0.000	0.000

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	416	416	411	0	0	0	0	0	-1
normalized size	1	1.00	0.99	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.243	1.523	0.046	0.000	0.520	0.000	0.000	0.000

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.090	34.804	0.048	0.000	0.914	0.000	0.000	0.000

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.073	3.961	0.109	0.000	0.000	0.000	0.000	0.000

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.051	4.301	0.085	0.000	0.573	0.000	0.000	0.000

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	410	339	0	375	372	0	0	-1
normalized size	1	1.00	0.83	0.00	0.91	0.91	0.00	0.00	-0.00
time (sec)	N/A	0.602	1.553	0.194	0.495	0.655	0.000	0.000	0.000

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	229	0	210	257	0	0	-1
normalized size	1	1.00	0.85	0.00	0.78	0.96	0.00	0.00	-0.00
time (sec)	N/A	0.361	0.749	0.185	0.406	0.528	0.000	0.000	0.000

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	207	0	101	134	0	0	-1
normalized size	1	1.00	1.53	0.00	0.75	0.99	0.00	0.00	-0.01
time (sec)	N/A	0.154	0.506	0.092	0.410	0.923	0.000	0.000	0.000

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.056	4.182	0.089	0.000	0.524	0.000	0.000	0.000

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.057	16.931	0.108	0.000	0.446	0.000	0.000	0.000

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	123	482	234	168	264	260	187
normalized size	1	1.00	1.38	5.42	2.63	1.89	2.97	2.92	2.10
time (sec)	N/A	0.143	0.458	0.022	0.326	0.523	1.412	0.161	0.243

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	83	240	139	102	151	148	110
normalized size	1	1.00	1.24	3.58	2.07	1.52	2.25	2.21	1.64
time (sec)	N/A	0.096	0.317	0.016	0.328	1.059	0.620	0.224	0.107

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	91	65	51	68	66	49
normalized size	1	1.00	0.96	2.02	1.44	1.13	1.51	1.47	1.09
time (sec)	N/A	0.048	0.118	0.016	0.319	0.457	0.285	0.196	0.143

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	57	94	71	111	0	70	-1
normalized size	1	1.00	0.89	1.47	1.11	1.73	0.00	1.09	-0.02
time (sec)	N/A	0.124	0.141	0.038	0.366	0.460	0.000	0.183	0.000

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	71	149	88	162	0	682	-1
normalized size	1	1.00	0.82	1.71	1.01	1.86	0.00	7.84	-0.01
time (sec)	N/A	0.169	0.349	0.039	0.448	0.512	0.000	0.219	0.000

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	95	296	99	274	0	327	-1
normalized size	1	1.00	0.77	2.41	0.80	2.23	0.00	2.66	-0.01
time (sec)	N/A	0.205	0.618	0.042	0.415	0.447	0.000	0.184	0.000

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	235	1061	520	418	779	602	481
normalized size	1	1.00	0.94	4.24	2.08	1.67	3.12	2.41	1.92
time (sec)	N/A	0.290	1.362	0.032	0.443	0.472	3.653	0.238	1.858

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	249	535	322	247	456	348	281
normalized size	1	1.00	1.37	2.94	1.77	1.36	2.51	1.91	1.54
time (sec)	N/A	0.202	0.726	0.029	0.418	0.668	1.643	0.243	0.550

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	98	208	164	128	219	163	135
normalized size	1	1.00	0.84	1.79	1.41	1.10	1.89	1.41	1.16
time (sec)	N/A	0.106	0.722	0.028	0.357	0.608	0.653	0.592	0.147

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	134	201	148	232	0	148	-1
normalized size	1	1.00	0.86	1.29	0.95	1.49	0.00	0.95	-0.01
time (sec)	N/A	0.325	0.295	0.192	0.405	0.885	0.000	0.290	0.000

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	232	319	181	357	0	1227	-1
normalized size	1	1.00	1.27	1.74	0.99	1.95	0.00	6.70	-0.01
time (sec)	N/A	0.350	0.596	0.218	0.445	0.584	0.000	0.322	0.000

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	242	242	395	626	203	590	0	702	-1
normalized size	1	1.00	1.63	2.59	0.84	2.44	0.00	2.90	-0.00
time (sec)	N/A	0.447	0.900	0.227	0.457	0.502	0.000	0.195	0.000

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	404	404	318	0	0	1004	0	0	-1
normalized size	1	1.00	0.79	0.00	0.00	2.49	0.00	0.00	-0.00
time (sec)	N/A	0.826	0.251	0.274	0.000	0.737	0.000	0.000	0.000

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	296	296	233	0	0	708	0	0	-1
normalized size	1	1.00	0.79	0.00	0.00	2.39	0.00	0.00	-0.00
time (sec)	N/A	0.669	0.130	0.185	0.000	0.517	0.000	0.000	0.000

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	142	393	0	455	0	0	-1
normalized size	1	1.00	0.76	2.10	0.00	2.43	0.00	0.00	-0.01
time (sec)	N/A	0.369	0.035	0.086	0.000	0.472	0.000	0.000	0.000

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.064	0.990	0.089	0.000	0.513	0.000	0.000	0.000

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.060	0.922	0.092	0.000	0.753	0.000	0.000	0.000

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	549	549	428	0	0	3957	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	7.21	0.00	0.00	-0.00
time (sec)	N/A	1.037	1.736	0.443	0.000	0.785	0.000	0.000	0.000

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	194	519	0	1717	0	0	-1
normalized size	1	1.00	0.76	2.04	0.00	6.76	0.00	0.00	-0.00
time (sec)	N/A	0.442	1.027	0.164	0.000	0.505	0.000	0.000	0.000

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.062	50.233	0.418	0.000	0.526	0.000	0.000	0.000

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.058	52.740	0.608	0.000	0.490	0.000	0.000	0.000

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	544	544	836	1232	0	6396	0	0	-1
normalized size	1	1.00	1.54	2.26	0.00	11.76	0.00	0.00	-0.00
time (sec)	N/A	2.081	9.759	0.282	0.000	0.675	0.000	0.000	0.000

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.062	100.762	0.721	0.000	0.949	0.000	0.000	0.000

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.061	93.769	1.078	0.000	0.501	0.000	0.000	0.000

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.055	4.374	0.086	0.000	0.475	0.000	0.000	0.000

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	543	543	448	0	377	829	0	0	-1
normalized size	1	1.00	0.83	0.00	0.69	1.53	0.00	0.00	-0.00
time (sec)	N/A	0.807	1.640	0.243	0.469	0.906	0.000	0.000	0.000

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	254	0	208	517	0	0	-1
normalized size	1	1.00	0.90	0.00	0.74	1.84	0.00	0.00	-0.00
time (sec)	N/A	0.375	0.723	0.146	0.406	0.795	0.000	0.000	0.000

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	118	0	101	249	0	0	-1
normalized size	1	1.00	0.90	0.00	0.77	1.90	0.00	0.00	-0.01
time (sec)	N/A	0.148	0.173	0.086	0.382	0.489	0.000	0.000	0.000

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.057	1.116	0.088	0.000	0.473	0.000	0.000	0.000

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.055	5.383	0.114	0.000	0.395	0.000	0.000	0.000

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	232	501	317	458	0	0	-1
normalized size	1	1.00	1.42	3.07	1.94	2.81	0.00	0.00	-0.01
time (sec)	N/A	0.356	3.211	0.169	0.652	0.913	0.000	0.000	0.000

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	188	269	0	262	0	0	-1
normalized size	1	1.00	1.45	2.07	0.00	2.02	0.00	0.00	-0.01
time (sec)	N/A	0.272	2.401	0.130	0.000	0.532	0.000	0.000	0.000

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	239	86	108	95	83	133	74
normalized size	1	1.00	2.66	0.96	1.20	1.06	0.92	1.48	0.82
time (sec)	N/A	0.112	0.626	0.150	0.611	0.927	0.366	0.606	0.548

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	61	67	36	33	27	33	27
normalized size	1	1.00	1.74	1.91	1.03	0.94	0.77	0.94	0.77
time (sec)	N/A	0.044	0.205	0.052	0.306	0.446	0.171	0.557	0.244

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.050	48.574	0.140	0.000	0.508	0.000	0.000	0.000

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.051	41.751	0.153	0.000	0.474	0.000	0.000	0.000

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	857	688	670	816	0	0	-1
normalized size	1	1.00	3.56	2.85	2.78	3.39	0.00	0.00	-0.00
time (sec)	N/A	0.526	6.534	0.291	0.708	0.524	0.000	0.000	0.000

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	260	374	0	471	0	0	-1
normalized size	1	1.00	1.41	2.03	0.00	2.56	0.00	0.00	-0.01
time (sec)	N/A	0.391	3.463	0.224	0.000	0.508	0.000	0.000	0.000

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	238	134	240	174	235	272	143
normalized size	1	1.00	2.00	1.13	2.02	1.46	1.97	2.29	1.20
time (sec)	N/A	0.177	1.021	0.187	0.466	0.523	0.622	0.334	0.582

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	59	107	74	69	105	63	59
normalized size	1	1.00	1.13	2.06	1.42	1.33	2.02	1.21	1.13
time (sec)	N/A	0.089	0.224	0.069	0.456	0.547	0.304	0.575	0.305

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.078	180.002	0.198	0.000	0.534	0.000	0.000	0.000

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.075	180.001	0.294	0.000	0.552	0.000	0.000	0.000

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	393	393	376	928	0	1029	0	0	-1
normalized size	1	1.00	0.96	2.36	0.00	2.62	0.00	0.00	-0.00
time (sec)	N/A	0.702	7.319	0.267	0.000	0.897	0.000	0.000	0.000

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	1661	508	0	587	0	0	-1
normalized size	1	1.00	5.79	1.77	0.00	2.05	0.00	0.00	-0.00
time (sec)	N/A	0.547	4.983	0.222	0.000	0.534	0.000	0.000	0.000

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	325	197	0	227	410	355	215
normalized size	1	1.00	1.86	1.13	0.00	1.30	2.34	2.03	1.23
time (sec)	N/A	0.263	1.786	0.185	0.000	0.497	0.926	0.501	0.708

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	109	196	98	95	182	87	94
normalized size	1	1.00	1.31	2.36	1.18	1.14	2.19	1.05	1.13
time (sec)	N/A	0.080	0.167	0.066	0.397	0.720	0.416	0.372	0.353

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.078	180.002	0.199	0.000	0.798	0.000	0.000	0.000

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.079	180.002	0.227	0.000	0.523	0.000	0.000	0.000

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	313	313	363	1034	580	997	0	0	-1
normalized size	1	1.00	1.16	3.30	1.85	3.19	0.00	0.00	-0.00
time (sec)	N/A	0.482	5.368	0.358	0.701	0.862	0.000	0.000	0.000

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	275	573	347	557	0	0	-1
normalized size	1	1.00	1.23	2.56	1.55	2.49	0.00	0.00	-0.00
time (sec)	N/A	0.346	4.130	0.213	0.762	0.446	0.000	0.000	0.000

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	345	211	0	211	0	0	-1
normalized size	1	1.00	2.74	1.67	0.00	1.67	0.00	0.00	-0.01
time (sec)	N/A	0.147	1.222	0.228	0.000	0.485	0.000	0.000	0.000

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	52	42	62	57	0	48	56
normalized size	1	1.00	1.27	1.02	1.51	1.39	0.00	1.17	1.37
time (sec)	N/A	0.060	0.065	0.075	0.498	1.600	0.000	0.270	0.882

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.050	46.521	0.972	0.000	0.727	0.000	0.000	0.000

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.050	57.446	1.862	0.000	0.467	0.000	0.000	0.000

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	419	419	1042	1535	938	2577	0	0	-1
normalized size	1	1.00	2.49	3.66	2.24	6.15	0.00	0.00	-0.00
time (sec)	N/A	0.805	17.154	0.372	1.071	0.980	0.000	0.000	0.000

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	296	296	715	847	603	1370	0	0	-1
normalized size	1	1.00	2.42	2.86	2.04	4.63	0.00	0.00	-0.00
time (sec)	N/A	0.583	12.917	0.250	0.654	0.664	0.000	0.000	0.000

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	454	316	0	505	0	0	-1
normalized size	1	1.00	2.79	1.94	0.00	3.10	0.00	0.00	-0.01
time (sec)	N/A	0.228	5.220	0.249	0.000	0.551	0.000	0.000	0.000

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	61	79	110	146	0	90	122
normalized size	1	1.00	1.07	1.39	1.93	2.56	0.00	1.58	2.14
time (sec)	N/A	0.086	0.200	0.075	0.610	0.565	0.000	0.451	1.402

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.076	133.438	0.649	0.000	0.536	0.000	0.000	0.000

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.074	180.000	1.672	0.000	0.664	0.000	0.000	0.000

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	546	546	2478	2058	1316	4289	0	0	-1
normalized size	1	1.00	4.54	3.77	2.41	7.86	0.00	0.00	-0.00
time (sec)	N/A	1.212	69.677	0.387	0.929	0.707	0.000	0.000	0.000

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	368	368	1378	1107	863	2213	0	0	-1
normalized size	1	1.00	3.74	3.01	2.35	6.01	0.00	0.00	-0.00
time (sec)	N/A	0.856	16.847	0.315	1.021	0.534	0.000	0.000	0.000

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	541	423	0	824	0	0	-1
normalized size	1	1.00	2.53	1.98	0.00	3.85	0.00	0.00	-0.00
time (sec)	N/A	0.367	2.750	0.302	0.000	0.559	0.000	0.000	0.000

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	90	119	158	242	0	97	132
normalized size	1	1.00	1.03	1.37	1.82	2.78	0.00	1.11	1.52
time (sec)	N/A	0.123	0.436	0.111	0.323	0.579	0.000	0.750	0.610

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.075	180.019	1.701	0.000	0.902	0.000	0.000	0.000

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.074	180.042	2.826	0.000	0.730	0.000	0.000	0.000

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	453	453	607	0	0	1112	0	0	-1
normalized size	1	1.00	1.34	0.00	0.00	2.45	0.00	0.00	-0.00
time (sec)	N/A	0.794	2.282	0.383	0.000	1.006	0.000	0.000	0.000

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	337	337	366	0	0	782	0	0	-1
normalized size	1	1.00	1.09	0.00	0.00	2.32	0.00	0.00	-0.00
time (sec)	N/A	0.709	1.601	0.278	0.000	0.536	0.000	0.000	0.000

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	163	440	0	500	0	0	-1
normalized size	1	1.00	0.74	2.00	0.00	2.27	0.00	0.00	-0.00
time (sec)	N/A	0.413	0.630	0.124	0.000	0.489	0.000	0.000	0.000

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	64	87	85	186	350	84	121
normalized size	1	1.00	1.19	1.61	1.57	3.44	6.48	1.56	2.24
time (sec)	N/A	0.075	0.110	0.003	0.565	0.586	68.103	0.386	0.823

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.049	9.094	0.105	0.000	0.441	0.000	0.000	0.000

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	551	551	979	0	0	2612	0	0	-1
normalized size	1	1.00	1.78	0.00	0.00	4.74	0.00	0.00	-0.00
time (sec)	N/A	1.027	2.960	0.189	0.000	0.646	0.000	0.000	0.000

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	407	407	453	0	0	1689	0	0	-1
normalized size	1	1.00	1.11	0.00	0.00	4.15	0.00	0.00	-0.00
time (sec)	N/A	0.853	2.932	0.168	0.000	0.612	0.000	0.000	0.000

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	299	510	0	946	0	0	-1
normalized size	1	1.00	1.13	1.93	0.00	3.58	0.00	0.00	-0.00
time (sec)	N/A	0.487	2.128	0.137	0.000	0.537	0.000	0.000	0.000

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	74	132	119	331	0	111	166
normalized size	1	1.00	1.04	1.86	1.68	4.66	0.00	1.56	2.34
time (sec)	N/A	0.128	0.294	0.048	0.612	0.765	0.000	0.285	0.373

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.076	134.047	0.144	0.000	0.608	0.000	0.000	0.000

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	712	712	1407	0	0	5191	0	0	-1
normalized size	1	1.00	1.98	0.00	0.00	7.29	0.00	0.00	-0.00
time (sec)	N/A	1.235	4.539	0.186	0.000	0.709	0.000	0.000	0.000

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	522	522	740	0	0	3247	0	0	-1
normalized size	1	1.00	1.42	0.00	0.00	6.22	0.00	0.00	-0.00
time (sec)	N/A	1.044	4.232	0.163	0.000	0.512	0.000	0.000	0.000

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	335	335	307	589	0	1727	0	0	-1
normalized size	1	1.00	0.92	1.76	0.00	5.16	0.00	0.00	-0.00
time (sec)	N/A	0.593	2.559	0.125	0.000	0.788	0.000	0.000	0.000

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	101	262	164	601	0	151	212
normalized size	1	1.00	0.94	2.45	1.53	5.62	0.00	1.41	1.98
time (sec)	N/A	0.221	0.306	0.053	0.500	0.516	0.000	0.359	0.438

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.077	180.000	0.171	0.000	0.455	0.000	0.000	0.000

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	605	605	757	0	0	1645	0	0	-1
normalized size	1	1.00	1.25	0.00	0.00	2.72	0.00	0.00	-0.00
time (sec)	N/A	0.965	2.896	0.683	0.000	0.570	0.000	0.000	0.000

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	433	433	454	0	0	1096	0	0	-1
normalized size	1	1.00	1.05	0.00	0.00	2.53	0.00	0.00	-0.00
time (sec)	N/A	0.814	1.904	0.470	0.000	0.585	0.000	0.000	0.000

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	261	306	532	0	649	0	0	-1
normalized size	1	1.00	1.17	2.04	0.00	2.49	0.00	0.00	-0.00
time (sec)	N/A	0.460	1.817	0.185	0.000	0.508	0.000	0.000	0.000

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	69	65	112	223	0	102	347
normalized size	1	1.00	1.08	1.02	1.75	3.48	0.00	1.59	5.42
time (sec)	N/A	0.088	0.075	0.003	0.429	0.551	0.000	0.364	0.459

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.049	5.752	0.123	0.000	0.535	0.000	0.000	0.000

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	745	745	1353	0	0	6416	0	0	-1
normalized size	1	1.00	1.82	0.00	0.00	8.61	0.00	0.00	-0.00
time (sec)	N/A	1.311	17.570	1.484	0.000	1.393	0.000	0.000	0.000

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	535	535	795	0	0	3805	0	0	-1
normalized size	1	1.00	1.49	0.00	0.00	7.11	0.00	0.00	-0.00
time (sec)	N/A	1.080	15.617	1.231	0.000	1.027	0.000	0.000	0.000

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	405	626	0	1830	0	0	-1
normalized size	1	1.00	1.32	2.05	0.00	5.98	0.00	0.00	-0.00
time (sec)	N/A	0.565	5.202	0.217	0.000	0.995	0.000	0.000	0.000

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	100	105	137	479	0	123	360
normalized size	1	1.00	1.25	1.31	1.71	5.99	0.00	1.54	4.50
time (sec)	N/A	0.147	0.739	0.003	0.520	0.617	0.000	0.411	0.393

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.077	114.240	1.425	0.000	0.587	0.000	0.000	0.000

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-1)	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1053	1053	2800	0	0	0	0	0	-1
normalized size	1	1.00	2.66	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.752	41.535	2.676	0.000	0.000	0.000	0.000	0.000

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	725	725	1531	0	0	10341	0	0	-1
normalized size	1	1.00	2.11	0.00	0.00	14.26	0.00	0.00	-0.00
time (sec)	N/A	1.372	24.568	1.515	0.000	0.906	0.000	0.000	0.000

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	420	420	736	861	0	4720	0	0	-1
normalized size	1	1.00	1.75	2.05	0.00	11.24	0.00	0.00	-0.00
time (sec)	N/A	0.726	7.911	0.260	0.000	0.579	0.000	0.000	0.000

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	145	164	211	1203	0	176	776
normalized size	1	1.00	1.28	1.45	1.87	10.65	0.00	1.56	6.87
time (sec)	N/A	0.404	1.807	0.003	0.533	0.664	0.000	2.004	0.746

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.079	180.000	2.614	0.000	0.679	0.000	0.000	0.000

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	118	635	264	295	0	0	-1
normalized size	1	1.00	0.85	4.57	1.90	2.12	0.00	0.00	-0.01
time (sec)	N/A	0.213	0.070	0.214	0.542	0.579	0.000	0.000	0.000

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	94	393	164	181	0	0	-1
normalized size	1	1.00	0.89	3.71	1.55	1.71	0.00	0.00	-0.01
time (sec)	N/A	0.184	0.048	0.142	0.752	0.458	0.000	0.000	0.000

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	66	188	0	89	0	0	-1
normalized size	1	1.00	0.90	2.58	0.00	1.22	0.00	0.00	-0.01
time (sec)	N/A	0.111	0.025	0.147	0.000	0.468	0.000	0.000	0.000

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	23	20	23	22	32	19
normalized size	1	1.00	1.00	1.00	0.87	1.00	0.96	1.39	0.83
time (sec)	N/A	0.027	0.014	0.033	0.393	0.481	0.216	0.301	0.239

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.049	27.609	0.145	0.000	0.425	0.000	0.000	0.000

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.049	32.358	0.152	0.000	0.567	0.000	0.000	0.000

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	106	447	373	258	520	803	269
normalized size	1	1.00	0.98	4.14	3.45	2.39	4.81	7.44	2.49
time (sec)	N/A	0.164	0.772	0.091	2.383	0.475	0.759	2.527	0.716

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	78	223	271	157	320	480	167
normalized size	1	1.00	0.95	2.72	3.30	1.91	3.90	5.85	2.04
time (sec)	N/A	0.126	0.503	0.083	0.565	0.493	0.568	1.043	0.523

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	57	83	188	76	168	231	87
normalized size	1	1.00	1.02	1.48	3.36	1.36	3.00	4.12	1.55
time (sec)	N/A	0.072	0.616	0.079	0.509	0.471	0.405	0.225	0.385

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	139	85	44	40	80	41	36
normalized size	1	1.00	6.32	3.86	2.00	1.82	3.64	1.86	1.64
time (sec)	N/A	0.043	0.145	0.082	0.393	0.451	0.253	0.187	0.213

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	62	103	76	79	0	81	-1
normalized size	1	1.00	0.82	1.36	1.00	1.04	0.00	1.07	-0.01
time (sec)	N/A	0.204	0.315	0.175	0.457	0.487	0.000	0.233	0.000

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	85	164	92	129	0	631	-1
normalized size	1	1.00	0.83	1.59	0.89	1.25	0.00	6.13	-0.01
time (sec)	N/A	0.221	0.509	0.179	0.654	0.509	0.000	0.369	0.000

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	134	726	0	401	1042	1005	449
normalized size	1	1.00	0.58	3.14	0.00	1.74	4.51	4.35	1.94
time (sec)	N/A	0.261	1.287	0.142	0.000	0.467	1.180	1.692	1.284

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	99	241	0	225	632	566	271
normalized size	1	1.00	0.58	1.41	0.00	1.32	3.70	3.31	1.58
time (sec)	N/A	0.186	0.870	0.243	0.000	0.491	0.854	0.262	0.936

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	60	120	0	92	323	246	144
normalized size	1	1.00	0.61	1.22	0.00	0.94	3.30	2.51	1.47
time (sec)	N/A	0.100	1.091	0.112	0.000	0.469	0.596	0.236	0.537

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	28	29	60	49	134	55	29
normalized size	1	1.00	0.82	0.85	1.76	1.44	3.94	1.62	0.85
time (sec)	N/A	0.048	0.046	0.036	0.312	0.523	0.351	0.226	0.293

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	112	180	0	127	0	154	-1
normalized size	1	1.00	0.85	1.37	0.00	0.97	0.00	1.18	-0.01
time (sec)	N/A	0.324	0.395	0.194	0.000	0.537	0.000	0.223	0.000

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	212	299	0	226	0	1193	-1
normalized size	1	1.00	1.18	1.66	0.00	1.26	0.00	6.63	-0.01
time (sec)	N/A	0.392	0.627	0.210	0.000	0.518	0.000	0.405	0.000

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	C	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	463	463	767	1152	684	1450	0	0	-1
normalized size	1	1.00	1.66	2.49	1.48	3.13	0.00	0.00	-0.00
time (sec)	N/A	0.483	11.217	0.361	0.630	0.549	0.000	0.000	0.000

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	501	613	387	800	0	0	-1
normalized size	1	1.00	1.87	2.29	1.44	2.99	0.00	0.00	-0.00
time (sec)	N/A	0.264	11.701	0.228	0.623	0.608	0.000	0.000	0.000

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	161	161	710	268	0	352	0	0	-1
normalized size	1	1.00	4.41	1.66	0.00	2.19	0.00	0.00	-0.01
time (sec)	N/A	0.142	3.326	0.257	0.000	0.513	0.000	0.000	0.000

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	30	91	87	102	0	104	74
normalized size	1	1.00	0.71	2.17	2.07	2.43	0.00	2.48	1.76
time (sec)	N/A	0.057	0.046	0.085	0.353	0.456	0.000	0.959	1.098

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.050	66.359	0.918	0.000	0.551	0.000	0.000	0.000

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.050	180.010	1.350	0.000	0.539	0.000	0.000	0.000

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	A	C	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	450	450	1049	1001	729	1385	0	0	-1
normalized size	1	1.00	2.33	2.22	1.62	3.08	0.00	0.00	-0.00
time (sec)	N/A	0.589	12.404	0.353	0.774	0.503	0.000	0.000	0.000

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	325	325	564	509	0	708	0	0	-1
normalized size	1	1.00	1.74	1.57	0.00	2.18	0.00	0.00	-0.00
time (sec)	N/A	0.387	8.125	0.257	0.000	0.480	0.000	0.000	0.000

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	194	143	251	201	0	261	205
normalized size	1	1.00	1.23	0.91	1.59	1.27	0.00	1.65	1.30
time (sec)	N/A	0.158	1.118	0.267	0.391	0.495	0.000	0.265	2.483

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	75	104	55	0	59	43
normalized size	1	1.00	1.00	1.60	2.21	1.17	0.00	1.26	0.91
time (sec)	N/A	0.055	0.046	0.093	0.811	0.496	0.000	0.190	0.483

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.078	130.792	0.394	0.000	0.507	0.000	0.000	0.000

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.077	180.014	1.980	0.000	0.572	0.000	0.000	0.000

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	667	667	1804	2026	1333	3841	0	0	-1
normalized size	1	1.00	2.70	3.04	2.00	5.76	0.00	0.00	-0.00
time (sec)	N/A	0.711	13.489	0.500	1.412	0.594	0.000	0.000	0.000

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	423	423	1284	1044	801	2055	0	0	-1
normalized size	1	1.00	3.04	2.47	1.89	4.86	0.00	0.00	-0.00
time (sec)	N/A	0.398	12.955	0.361	0.936	0.698	0.000	0.000	0.000

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	1290	445	0	910	0	0	-1
normalized size	1	1.00	5.54	1.91	0.00	3.91	0.00	0.00	-0.00
time (sec)	N/A	0.190	6.663	0.355	0.000	0.528	0.000	0.000	0.000

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	101	180	180	286	0	177	137
normalized size	1	1.00	1.11	1.98	1.98	3.14	0.00	1.95	1.51
time (sec)	N/A	0.081	0.106	0.112	0.331	0.577	0.000	0.207	0.986

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.080	118.296	2.025	0.000	0.728	0.000	0.000	0.000

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.081	180.028	2.967	0.000	0.624	0.000	0.000	0.000

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	356	356	329	0	0	882	0	0	-1
normalized size	1	1.00	0.92	0.00	0.00	2.48	0.00	0.00	-0.00
time (sec)	N/A	0.483	0.138	0.543	0.000	0.523	0.000	0.000	0.000

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	244	0	0	609	0	0	-1
normalized size	1	1.00	0.92	0.00	0.00	2.31	0.00	0.00	-0.00
time (sec)	N/A	0.411	0.127	0.367	0.000	0.542	0.000	0.000	0.000

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	157	412	0	380	0	0	-1
normalized size	1	1.00	0.92	2.42	0.00	2.24	0.00	0.00	-0.01
time (sec)	N/A	0.234	0.033	0.136	0.000	0.533	0.000	0.000	0.000

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	19	18	44	41	33	18
normalized size	1	1.00	1.00	1.06	1.00	2.44	2.28	1.83	1.00
time (sec)	N/A	0.027	0.007	0.003	0.309	0.432	0.856	1.919	0.080

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.047	13.106	0.287	0.000	0.542	0.000	0.000	0.000

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	527	527	933	0	0	2020	0	0	-1
normalized size	1	1.00	1.77	0.00	0.00	3.83	0.00	0.00	-0.00
time (sec)	N/A	0.908	3.093	0.506	0.000	0.789	0.000	0.000	0.000

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	389	389	447	0	0	1313	0	0	-1
normalized size	1	1.00	1.15	0.00	0.00	3.38	0.00	0.00	-0.00
time (sec)	N/A	0.785	2.767	0.396	0.000	0.718	0.000	0.000	0.000

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	258	901	0	742	0	0	-1
normalized size	1	1.00	1.02	3.58	0.00	2.94	0.00	0.00	-0.00
time (sec)	N/A	0.443	1.907	0.170	0.000	0.665	0.000	0.000	0.000

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	458	174	116	259	503	110	121
normalized size	1	1.00	6.74	2.56	1.71	3.81	7.40	1.62	1.78
time (sec)	N/A	0.117	1.418	0.071	0.416	0.601	156.440	0.186	0.419

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.075	25.266	0.183	0.000	0.788	0.000	0.000	0.000

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	642	642	10263	0	0	4371	0	0	-1
normalized size	1	1.00	15.99	0.00	0.00	6.81	0.00	0.00	-0.00
time (sec)	N/A	0.785	23.923	0.717	0.000	0.671	0.000	0.000	0.000

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	477	477	3021	0	0	2726	0	0	-1
normalized size	1	1.00	6.33	0.00	0.00	5.71	0.00	0.00	-0.00
time (sec)	N/A	0.642	16.398	0.533	0.000	0.535	0.000	0.000	0.000

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	251	975	0	1416	0	0	-1
normalized size	1	1.00	0.84	3.27	0.00	4.75	0.00	0.00	-0.00
time (sec)	N/A	0.358	1.278	0.211	0.000	0.504	0.000	0.000	0.000

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	53	291	127	327	0	92	120
normalized size	1	1.00	0.90	4.93	2.15	5.54	0.00	1.56	2.03
time (sec)	N/A	0.069	0.046	0.073	0.320	0.558	0.000	0.227	0.333

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.077	77.188	0.355	0.000	0.771	0.000	0.000	0.000

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	786	786	3214	0	0	1718	0	0	-1
normalized size	1	1.00	4.09	0.00	0.00	2.19	0.00	0.00	-0.00
time (sec)	N/A	1.457	26.610	0.566	0.000	0.765	0.000	0.000	0.000

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	558	558	1639	0	0	1098	0	0	-1
normalized size	1	1.00	2.94	0.00	0.00	1.97	0.00	0.00	-0.00
time (sec)	N/A	1.034	16.552	0.463	0.000	0.475	0.000	0.000	0.000

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	334	334	439	954	0	588	0	0	-1
normalized size	1	1.00	1.31	2.86	0.00	1.76	0.00	0.00	-0.00
time (sec)	N/A	0.596	2.608	0.276	0.000	0.818	0.000	0.000	0.000

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	114	100	95	92	0	121	129
normalized size	1	1.00	1.65	1.45	1.38	1.33	0.00	1.75	1.87
time (sec)	N/A	0.070	0.092	0.003	0.438	0.499	0.000	0.161	1.231

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.049	17.725	0.178	0.000	1.006	0.000	0.000	0.000

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	780	780	1143	0	0	6397	0	0	-1
normalized size	1	1.00	1.47	0.00	0.00	8.20	0.00	0.00	-0.00
time (sec)	N/A	1.688	13.459	1.926	0.000	0.767	0.000	0.000	0.000

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	548	548	905	0	0	3600	0	0	-1
normalized size	1	1.00	1.65	0.00	0.00	6.57	0.00	0.00	-0.00
time (sec)	N/A	1.295	8.133	1.244	0.000	1.060	0.000	0.000	0.000

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	295	295	284	1928	0	1296	0	0	-1
normalized size	1	1.00	0.96	6.54	0.00	4.39	0.00	0.00	-0.00
time (sec)	N/A	0.717	2.861	0.274	0.000	0.781	0.000	0.000	0.000

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	104	90	115	353	0	108	413
normalized size	1	1.00	1.35	1.17	1.49	4.58	0.00	1.40	5.36
time (sec)	N/A	0.100	0.160	0.003	0.417	0.536	0.000	0.306	1.381

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.077	66.067	0.802	0.000	0.626	0.000	0.000	0.000

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	928	928	3368	0	0	10600	0	0	-1
normalized size	1	1.00	3.63	0.00	0.00	11.42	0.00	0.00	-0.00
time (sec)	N/A	1.772	28.317	1.304	0.000	1.018	0.000	0.000	0.000

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	560	560	588	2051	0	4699	0	0	-1
normalized size	1	1.00	1.05	3.66	0.00	8.39	0.00	0.00	-0.00
time (sec)	N/A	0.938	6.874	0.272	0.000	1.001	0.000	0.000	0.000

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	104	468	216	893	0	282	381
normalized size	1	1.00	0.87	3.93	1.82	7.50	0.00	2.37	3.20
time (sec)	N/A	0.144	0.179	0.001	0.545	0.504	0.000	0.590	2.204

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.077	130.138	1.456	0.000	12.852	0.000	0.000	0.000

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.062	10.979	0.141	0.000	0.537	0.000	0.000	0.000

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.062	8.066	0.187	0.000	0.592	0.000	0.000	0.000

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.038	5.251	0.112	0.000	0.399	0.000	0.000	0.000

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	78	164	157	411	0	0	199
normalized size	1	1.00	1.05	2.22	2.12	5.55	0.00	0.00	2.69
time (sec)	N/A	0.073	0.450	0.370	0.522	0.551	0.000	0.000	0.560

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	175	491	0	1378	0	0	-1
normalized size	1	1.00	0.75	2.10	0.00	5.89	0.00	0.00	-0.00
time (sec)	N/A	0.440	1.295	0.325	0.000	0.547	0.000	0.000	0.000

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	348	348	368	0	0	2420	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	6.95	0.00	0.00	-0.00
time (sec)	N/A	0.740	2.280	0.543	0.000	0.600	0.000	0.000	0.000

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	78	164	157	411	0	0	199
normalized size	1	1.00	1.05	2.22	2.12	5.55	0.00	0.00	2.69
time (sec)	N/A	0.070	0.362	0.000	0.536	0.483	0.000	0.000	0.002

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	175	491	0	1378	0	0	-1
normalized size	1	1.00	0.75	2.10	0.00	5.89	0.00	0.00	-0.00
time (sec)	N/A	0.440	0.542	0.000	0.000	0.512	0.000	0.000	0.000

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	348	348	368	0	0	2420	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	6.95	0.00	0.00	-0.00
time (sec)	N/A	0.731	0.339	0.000	0.000	0.628	0.000	0.000	0.000

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	112	308	413	1230	0	0	-1
normalized size	1	1.00	1.00	2.75	3.69	10.98	0.00	0.00	-0.01
time (sec)	N/A	0.098	1.085	0.510	0.596	0.467	0.000	0.000	0.000

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	623	805	0	5233	0	0	-1
normalized size	1	1.00	2.04	2.63	0.00	17.10	0.00	0.00	-0.00
time (sec)	N/A	0.520	16.159	0.480	0.000	0.807	0.000	0.000	0.000

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	631	631	5753	0	0	11757	0	0	-1
normalized size	1	1.00	9.12	0.00	0.00	18.63	0.00	0.00	-0.00
time (sec)	N/A	1.095	24.161	0.717	0.000	0.786	0.000	0.000	0.000

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	112	308	413	1230	0	0	-1
normalized size	1	1.00	1.00	2.75	3.69	10.98	0.00	0.00	-0.01
time (sec)	N/A	0.095	1.237	0.000	0.692	0.610	0.000	0.000	0.000

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	623	805	0	5233	0	0	-1
normalized size	1	1.00	2.04	2.63	0.00	17.10	0.00	0.00	-0.00
time (sec)	N/A	0.521	7.126	0.000	0.000	0.707	0.000	0.000	0.000

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	631	631	5753	0	0	11757	0	0	-1
normalized size	1	1.00	9.12	0.00	0.00	18.63	0.00	0.00	-0.00
time (sec)	N/A	1.087	7.491	0.000	0.000	0.811	0.000	0.000	0.000

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	448	448	2819	0	0	1976	0	0	-1
normalized size	1	1.00	6.29	0.00	0.00	4.41	0.00	0.00	-0.00
time (sec)	N/A	0.647	18.878	0.421	0.000	0.495	0.000	0.000	0.000

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	330	330	1301	0	0	1265	0	0	-1
normalized size	1	1.00	3.94	0.00	0.00	3.83	0.00	0.00	-0.00
time (sec)	N/A	0.550	11.646	0.336	0.000	0.467	0.000	0.000	0.000

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	206	483	0	692	0	0	-1
normalized size	1	1.00	0.97	2.28	0.00	3.26	0.00	0.00	-0.00
time (sec)	N/A	0.312	1.072	0.121	0.000	0.493	0.000	0.000	0.000

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	33	35	83	132	65	60	31
normalized size	1	1.00	0.97	1.03	2.44	3.88	1.91	1.76	0.91
time (sec)	N/A	0.057	0.037	0.026	0.346	0.488	0.988	0.237	0.074

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.057	73.260	0.262	0.000	0.460	0.000	0.000	0.000

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	696	696	2963	0	0	3847	0	0	-1
normalized size	1	1.00	4.26	0.00	0.00	5.53	0.00	0.00	-0.00
time (sec)	N/A	1.130	14.163	0.406	0.000	0.593	0.000	0.000	0.000

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	510	510	2172	0	0	2410	0	0	-1
normalized size	1	1.00	4.26	0.00	0.00	4.73	0.00	0.00	-0.00
time (sec)	N/A	0.962	9.423	0.307	0.000	0.557	0.000	0.000	0.000

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	327	327	1551	1012	0	1284	0	0	-1
normalized size	1	1.00	4.74	3.09	0.00	3.93	0.00	0.00	-0.00
time (sec)	N/A	0.550	3.453	0.156	0.000	0.543	0.000	0.000	0.000

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	109	260	160	446	0	155	212
normalized size	1	1.00	1.15	2.74	1.68	4.69	0.00	1.63	2.23
time (sec)	N/A	0.181	0.392	0.062	0.419	0.485	0.000	0.223	0.488

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.082	180.001	0.182	0.000	0.492	0.000	0.000	0.000

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	864	864	7375	0	0	7980	0	0	-1
normalized size	1	1.00	8.54	0.00	0.00	9.24	0.00	0.00	-0.00
time (sec)	N/A	1.117	48.587	0.617	0.000	0.627	0.000	0.000	0.000

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	636	636	3509	0	0	4887	0	0	-1
normalized size	1	1.00	5.52	0.00	0.00	7.68	0.00	0.00	-0.00
time (sec)	N/A	0.875	15.938	0.547	0.000	0.609	0.000	0.000	0.000

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	400	400	551	1102	0	2465	0	0	-1
normalized size	1	1.00	1.38	2.76	0.00	6.16	0.00	0.00	-0.00
time (sec)	N/A	0.485	2.762	0.184	0.000	0.552	0.000	0.000	0.000

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	75	428	183	652	0	145	180
normalized size	1	1.00	0.88	5.04	2.15	7.67	0.00	1.71	2.12
time (sec)	N/A	0.122	0.163	0.068	0.329	0.427	0.000	0.189	0.428

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.084	180.001	0.277	0.000	0.476	0.000	0.000	0.000

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1021	1021	3088	0	0	1723	0	0	-1
normalized size	1	1.00	3.02	0.00	0.00	1.69	0.00	0.00	-0.00
time (sec)	N/A	1.330	23.815	0.697	0.000	0.695	0.000	0.000	0.000

Problem 349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	716	716	872	0	0	1087	0	0	-1
normalized size	1	1.00	1.22	0.00	0.00	1.52	0.00	0.00	-0.00
time (sec)	N/A	1.067	9.927	0.484	0.000	0.567	0.000	0.000	0.000

Problem 350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	438	1287	0	589	0	0	-1
normalized size	1	1.00	1.04	3.06	0.00	1.40	0.00	0.00	-0.00
time (sec)	N/A	0.597	2.553	0.226	0.000	0.512	0.000	0.000	0.000

Problem 351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	51	113	95	92	0	85	130
normalized size	1	1.00	0.74	1.64	1.38	1.33	0.00	1.23	1.88
time (sec)	N/A	0.077	0.071	0.002	0.422	0.492	0.000	2.001	1.270

Problem 352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.048	16.492	0.356	0.000	0.496	0.000	0.000	0.000

Problem 353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	917	917	1143	0	0	6537	0	0	-1
normalized size	1	1.00	1.25	0.00	0.00	7.13	0.00	0.00	-0.00
time (sec)	N/A	1.712	12.974	1.816	0.000	0.804	0.000	0.000	0.000

Problem 354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	648	648	906	0	0	3690	0	0	-1
normalized size	1	1.00	1.40	0.00	0.00	5.69	0.00	0.00	-0.00
time (sec)	N/A	1.321	8.103	1.439	0.000	1.055	0.000	0.000	0.000

Problem 355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	335	335	285	1858	0	1338	0	0	-1
normalized size	1	1.00	0.85	5.55	0.00	3.99	0.00	0.00	-0.00
time (sec)	N/A	0.663	2.905	0.252	0.000	0.543	0.000	0.000	0.000

Problem 356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	104	100	117	350	0	117	170
normalized size	1	1.00	1.33	1.28	1.50	4.49	0.00	1.50	2.18
time (sec)	N/A	0.112	0.170	0.001	0.410	0.646	0.000	1.095	0.596

Problem 357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.059	58.857	0.793	0.000	0.516	0.000	0.000	0.000

Problem 358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1176	1176	3124	0	0	11122	0	0	-1
normalized size	1	1.00	2.66	0.00	0.00	9.46	0.00	0.00	-0.00
time (sec)	N/A	1.696	27.017	1.021	0.000	0.937	0.000	0.000	0.000

Problem 359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	711	711	587	2074	0	4963	0	0	-1
normalized size	1	1.00	0.83	2.92	0.00	6.98	0.00	0.00	-0.00
time (sec)	N/A	0.993	7.977	0.278	0.000	0.710	0.000	0.000	0.000

Problem 360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	105	474	218	926	0	225	337
normalized size	1	1.00	0.86	3.89	1.79	7.59	0.00	1.84	2.76
time (sec)	N/A	0.199	0.205	0.004	0.408	0.529	0.000	3.028	1.933

Problem 361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.086	140.785	1.391	0.000	9.077	0.000	0.000	0.000

Problem 362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	606	606	2858	0	0	3891	0	0	-1
normalized size	1	1.00	4.72	0.00	0.00	6.42	0.00	0.00	-0.00
time (sec)	N/A	0.879	26.473	0.602	0.000	0.733	0.000	0.000	0.000

Problem 363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	1496	0	0	2414	0	0	-1
normalized size	1	1.00	3.33	0.00	0.00	5.38	0.00	0.00	-0.00
time (sec)	N/A	0.717	11.183	0.423	0.000	0.626	0.000	0.000	0.000

Problem 364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	423	565	0	1248	0	0	-1
normalized size	1	1.00	1.52	2.03	0.00	4.49	0.00	0.00	-0.00
time (sec)	N/A	0.418	0.969	0.173	0.000	0.503	0.000	0.000	0.000

Problem 365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	49	54	119	309	87	88	46
normalized size	1	1.00	0.89	0.98	2.16	5.62	1.58	1.60	0.84
time (sec)	N/A	0.081	0.074	0.029	0.329	0.458	1.339	0.261	0.111

Problem 366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.087	180.001	0.362	0.000	0.451	0.000	0.000	0.000

Problem 367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	897	897	1667	0	0	7042	0	0	-1
normalized size	1	1.00	1.86	0.00	0.00	7.85	0.00	0.00	-0.00
time (sec)	N/A	1.473	7.371	0.441	0.000	0.680	0.000	0.000	0.000

Problem 368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	649	649	966	0	0	4311	0	0	-1
normalized size	1	1.00	1.49	0.00	0.00	6.64	0.00	0.00	-0.00
time (sec)	N/A	1.202	4.561	0.381	0.000	0.574	0.000	0.000	0.000

Problem 369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	403	403	676	1128	0	2195	0	0	-1
normalized size	1	1.00	1.68	2.80	0.00	5.45	0.00	0.00	-0.00
time (sec)	N/A	0.690	2.779	0.174	0.000	0.544	0.000	0.000	0.000

Problem 370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	123	398	209	745	0	211	278
normalized size	1	1.00	0.87	2.82	1.48	5.28	0.00	1.50	1.97
time (sec)	N/A	0.498	0.351	0.070	0.469	0.536	0.000	0.227	0.614

Problem 371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	39	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.126	180.001	0.201	0.000	0.484	0.000	0.000	0.000

Problem 372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1123	1123	8706	0	0	12603	0	0	-1
normalized size	1	1.00	7.75	0.00	0.00	11.22	0.00	0.00	-0.00
time (sec)	N/A	1.524	40.409	0.720	0.000	0.990	0.000	0.000	0.000

Problem 373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	819	819	5198	0	0	7645	0	0	-1
normalized size	1	1.00	6.35	0.00	0.00	9.33	0.00	0.00	-0.00
time (sec)	N/A	1.171	18.253	0.542	0.000	0.632	0.000	0.000	0.000

Problem 374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	499	499	853	1217	0	3795	0	0	-1
normalized size	1	1.00	1.71	2.44	0.00	7.61	0.00	0.00	-0.00
time (sec)	N/A	0.675	2.950	0.259	0.000	0.602	0.000	0.000	0.000

Problem 375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	98	614	234	1069	0	202	238
normalized size	1	1.00	0.87	5.43	2.07	9.46	0.00	1.79	2.11
time (sec)	N/A	0.163	0.231	0.081	0.338	0.580	0.000	0.270	0.593

Problem 376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	39	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.132	180.003	0.346	0.000	0.602	0.000	0.000	0.000

Problem 377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1218	1218	3261	0	0	1968	0	0	-1
normalized size	1	1.00	2.68	0.00	0.00	1.62	0.00	0.00	-0.00
time (sec)	N/A	1.694	22.734	1.786	0.000	0.667	0.000	0.000	0.000

Problem 378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	861	861	997	0	0	1250	0	0	-1
normalized size	1	1.00	1.16	0.00	0.00	1.45	0.00	0.00	-0.00
time (sec)	N/A	1.366	10.658	1.098	0.000	0.932	0.000	0.000	0.000

Problem 379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	516	516	438	3882	0	684	0	0	-1
normalized size	1	1.00	0.85	7.52	0.00	1.33	0.00	0.00	-0.00
time (sec)	N/A	0.776	2.796	0.329	0.000	0.610	0.000	0.000	0.000

Problem 380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	78	153	110	111	0	95	174
normalized size	1	1.00	1.05	2.07	1.49	1.50	0.00	1.28	2.35
time (sec)	N/A	0.160	0.082	0.003	0.404	0.537	0.000	0.311	1.261

Problem 381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.060	180.001	0.576	0.000	0.548	0.000	0.000	0.000

Problem 382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1118	1118	1118	0	0	6525	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	5.84	0.00	0.00	-0.00
time (sec)	N/A	1.980	13.305	1.740	0.000	0.779	0.000	0.000	0.000

Problem 383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	772	772	908	0	0	3680	0	0	-1
normalized size	1	1.00	1.18	0.00	0.00	4.77	0.00	0.00	-0.00
time (sec)	N/A	1.533	8.386	1.233	0.000	0.689	0.000	0.000	0.000

Problem 384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	385	385	284	1928	0	1337	0	0	-1
normalized size	1	1.00	0.74	5.01	0.00	3.47	0.00	0.00	-0.00
time (sec)	N/A	0.758	2.913	0.260	0.000	0.553	0.000	0.000	0.000

Problem 385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	106	103	115	351	0	121	422
normalized size	1	1.00	1.18	1.14	1.28	3.90	0.00	1.34	4.69
time (sec)	N/A	0.106	0.182	0.003	0.480	0.463	0.000	1.550	0.804

Problem 386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.073	180.001	0.676	0.000	0.544	0.000	0.000	0.000

Problem 387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1256	1256	3124	0	0	10892	0	0	-1
normalized size	1	1.00	2.49	0.00	0.00	8.67	0.00	0.00	-0.00
time (sec)	N/A	1.968	27.867	1.070	0.000	1.032	0.000	0.000	0.000

Problem 388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	760	760	588	2068	0	4873	0	0	-1
normalized size	1	1.00	0.77	2.72	0.00	6.41	0.00	0.00	-0.00
time (sec)	N/A	1.148	8.063	0.272	0.000	0.928	0.000	0.000	0.000

Problem 389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	130	475	219	917	0	226	339
normalized size	1	1.00	1.07	3.93	1.81	7.58	0.00	1.87	2.80
time (sec)	N/A	0.229	0.325	0.003	0.737	0.509	0.000	1.130	2.019

Problem 390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.082	180.002	1.441	0.000	8.059	0.000	0.000	0.000

Problem 391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	792	792	7375	0	0	7020	0	0	-1
normalized size	1	1.00	9.31	0.00	0.00	8.86	0.00	0.00	-0.00
time (sec)	N/A	1.197	25.871	0.576	0.000	0.610	0.000	0.000	0.000

Problem 392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	578	578	3510	0	0	4263	0	0	-1
normalized size	1	1.00	6.07	0.00	0.00	7.38	0.00	0.00	-0.00
time (sec)	N/A	0.928	13.684	0.420	0.000	0.498	0.000	0.000	0.000

Problem 393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	348	348	447	671	0	2129	0	0	-1
normalized size	1	1.00	1.28	1.93	0.00	6.12	0.00	0.00	-0.00
time (sec)	N/A	0.526	1.500	0.207	0.000	0.522	0.000	0.000	0.000

Problem 394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	66	73	171	602	105	117	63
normalized size	1	1.00	0.87	0.96	2.25	7.92	1.38	1.54	0.83
time (sec)	N/A	0.097	0.125	0.041	0.454	0.432	2.010	0.617	0.144

Problem 395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.083	180.002	0.250	0.000	0.495	0.000	0.000	0.000

Problem 396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1038	1038	7058	0	0	10658	0	0	-1
normalized size	1	1.00	6.80	0.00	0.00	10.27	0.00	0.00	-0.00
time (sec)	N/A	1.827	26.944	0.559	0.000	0.669	0.000	0.000	0.000

Problem 397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	755	755	4653	0	0	6459	0	0	-1
normalized size	1	1.00	6.16	0.00	0.00	8.55	0.00	0.00	-0.00
time (sec)	N/A	1.514	16.252	0.476	0.000	0.764	0.000	0.000	0.000

Problem 398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	474	474	2917	1213	0	3228	0	0	-1
normalized size	1	1.00	6.15	2.56	0.00	6.81	0.00	0.00	-0.00
time (sec)	N/A	0.865	10.353	0.204	0.000	0.494	0.000	0.000	0.000

Problem 399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	153	624	257	1134	0	258	330
normalized size	1	1.00	0.83	3.39	1.40	6.16	0.00	1.40	1.79
time (sec)	N/A	0.793	1.810	0.082	0.525	0.611	0.000	0.418	0.727

Problem 400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	39	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.127	180.001	0.202	0.000	0.423	0.000	0.000	0.000

Problem 401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-1)	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1443	1443	5157	0	0	0	0	0	-1
normalized size	1	1.00	3.57	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.187	18.204	0.681	0.000	0.000	0.000	0.000	0.000

Problem 402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1049	1049	1545	0	0	11318	0	0	-1
normalized size	1	1.00	1.47	0.00	0.00	10.79	0.00	0.00	-0.00
time (sec)	N/A	1.623	9.946	0.510	0.000	0.776	0.000	0.000	0.000

Problem 403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	641	641	958	1363	0	5548	0	0	-1
normalized size	1	1.00	1.49	2.13	0.00	8.66	0.00	0.00	-0.00
time (sec)	N/A	0.944	4.113	0.234	0.000	0.623	0.000	0.000	0.000

Problem 404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	123	804	300	1660	0	258	307
normalized size	1	1.00	0.87	5.70	2.13	11.77	0.00	1.83	2.18
time (sec)	N/A	0.223	0.363	0.137	0.360	0.477	0.000	0.357	0.754

Problem 405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	39	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.127	180.002	0.344	0.000	0.453	0.000	0.000	0.000

Problem 406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1519	1519	2861	0	0	4546	0	0	-1
normalized size	1	1.00	1.88	0.00	0.00	2.99	0.00	0.00	-0.00
time (sec)	N/A	2.154	23.370	2.372	0.000	0.737	0.000	0.000	0.000

Problem 407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1067	1067	1948	0	0	2793	0	0	-1
normalized size	1	1.00	1.83	0.00	0.00	2.62	0.00	0.00	-0.00
time (sec)	N/A	1.691	11.652	1.553	0.000	0.645	0.000	0.000	0.000

Problem 408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	631	631	429	4066	0	1420	0	0	-1
normalized size	1	1.00	0.68	6.44	0.00	2.25	0.00	0.00	-0.00
time (sec)	N/A	0.957	4.305	0.433	0.000	0.531	0.000	0.000	0.000

Problem 409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	91	196	147	288	0	125	249
normalized size	1	1.00	1.02	2.20	1.65	3.24	0.00	1.40	2.80
time (sec)	N/A	0.196	0.172	0.114	0.408	0.501	0.000	0.728	1.640

Problem 410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.089	180.002	1.231	0.000	0.632	0.000	0.000	0.000

Problem 411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1294	1294	1111	0	0	7331	0	0	-1
normalized size	1	1.00	0.86	0.00	0.00	5.67	0.00	0.00	-0.00
time (sec)	N/A	2.455	11.816	2.382	0.000	0.698	0.000	0.000	0.000

Problem 412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	904	904	935	0	0	4195	0	0	-1
normalized size	1	1.00	1.03	0.00	0.00	4.64	0.00	0.00	-0.00
time (sec)	N/A	1.821	8.402	1.288	0.000	0.655	0.000	0.000	0.000

Problem 413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	454	454	317	1897	0	1571	0	0	-1
normalized size	1	1.00	0.70	4.18	0.00	3.46	0.00	0.00	-0.00
time (sec)	N/A	0.892	3.904	0.315	0.000	0.491	0.000	0.000	0.000

Problem 414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	96	158	141	459	0	135	468
normalized size	1	1.00	0.79	1.31	1.17	3.79	0.00	1.12	3.87
time (sec)	N/A	0.209	0.465	0.004	0.420	0.443	0.000	2.251	2.002

Problem 415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.081	180.002	0.864	0.000	0.532	0.000	0.000	0.000

Problem 416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1479	1479	3102	0	0	10546	0	0	-1
normalized size	1	1.00	2.10	0.00	0.00	7.13	0.00	0.00	-0.00
time (sec)	N/A	2.453	26.919	1.229	0.000	0.900	0.000	0.000	0.000

Problem 417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	894	894	588	2284	0	4709	0	0	-1
normalized size	1	1.00	0.66	2.55	0.00	5.27	0.00	0.00	-0.00
time (sec)	N/A	1.415	7.297	0.336	0.000	0.740	0.000	0.000	0.000

Problem 418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	152	472	217	896	0	223	381
normalized size	1	1.00	1.27	3.93	1.81	7.47	0.00	1.86	3.18
time (sec)	N/A	0.201	0.387	0.003	0.409	0.491	0.000	3.783	2.368

Problem 419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.076	180.001	1.517	0.000	7.751	0.000	0.000	0.000

Problem 420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	451	451	1924	0	0	1228	0	0	-1
normalized size	1	1.00	4.27	0.00	0.00	2.72	0.00	0.00	-0.00
time (sec)	N/A	0.770	17.052	0.838	0.000	0.821	0.000	0.000	0.000

Problem 421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	325	325	1013	0	0	813	0	0	-1
normalized size	1	1.00	3.12	0.00	0.00	2.50	0.00	0.00	-0.00
time (sec)	N/A	0.654	5.747	0.578	0.000	0.621	0.000	0.000	0.000

Problem 422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	236	451	0	476	0	0	-1
normalized size	1	1.00	1.15	2.20	0.00	2.32	0.00	0.00	-0.00
time (sec)	N/A	0.380	0.881	0.210	0.000	0.497	0.000	0.000	0.000

Problem 423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	28	35	75	67	0	63	254
normalized size	1	1.00	0.82	1.03	2.21	1.97	0.00	1.85	7.47
time (sec)	N/A	0.047	0.020	0.003	0.318	0.649	0.000	0.370	0.409

Problem 424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.050	28.627	0.572	0.000	0.534	0.000	0.000	0.000

Problem 425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	638	638	802	0	0	1470	0	0	-1
normalized size	1	1.00	1.26	0.00	0.00	2.30	0.00	0.00	-0.00
time (sec)	N/A	1.275	2.230	1.612	0.000	0.512	0.000	0.000	0.000

Problem 426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	462	462	489	0	0	992	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	2.15	0.00	0.00	-0.00
time (sec)	N/A	1.040	1.712	1.086	0.000	0.481	0.000	0.000	0.000

Problem 427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	286	286	339	970	0	598	0	0	-1
normalized size	1	1.00	1.19	3.39	0.00	2.09	0.00	0.00	-0.00
time (sec)	N/A	0.579	1.784	0.283	0.000	0.523	0.000	0.000	0.000

Problem 428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	80	150	126	209	0	139	384
normalized size	1	1.00	1.13	2.11	1.77	2.94	0.00	1.96	5.41
time (sec)	N/A	0.213	0.136	0.003	0.422	0.518	0.000	1.486	0.474

Problem 429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.059	57.143	0.894	0.000	0.597	0.000	0.000	0.000

Problem 430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	656	656	3099	0	0	3344	0	0	-1
normalized size	1	1.00	4.72	0.00	0.00	5.10	0.00	0.00	-0.00
time (sec)	N/A	1.230	16.378	2.681	0.000	0.585	0.000	0.000	0.000

Problem 431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	486	486	1196	0	0	2101	0	0	-1
normalized size	1	1.00	2.46	0.00	0.00	4.32	0.00	0.00	-0.00
time (sec)	N/A	1.025	7.224	1.728	0.000	0.523	0.000	0.000	0.000

Problem 432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	322	322	296	932	0	1108	0	0	-1
normalized size	1	1.00	0.92	2.89	0.00	3.44	0.00	0.00	-0.00
time (sec)	N/A	0.592	1.634	0.370	0.000	0.534	0.000	0.000	0.000

Problem 433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	48	178	130	203	0	108	360
normalized size	1	1.00	0.84	3.12	2.28	3.56	0.00	1.89	6.32
time (sec)	N/A	0.128	0.076	0.139	0.314	0.740	0.000	0.189	0.494

Problem 434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.083	180.000	1.436	0.000	0.629	0.000	0.000	0.000

Problem 435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1049	1049	3872	0	0	2454	0	0	-1
normalized size	1	1.00	3.69	0.00	0.00	2.34	0.00	0.00	-0.00
time (sec)	N/A	1.341	34.475	1.089	0.000	0.674	0.000	0.000	0.000

Problem 436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	734	734	3002	0	0	1539	0	0	-1
normalized size	1	1.00	4.09	0.00	0.00	2.10	0.00	0.00	-0.00
time (sec)	N/A	1.097	28.707	0.785	0.000	0.520	0.000	0.000	0.000

Problem 437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	439	439	1541	1065	0	808	0	0	-1
normalized size	1	1.00	3.51	2.43	0.00	1.84	0.00	0.00	-0.00
time (sec)	N/A	0.637	2.728	0.265	0.000	0.521	0.000	0.000	0.000

Problem 438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	92	123	138	134	0	147	-1
normalized size	1	1.00	1.02	1.37	1.53	1.49	0.00	1.63	-0.01
time (sec)	N/A	0.170	0.149	0.004	0.403	0.601	0.000	0.158	0.000

Problem 439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.063	28.404	0.204	0.000	1.536	0.000	0.000	0.000

Problem 440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1164	1164	1467	0	0	9712	0	0	-1
normalized size	1	1.00	1.26	0.00	0.00	8.34	0.00	0.00	-0.00
time (sec)	N/A	2.199	17.264	6.467	0.000	1.085	0.000	0.000	0.000

Problem 441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	795	795	1244	0	0	5569	0	0	-1
normalized size	1	1.00	1.56	0.00	0.00	7.01	0.00	0.00	-0.00
time (sec)	N/A	1.614	11.814	3.994	0.000	0.769	0.000	0.000	0.000

Problem 442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	442	442	459	1815	0	2176	0	0	-1
normalized size	1	1.00	1.04	4.11	0.00	4.92	0.00	0.00	-0.00
time (sec)	N/A	0.806	6.498	0.381	0.000	0.595	0.000	0.000	0.000

Problem 443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	171	136	168	581	0	146	668
normalized size	1	1.00	1.51	1.20	1.49	5.14	0.00	1.29	5.91
time (sec)	N/A	0.260	0.224	0.003	0.401	0.676	0.000	4.102	4.817

Problem 444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.089	180.000	2.119	0.000	1.243	0.000	0.000	0.000

Problem 445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-1)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1185	1185	3806	0	0	0	0	0	-1
normalized size	1	1.00	3.21	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.225	32.579	2.928	0.000	0.000	0.000	0.000	0.000

Problem 446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	746	746	886	2580	0	7615	0	0	-1
normalized size	1	1.00	1.19	3.46	0.00	10.21	0.00	0.00	-0.00
time (sec)	N/A	1.059	10.708	0.391	0.000	0.729	0.000	0.000	0.000

Problem 447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	196	530	265	1279	0	343	-1
normalized size	1	1.00	1.22	3.31	1.66	7.99	0.00	2.14	-0.01
time (sec)	N/A	0.271	0.767	0.003	0.414	1.057	0.000	2.837	0.000

Problem 448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.089	173.552	4.364	0.000	36.589	0.000	0.000	0.000

Problem 449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	601	601	2469	0	0	4313	0	0	-1
normalized size	1	1.00	4.11	0.00	0.00	7.18	0.00	0.00	-0.00
time (sec)	N/A	1.003	25.955	1.760	0.000	0.677	0.000	0.000	0.000

Problem 450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	419	419	1383	0	0	2528	0	0	-1
normalized size	1	1.00	3.30	0.00	0.00	6.03	0.00	0.00	-0.00
time (sec)	N/A	0.818	17.092	1.234	0.000	0.729	0.000	0.000	0.000

Problem 451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	416	528	0	1221	0	0	-1
normalized size	1	1.00	1.71	2.17	0.00	5.02	0.00	0.00	-0.00
time (sec)	N/A	0.464	1.799	0.216	0.000	0.543	0.000	0.000	0.000

Problem 452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	50	35	110	211	0	98	409
normalized size	1	1.00	1.00	0.70	2.20	4.22	0.00	1.96	8.18
time (sec)	N/A	0.075	0.036	0.003	0.316	0.511	0.000	6.791	0.873

Problem 453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.066	180.000	1.251	0.000	0.620	0.000	0.000	0.000

Problem 454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	721	721	1350	0	0	4612	0	0	-1
normalized size	1	1.00	1.87	0.00	0.00	6.40	0.00	0.00	-0.00
time (sec)	N/A	1.636	8.479	2.053	0.000	0.691	0.000	0.000	0.000

Problem 455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	517	517	792	0	0	2729	0	0	-1
normalized size	1	1.00	1.53	0.00	0.00	5.28	0.00	0.00	-0.00
time (sec)	N/A	1.296	7.880	1.352	0.000	0.581	0.000	0.000	0.000

Problem 456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	294	294	364	1017	0	1338	0	0	-1
normalized size	1	1.00	1.24	3.46	0.00	4.55	0.00	0.00	-0.00
time (sec)	N/A	0.688	3.595	0.236	0.000	0.491	0.000	0.000	0.000

Problem 457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	98	147	134	360	0	149	380
normalized size	1	1.00	1.27	1.91	1.74	4.68	0.00	1.94	4.94
time (sec)	N/A	0.266	0.411	0.004	0.407	0.488	0.000	1.114	0.635

Problem 458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.073	179.767	1.261	0.000	0.637	0.000	0.000	0.000

Problem 459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	718	718	2567	0	0	5829	0	0	-1
normalized size	1	1.00	3.58	0.00	0.00	8.12	0.00	0.00	-0.00
time (sec)	N/A	1.645	16.815	2.750	0.000	0.723	0.000	0.000	0.000

Problem 460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	518	518	1454	0	0	3506	0	0	-1
normalized size	1	1.00	2.81	0.00	0.00	6.77	0.00	0.00	-0.00
time (sec)	N/A	1.287	11.374	1.780	0.000	0.720	0.000	0.000	0.000

Problem 461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	324	324	313	938	0	1735	0	0	-1
normalized size	1	1.00	0.97	2.90	0.00	5.35	0.00	0.00	-0.00
time (sec)	N/A	0.743	2.383	0.316	0.000	0.940	0.000	0.000	0.000

Problem 462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	52	172	131	299	0	113	356
normalized size	1	1.00	0.88	2.92	2.22	5.07	0.00	1.92	6.03
time (sec)	N/A	0.123	0.078	0.003	0.332	0.642	0.000	0.223	0.468

Problem 463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.085	180.002	1.255	0.000	0.978	0.000	0.000	0.000

Problem 464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1428	1428	4010	0	0	9779	0	0	-1
normalized size	1	1.00	2.81	0.00	0.00	6.85	0.00	0.00	-0.00
time (sec)	N/A	2.284	17.192	4.931	0.000	1.023	0.000	0.000	0.000

Problem 465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	982	982	1971	0	0	5666	0	0	-1
normalized size	1	1.00	2.01	0.00	0.00	5.77	0.00	0.00	-0.00
time (sec)	N/A	1.668	11.766	2.845	0.000	0.634	0.000	0.000	0.000

Problem 466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	591	591	535	1529	0	2591	0	0	-1
normalized size	1	1.00	0.91	2.59	0.00	4.38	0.00	0.00	-0.00
time (sec)	N/A	0.900	6.431	0.392	0.000	0.671	0.000	0.000	0.000

Problem 467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	160	159	173	441	0	200	142
normalized size	1	1.00	1.54	1.53	1.66	4.24	0.00	1.92	1.37
time (sec)	N/A	0.170	0.601	0.004	0.424	0.698	0.000	0.190	2.869

Problem 468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.092	76.148	2.058	0.000	12.186	0.000	0.000	0.000

Problem 469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	914	914	2677	0	0	10467	0	0	-1
normalized size	1	1.00	2.93	0.00	0.00	11.45	0.00	0.00	-0.00
time (sec)	N/A	2.037	28.070	3.945	0.000	1.325	0.000	0.000	0.000

Problem 470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	499	499	1862	1771	0	4086	0	0	-1
normalized size	1	1.00	3.73	3.55	0.00	8.19	0.00	0.00	-0.00
time (sec)	N/A	0.978	8.992	0.365	0.000	0.596	0.000	0.000	0.000

Problem 471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	135	174	208	1040	0	185	768
normalized size	1	1.00	0.94	1.21	1.44	7.22	0.00	1.28	5.33
time (sec)	N/A	0.311	2.569	0.003	0.410	0.606	0.000	0.182	5.232

Problem 472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	39	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.129	153.967	2.195	0.000	1.635	0.000	0.000	0.000

Problem 473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F(-1)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	978	978	1337	3280	0	0	0	0	-1
normalized size	1	1.00	1.37	3.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.411	10.924	0.413	0.000	0.000	0.000	0.000	0.000

Problem 474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	227	478	350	2568	0	458	398
normalized size	1	1.00	1.26	2.66	1.94	14.27	0.00	2.54	2.21
time (sec)	N/A	0.259	0.944	0.003	0.418	2.046	0.000	0.702	7.495

Problem 475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	F(-1)	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	39	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.135	180.002	4.649	0.000	0.000	0.000	0.000	0.000

Problem 476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	752	752	3043	0	0	11595	0	0	-1
normalized size	1	1.00	4.05	0.00	0.00	15.42	0.00	0.00	-0.00
time (sec)	N/A	1.353	69.320	2.167	0.000	1.185	0.000	0.000	0.000

Problem 477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	502	502	1550	0	0	6479	0	0	-1
normalized size	1	1.00	3.09	0.00	0.00	12.91	0.00	0.00	-0.00
time (sec)	N/A	1.004	28.088	1.247	0.000	1.025	0.000	0.000	0.000

Problem 478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	376	649	0	2899	0	0	-1
normalized size	1	1.00	1.26	2.18	0.00	9.73	0.00	0.00	-0.00
time (sec)	N/A	0.570	7.036	0.246	0.000	0.741	0.000	0.000	0.000

Problem 479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	60	73	161	545	0	134	470
normalized size	1	1.00	0.83	1.01	2.24	7.57	0.00	1.86	6.53
time (sec)	N/A	0.111	0.097	0.006	0.320	1.542	0.000	0.214	0.996

Problem 480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.092	180.000	2.456	0.000	2.591	0.000	0.000	0.000

Problem 481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1038	1038	2383	0	0	13504	0	0	-1
normalized size	1	1.00	2.30	0.00	0.00	13.01	0.00	0.00	-0.00
time (sec)	N/A	2.241	42.750	2.500	0.000	1.498	0.000	0.000	0.000

Problem 482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	714	714	1529	0	0	7726	0	0	-1
normalized size	1	1.00	2.14	0.00	0.00	10.82	0.00	0.00	-0.00
time (sec)	N/A	1.728	24.576	1.548	0.000	0.686	0.000	0.000	0.000

Problem 483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	413	413	734	1284	0	3585	0	0	-1
normalized size	1	1.00	1.78	3.11	0.00	8.68	0.00	0.00	-0.00
time (sec)	N/A	0.929	8.088	0.342	0.000	0.788	0.000	0.000	0.000

Problem 484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	145	162	217	892	0	221	628
normalized size	1	1.00	1.31	1.46	1.95	8.04	0.00	1.99	5.66
time (sec)	N/A	0.569	1.219	0.005	0.400	0.550	0.000	1.853	0.691

Problem 485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.088	180.002	2.367	0.000	1.042	0.000	0.000	0.000

Problem 486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-1)	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	972	972	3657	0	0	0	0	0	-1
normalized size	1	1.00	3.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.203	75.755	2.511	0.000	0.000	0.000	0.000	0.000

Problem 487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	689	689	2137	0	0	7775	0	0	-1
normalized size	1	1.00	3.10	0.00	0.00	11.28	0.00	0.00	-0.00
time (sec)	N/A	1.708	38.956	1.503	0.000	1.307	0.000	0.000	0.000

Problem 488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	435	435	455	1098	0	3547	0	0	-1
normalized size	1	1.00	1.05	2.52	0.00	8.15	0.00	0.00	-0.00
time (sec)	N/A	0.976	4.262	0.263	0.000	0.540	0.000	0.000	0.000

Problem 489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	64	194	173	617	0	166	1329
normalized size	1	1.00	0.80	2.42	2.16	7.71	0.00	2.08	16.61
time (sec)	N/A	0.105	0.111	0.002	0.336	0.559	0.000	1.721	1.013

Problem 490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.076	180.001	1.175	0.000	2.739	0.000	0.000	0.000

Problem 491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-1)	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1795	1795	5823	0	0	0	0	0	-1
normalized size	1	1.00	3.24	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.272	90.003	5.412	0.000	0.000	0.000	0.000	0.000

Problem 492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	C	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1219	1219	3044	0	0	13381	0	0	-1
normalized size	1	1.00	2.50	0.00	0.00	10.98	0.00	0.00	-0.00
time (sec)	N/A	2.222	39.344	2.888	0.000	0.927	0.000	0.000	0.000

Problem 493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	762	762	913	1478	0	5767	0	0	-1
normalized size	1	1.00	1.20	1.94	0.00	7.57	0.00	0.00	-0.00
time (sec)	N/A	1.138	7.735	0.346	0.000	0.728	0.000	0.000	0.000

Problem 494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	164	219	236	1035	0	263	196
normalized size	1	1.00	1.26	1.68	1.82	7.96	0.00	2.02	1.51
time (sec)	N/A	0.235	0.364	0.004	0.408	0.793	0.000	2.870	3.612

Problem 495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.091	158.103	4.127	0.000	83.482	0.000	0.000	0.000

Problem 496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F(-1)	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1245	1245	2574	0	0	0	0	0	-1
normalized size	1	1.00	2.07	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.437	27.060	5.700	0.000	0.000	0.000	0.000	0.000

Problem 497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	699	699	863	2767	0	11126	0	0	-1
normalized size	1	1.00	1.23	3.96	0.00	15.92	0.00	0.00	-0.00
time (sec)	N/A	1.356	8.403	0.435	0.000	0.845	0.000	0.000	0.000

Problem 498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	185	233	334	2653	0	224	531
normalized size	1	1.00	0.90	1.13	1.62	12.88	0.00	1.09	2.58
time (sec)	N/A	0.420	2.430	0.005	0.410	1.232	0.000	0.570	3.470

Problem 499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	39	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.134	180.002	4.481	0.000	3.955	0.000	0.000	0.000

Problem 500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F(-1)	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1122	1122	2870	3563	0	0	0	0	-1
normalized size	1	1.00	2.56	3.18	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.807	10.104	0.431	0.000	0.000	0.000	0.000	0.000

Problem 501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	237	539	418	3148	0	464	554
normalized size	1	1.00	1.12	2.55	1.98	14.92	0.00	2.20	2.63
time (sec)	N/A	0.367	0.786	0.004	0.421	3.114	0.000	1.583	6.913

Problem 502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	F(-1)	A	A	F(-1)	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	39	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.134	180.003	4.632	0.000	0.000	0.000	0.000	0.000

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [496] had the largest ratio of [.9167]

Table 2.1: Rubi specific breakdown of results for each integral

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

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
23	A	9	5	1.00	14	0.357
24	A	7	4	1.00	14	0.286
25	A	5	3	1.00	12	0.250
26	A	0	0	0.00	0	0.000
27	A	0	0	0.00	0	0.000
28	A	6	6	1.00	16	0.375
29	A	5	5	1.00	16	0.312
30	A	2	2	1.00	14	0.143
31	A	0	0	0.00	0	0.000
32	A	0	0	0.00	0	0.000
33	A	15	8	1.00	16	0.500
34	A	9	6	1.00	16	0.375
35	A	6	4	1.00	14	0.286
36	A	0	0	0.00	0	0.000
37	A	0	0	0.00	0	0.000
38	A	8	5	1.00	16	0.312
39	A	7	5	1.00	16	0.312
40	A	6	5	1.00	16	0.312
41	A	5	4	1.00	16	0.250
42	A	6	5	1.00	16	0.312
43	A	7	5	1.00	16	0.312
44	A	8	5	1.00	16	0.312
45	A	10	8	1.00	18	0.444
46	A	9	7	1.00	18	0.389
47	A	8	6	1.00	18	0.333
48	A	7	5	1.00	18	0.278

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
49	A	7	6	1.00	18	0.333
50	A	9	7	1.00	18	0.389
51	A	9	8	1.00	18	0.444
52	A	11	7	1.00	18	0.389
53	A	23	7	1.00	18	0.389
54	A	20	7	1.00	18	0.389
55	A	14	6	1.00	18	0.333
56	A	12	5	1.00	18	0.278
57	A	12	5	1.00	18	0.278
58	A	18	6	1.00	18	0.333
59	A	19	7	1.00	18	0.389
60	A	7	5	1.00	12	0.417
61	A	6	5	1.00	12	0.417
62	A	5	4	1.00	12	0.333
63	A	6	5	1.00	12	0.417
64	A	7	5	1.00	12	0.417
65	A	0	0	0.00	0	0.000
66	A	0	0	0.00	0	0.000
67	A	0	0	0.00	0	0.000
68	A	2	1	1.00	18	0.056
69	A	2	1	1.00	20	0.050
70	A	3	1	1.00	20	0.050
71	A	4	3	1.00	22	0.136
72	A	0	0	0.00	0	0.000
73	A	8	3	1.00	16	0.188
74	A	5	3	1.00	16	0.188

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
75	A	3	2	1.00	14	0.143
76	A	0	0	0.00	0	0.000
77	A	0	0	0.00	0	0.000
78	A	3	2	1.00	12	0.167
79	A	3	2	1.00	12	0.167
80	A	3	2	1.00	12	0.167
81	A	3	2	1.00	10	0.200
82	A	3	2	1.00	12	0.167
83	A	3	2	1.00	12	0.167
84	A	3	2	1.00	12	0.167
85	A	5	3	1.00	14	0.214
86	A	5	3	1.00	14	0.214
87	A	5	3	1.00	14	0.214
88	A	5	3	1.00	12	0.250
89	A	5	3	1.00	14	0.214
90	A	5	3	1.00	14	0.214
91	A	5	3	1.00	14	0.214
92	A	4	2	1.00	20	0.100
93	A	4	2	1.00	20	0.100
94	A	5	2	1.00	20	0.100
95	A	7	5	1.00	24	0.208
96	A	6	3	1.00	21	0.143
97	A	5	3	1.00	21	0.143
98	A	4	3	1.00	19	0.158
99	A	5	4	1.00	21	0.190
100	A	6	5	1.00	21	0.238

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
101	A	7	5	1.00	21	0.238
102	A	10	6	1.00	23	0.261
103	A	9	7	1.00	23	0.304
104	A	6	4	1.00	21	0.190
105	A	9	5	1.00	23	0.217
106	A	9	5	1.00	23	0.217
107	A	15	6	1.00	23	0.261
108	A	7	7	1.00	23	0.304
109	A	6	6	1.00	23	0.261
110	A	3	3	1.00	21	0.143
111	A	0	0	0.00	0	0.000
112	A	0	0	0.00	0	0.000
113	A	10	9	1.00	23	0.391
114	A	9	9	1.00	23	0.391
115	A	4	4	1.00	21	0.190
116	A	0	0	0.00	0	0.000
117	A	0	0	0.00	0	0.000
118	A	6	3	1.00	21	0.143
119	A	5	3	1.00	21	0.143
120	A	4	3	1.00	21	0.143
121	A	3	3	1.00	19	0.158
122	A	4	4	1.00	21	0.190
123	A	5	5	1.00	21	0.238
124	A	6	5	1.00	21	0.238
125	A	9	5	1.00	21	0.238
126	A	7	5	1.00	21	0.238

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
127	A	4	4	1.00	19	0.210
128	A	9	5	1.00	21	0.238
129	A	9	5	1.00	21	0.238
130	A	14	5	1.00	21	0.238
131	A	10	5	1.00	21	0.238
132	A	5	4	1.00	19	0.210
133	A	12	5	1.00	21	0.238
134	A	12	5	1.00	21	0.238
135	A	21	6	1.00	21	0.286
136	A	10	6	1.00	21	0.286
137	A	8	5	1.00	21	0.238
138	A	6	4	1.00	19	0.210
139	A	0	0	0.00	0	0.000
140	A	0	0	0.00	0	0.000
141	A	16	9	1.00	21	0.429
142	A	10	7	1.00	21	0.333
143	A	7	5	1.00	19	0.263
144	A	0	0	0.00	0	0.000
145	A	0	0	0.00	0	0.000
146	A	23	10	1.00	21	0.476
147	A	13	8	1.00	21	0.381
148	A	8	5	1.00	19	0.263
149	A	0	0	0.00	0	0.000
150	A	0	0	0.00	0	0.000
151	A	0	0	0.00	0	0.000
152	A	12	5	1.00	23	0.217

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
153	A	9	5	1.00	23	0.217
154	A	5	3	1.00	21	0.143
155	A	0	0	0.00	0	0.000
156	A	0	0	0.00	0	0.000
157	A	6	3	1.00	18	0.167
158	A	5	3	1.00	18	0.167
159	A	4	3	1.00	16	0.188
160	A	5	4	1.00	18	0.222
161	A	6	5	1.00	18	0.278
162	A	7	5	1.00	18	0.278
163	A	10	6	1.00	20	0.300
164	A	9	7	1.00	20	0.350
165	A	6	4	1.00	18	0.222
166	A	10	5	1.00	20	0.250
167	A	11	7	1.00	20	0.350
168	A	14	8	1.00	20	0.400
169	A	12	7	1.00	20	0.350
170	A	10	6	1.00	20	0.300
171	A	8	5	1.00	18	0.278
172	A	0	0	0.00	0	0.000
173	A	0	0	0.00	0	0.000
174	A	18	10	1.00	20	0.500
175	A	11	8	1.00	18	0.444
176	A	0	0	0.00	0	0.000
177	A	0	0	0.00	0	0.000
178	A	35	11	1.00	18	0.611

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
179	A	0	0	0.00	0	0.000
180	A	0	0	0.00	0	0.000
181	A	0	0	0.00	0	0.000
182	A	18	5	1.00	20	0.250
183	A	10	5	1.00	20	0.250
184	A	5	3	1.00	18	0.167
185	A	0	0	0.00	0	0.000
186	A	0	0	0.00	0	0.000
187	A	9	9	1.00	29	0.310
188	A	8	8	1.00	29	0.276
189	A	5	4	1.00	27	0.148
190	A	2	2	1.00	22	0.091
191	A	0	0	0.00	0	0.000
192	A	0	0	0.00	0	0.000
193	A	14	11	1.00	31	0.355
194	A	12	10	1.00	31	0.323
195	A	8	6	1.00	29	0.207
196	A	4	4	1.00	24	0.167
197	A	0	0	0.00	0	0.000
198	A	0	0	0.00	0	0.000
199	A	19	13	1.00	31	0.419
200	A	17	13	1.00	31	0.419
201	A	11	7	1.00	29	0.241
202	A	2	2	1.00	24	0.083
203	A	0	0	0.00	0	0.000
204	A	0	0	0.00	0	0.000

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
205	A	17	10	1.00	29	0.345
206	A	14	11	1.00	29	0.379
207	A	9	7	1.00	27	0.259
208	A	3	3	1.00	22	0.136
209	A	0	0	0.00	0	0.000
210	A	0	0	0.00	0	0.000
211	A	24	10	1.00	31	0.323
212	A	20	11	1.00	31	0.355
213	A	12	7	1.00	29	0.241
214	A	5	5	1.00	24	0.208
215	A	0	0	0.00	0	0.000
216	A	0	0	0.00	0	0.000
217	A	40	13	1.00	31	0.419
218	A	30	13	1.00	31	0.419
219	A	19	8	1.00	29	0.276
220	A	6	6	1.00	24	0.250
221	A	0	0	0.00	0	0.000
222	A	0	0	0.00	0	0.000
223	A	14	9	1.00	26	0.346
224	A	12	8	1.00	26	0.308
225	A	10	6	1.00	24	0.250
226	A	4	4	1.00	19	0.210
227	A	0	0	0.00	0	0.000
228	A	19	11	1.00	28	0.393
229	A	16	10	1.00	28	0.357
230	A	13	8	1.00	26	0.308

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
231	A	6	6	1.00	21	0.286
232	A	0	0	0.00	0	0.000
233	A	24	13	1.00	28	0.464
234	A	21	13	1.00	28	0.464
235	A	16	9	1.00	26	0.346
236	A	6	6	1.00	21	0.286
237	A	0	0	0.00	0	0.000
238	A	22	9	1.00	26	0.346
239	A	18	8	1.00	26	0.308
240	A	14	7	1.00	24	0.292
241	A	5	5	1.00	19	0.263
242	A	0	0	0.00	0	0.000
243	A	29	11	1.00	28	0.393
244	A	24	12	1.00	28	0.429
245	A	17	9	1.00	26	0.346
246	A	7	7	1.00	21	0.333
247	A	0	0	0.00	0	0.000
248	A	45	14	1.00	28	0.500
249	A	34	14	1.00	28	0.500
250	A	24	10	1.00	26	0.385
251	A	7	7	1.00	21	0.333
252	A	0	0	0.00	0	0.000
253	A	6	6	1.00	29	0.207
254	A	5	5	1.00	29	0.172
255	A	4	4	1.00	27	0.148
256	A	2	2	1.00	22	0.091

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
257	A	0	0	0.00	0	0.000
258	A	0	0	0.00	0	0.000
259	A	6	4	1.00	31	0.129
260	A	5	4	1.00	31	0.129
261	A	4	3	1.00	29	0.103
262	A	2	2	1.00	24	0.083
263	A	5	5	1.00	31	0.161
264	A	6	6	1.00	31	0.194
265	A	10	8	1.00	31	0.258
266	A	7	5	1.00	31	0.161
267	A	6	6	1.00	29	0.207
268	A	2	1	1.00	24	0.042
269	A	9	6	1.00	31	0.194
270	A	11	7	1.00	31	0.226
271	A	22	13	1.00	29	0.448
272	A	13	10	1.00	29	0.345
273	A	10	8	1.00	27	0.296
274	A	4	3	1.00	22	0.136
275	A	0	0	0.00	0	0.000
276	A	0	0	0.00	0	0.000
277	A	20	12	1.00	31	0.387
278	A	16	12	1.00	31	0.387
279	A	7	7	1.00	29	0.241
280	A	3	3	1.00	24	0.125
281	A	0	0	0.00	0	0.000
282	A	0	0	0.00	0	0.000

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
283	A	32	16	1.00	31	0.516
284	A	17	12	1.00	31	0.387
285	A	11	7	1.00	29	0.241
286	A	4	3	1.00	24	0.125
287	A	0	0	0.00	0	0.000
288	A	0	0	0.00	0	0.000
289	A	11	6	1.00	26	0.231
290	A	9	5	1.00	26	0.192
291	A	7	4	1.00	24	0.167
292	A	2	2	1.00	19	0.105
293	A	0	0	0.00	0	0.000
294	A	18	11	1.00	28	0.393
295	A	15	10	1.00	28	0.357
296	A	12	8	1.00	26	0.308
297	A	5	5	1.00	21	0.238
298	A	0	0	0.00	0	0.000
299	A	21	14	1.00	28	0.500
300	A	16	10	1.00	28	0.357
301	A	13	10	1.00	26	0.385
302	A	3	2	1.00	21	0.095
303	A	0	0	0.00	0	0.000
304	A	29	10	1.00	26	0.385
305	A	24	9	1.00	26	0.346
306	A	19	8	1.00	24	0.333
307	A	6	6	1.00	19	0.316
308	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
309	A	29	13	1.00	28	0.464
310	A	24	14	1.00	28	0.500
311	A	15	11	1.00	26	0.423
312	A	5	5	1.00	21	0.238
313	A	0	0	0.00	0	0.000
314	A	39	14	1.00	28	0.500
315	A	31	12	1.00	26	0.462
316	A	7	6	1.00	21	0.286
317	A	0	0	0.00	0	0.000
318	A	0	0	0.00	0	0.000
319	A	0	0	0.00	0	0.000
320	A	0	0	0.00	0	0.000
321	A	4	4	1.00	24	0.167
322	A	9	6	1.00	26	0.231
323	A	11	7	1.00	26	0.269
324	A	4	4	1.00	24	0.167
325	A	9	6	1.00	26	0.231
326	A	11	7	1.00	26	0.269
327	A	6	6	1.00	24	0.250
328	A	12	9	1.00	26	0.346
329	A	19	11	1.00	26	0.423
330	A	6	6	1.00	24	0.250
331	A	12	9	1.00	26	0.346
332	A	19	11	1.00	26	0.423
333	A	16	9	1.00	32	0.281
334	A	13	8	1.00	32	0.250

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
335	A	10	7	1.00	30	0.233
336	A	4	3	1.00	25	0.120
337	A	0	0	0.00	0	0.000
338	A	23	14	1.00	34	0.412
339	A	20	14	1.00	34	0.412
340	A	15	10	1.00	32	0.312
341	A	5	5	1.00	27	0.185
342	A	0	0	0.00	0	0.000
343	A	30	16	1.00	34	0.471
344	A	23	13	1.00	34	0.382
345	A	17	12	1.00	32	0.375
346	A	4	3	1.00	27	0.111
347	A	0	0	0.00	0	0.000
348	A	39	11	1.00	26	0.423
349	A	32	10	1.00	26	0.385
350	A	25	9	1.00	24	0.375
351	A	6	5	1.00	19	0.263
352	A	0	0	0.00	0	0.000
353	A	36	14	1.00	32	0.438
354	A	30	15	1.00	32	0.469
355	A	18	12	1.00	30	0.400
356	A	5	5	1.00	25	0.200
357	A	0	0	0.00	0	0.000
358	A	49	15	1.00	34	0.441
359	A	38	13	1.00	32	0.406
360	A	8	7	1.00	27	0.259

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
361	A	0	0	0.00	0	0.000
362	A	22	14	1.00	34	0.412
363	A	17	10	1.00	34	0.294
364	A	14	10	1.00	32	0.312
365	A	4	3	1.00	27	0.111
366	A	0	0	0.00	0	0.000
367	A	31	16	1.00	36	0.444
368	A	25	16	1.00	36	0.444
369	A	19	12	1.00	34	0.353
370	A	8	8	1.00	29	0.276
371	A	0	0	0.00	0	0.000
372	A	40	17	1.00	36	0.472
373	A	28	14	1.00	36	0.389
374	A	22	13	1.00	34	0.382
375	A	4	3	1.00	29	0.103
376	A	0	0	0.00	0	0.000
377	A	46	12	1.00	32	0.375
378	A	38	11	1.00	32	0.344
379	A	30	10	1.00	30	0.333
380	A	7	6	1.00	25	0.240
381	A	0	0	0.00	0	0.000
382	A	45	15	1.00	28	0.536
383	A	37	16	1.00	28	0.571
384	A	21	13	1.00	26	0.500
385	A	8	7	1.00	21	0.333
386	A	0	0	0.00	0	0.000

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
387	A	53	15	1.00	34	0.441
388	A	42	13	1.00	32	0.406
389	A	8	7	1.00	27	0.259
390	A	0	0	0.00	0	0.000
391	A	30	15	1.00	34	0.441
392	A	22	10	1.00	34	0.294
393	A	18	11	1.00	32	0.344
394	A	4	3	1.00	27	0.111
395	A	0	0	0.00	0	0.000
396	A	38	18	1.00	36	0.500
397	A	31	18	1.00	36	0.500
398	A	24	14	1.00	34	0.412
399	A	9	8	1.00	29	0.276
400	A	0	0	0.00	0	0.000
401	A	55	18	1.00	36	0.500
402	A	40	15	1.00	36	0.417
403	A	31	14	1.00	34	0.412
404	A	4	3	1.00	29	0.103
405	A	0	0	0.00	0	0.000
406	A	61	15	1.00	34	0.441
407	A	50	14	1.00	34	0.412
408	A	39	13	1.00	32	0.406
409	A	7	6	1.00	27	0.222
410	A	0	0	0.00	0	0.000
411	A	53	18	1.00	34	0.529
412	A	44	19	1.00	34	0.559

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
413	A	25	15	1.00	32	0.469
414	A	9	8	1.00	27	0.296
415	A	0	0	0.00	0	0.000
416	A	71	17	1.00	28	0.607
417	A	55	15	1.00	26	0.577
418	A	7	6	1.00	21	0.286
419	A	0	0	0.00	0	0.000
420	A	18	8	1.00	26	0.308
421	A	15	7	1.00	26	0.269
422	A	12	6	1.00	24	0.250
423	A	4	4	1.00	19	0.210
424	A	0	0	0.00	0	0.000
425	A	33	14	1.00	32	0.438
426	A	27	13	1.00	32	0.406
427	A	21	11	1.00	30	0.367
428	A	6	6	1.00	25	0.240
429	A	0	0	0.00	0	0.000
430	A	34	17	1.00	34	0.500
431	A	26	13	1.00	34	0.382
432	A	22	13	1.00	32	0.406
433	A	4	3	1.00	27	0.111
434	A	0	0	0.00	0	0.000
435	A	40	13	1.00	32	0.406
436	A	33	12	1.00	32	0.375
437	A	26	11	1.00	30	0.367
438	A	7	6	1.00	25	0.240

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
439	A	0	0	0.00	0	0.000
440	A	53	22	1.00	34	0.647
441	A	44	23	1.00	34	0.676
442	A	26	19	1.00	32	0.594
443	A	10	9	1.00	27	0.333
444	A	0	0	0.00	0	0.000
445	A	57	23	1.00	34	0.676
446	A	43	20	1.00	32	0.625
447	A	9	7	1.00	27	0.259
448	A	0	0	0.00	0	0.000
449	A	27	11	1.00	32	0.344
450	A	22	12	1.00	32	0.375
451	A	15	9	1.00	30	0.300
452	A	4	3	1.00	25	0.120
453	A	0	0	0.00	0	0.000
454	A	41	17	1.00	28	0.607
455	A	34	18	1.00	28	0.643
456	A	25	14	1.00	26	0.538
457	A	7	7	1.00	21	0.333
458	A	0	0	0.00	0	0.000
459	A	48	19	1.00	34	0.559
460	A	37	17	1.00	34	0.500
461	A	28	15	1.00	32	0.469
462	A	4	3	1.00	27	0.111
463	A	0	0	0.00	0	0.000
464	A	64	20	1.00	34	0.588

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
465	A	53	21	1.00	34	0.618
466	A	37	18	1.00	32	0.562
467	A	7	6	1.00	27	0.222
468	A	0	0	0.00	0	0.000
469	A	51	25	1.00	36	0.694
470	A	30	20	1.00	34	0.588
471	A	13	11	1.00	29	0.379
472	A	0	0	0.00	0	0.000
473	A	57	27	1.00	34	0.794
474	A	9	7	1.00	29	0.241
475	A	0	0	0.00	0	0.000
476	A	34	14	1.00	34	0.412
477	A	26	14	1.00	34	0.412
478	A	19	11	1.00	32	0.344
479	A	4	3	1.00	27	0.111
480	A	0	0	0.00	0	0.000
481	A	67	22	1.00	34	0.647
482	A	52	22	1.00	34	0.647
483	A	38	17	1.00	32	0.531
484	A	8	8	1.00	27	0.296
485	A	0	0	0.00	0	0.000
486	A	62	23	1.00	28	0.821
487	A	47	20	1.00	28	0.714
488	A	36	18	1.00	26	0.692
489	A	3	2	1.00	21	0.095
490	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
491	A	87	28	1.00	34	0.824
492	A	71	26	1.00	34	0.765
493	A	49	23	1.00	32	0.719
494	A	7	6	1.00	27	0.222
495	A	0	0	0.00	0	0.000
496	A	88	33	1.00	36	0.917
497	A	44	22	1.00	34	0.647
498	A	17	12	1.00	29	0.414
499	A	0	0	0.00	0	0.000
500	A	65	28	1.00	34	0.824
501	A	9	7	1.00	29	0.241
502	A	0	0	0.00	0	0.000

Chapter 3

Listing of integrals

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

Optimal. Leaf size=91

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

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

Rubi [A] time = 0.12, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3296, 2638}

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

Antiderivative was successfully verified.

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

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

Rule 2638

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

Rule 3296

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

Rubi steps

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

Mathematica [A] time = 0.35, size = 76, normalized size = 0.84

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

Antiderivative was successfully verified.

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

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

fricas [A] time = 2.19, size = 169, normalized size = 1.86

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.55, size = 324, normalized size = 3.56

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(b^4*d^4*x^4 + 4*b^4*c*d^3*x^3 + 6*b^4*c^2*d^2*x^2 - 4*b^3*d^4*x^3 + 4*
b^4*c^3*d*x - 12*b^3*c*d^3*x^2 + b^4*c^4 - 12*b^3*c^2*d^2*x + 12*b^2*d^4*x^
2 - 4*b^3*c^3*d + 24*b^2*c*d^3*x + 12*b^2*c^2*d^2 - 24*b*d^4*x - 24*b*c*d^3
 + 24*d^4)*e^(b*x + a)/b^5 + 1/2*(b^4*d^4*x^4 + 4*b^4*c*d^3*x^3 + 6*b^4*c^2
*d^2*x^2 + 4*b^3*d^4*x^3 + 4*b^4*c^3*d*x + 12*b^3*c*d^3*x^2 + b^4*c^4 + 12*
b^3*c^2*d^2*x + 12*b^2*d^4*x^2 + 4*b^3*c^3*d + 24*b^2*c*d^3*x + 12*b^2*c^2*
d^2 + 24*b*d^4*x + 24*b*c*d^3 + 24*d^4)*e^(-b*x - a)/b^5
```

maple [B] time = 0.06, size = 547, normalized size = 6.01

$$\frac{-\frac{12d^3ac\left((bx+a)^2\cosh(bx+a)-2(bx+a)\sinh(bx+a)+2\cosh(bx+a)\right)}{b^3}+\frac{12d^3a^2c((bx+a)\cosh(bx+a)-\sinh(bx+a))}{b^3}-\frac{12d^2a\,c^2((bx+a)\cosh(bx+a)-\sin}{b^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [B] time = 0.69, size = 326, normalized size = 3.58

$$\frac{c^4e^{(bx+a)}}{2\,b}+\frac{2\,(bxe^a-e^a)c^3de^{(bx)}}{b^2}+\frac{c^4e^{(-bx-a)}}{2\,b}+\frac{2\,(bx+1)c^3de^{(-bx-a)}}{b^2}+\frac{3\left(b^2x^2e^a-2\,bxe^a+2\,e^a\right)c^2d^2e^{(bx)}}{b^3}+\frac{3\left(b^2x^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*c^4*e^(b*x + a)/b + 2*(b*x*e^a - e^a)*c^3*d*e^(b*x)/b^2 + 1/2*c^4*e^(-b
*x - a)/b + 2*(b*x + 1)*c^3*d*e^(-b*x - a)/b^2 + 3*(b^2*x^2*e^a - 2*b*x*e^a
 + 2*e^a)*c^2*d^2*e^(b*x)/b^3 + 3*(b^2*x^2 + 2*b*x + 2)*c^2*d^2*e^(-b*x - a
)/b^3 + 2*(b^3*x^3*e^a - 3*b^2*x^2*e^a + 6*b*x*e^a - 6*e^a)*c*d^3*e^(b*x)/b
^4 + 2*(b^3*x^3 + 3*b^2*x^2 + 6*b*x + 6)*c*d^3*e^(-b*x - a)/b^4 + 1/2*(b^4*
x^4*e^a - 4*b^3*x^3*e^a + 12*b^2*x^2*e^a - 24*b*x*e^a + 24*e^a)*d^4*e^(b*x)
/b^5 + 1/2*(b^4*x^4 + 4*b^3*x^3 + 12*b^2*x^2 + 24*b*x + 24)*d^4*e^(-b*x - a
)/b^5
```

mupad [B] time = 0.45, size = 215, normalized size = 2.36

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [A] time = 2.41, size = 311, normalized size = 3.42

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((c**4*cosh(a + b*x)/b + 4*c**3*d*x*cosh(a + b*x)/b + 6*c**2*d**2*
x**2*cosh(a + b*x)/b + 4*c*d**3*x**3*cosh(a + b*x)/b + d**4*x**4*cosh(a + b
*x)/b - 4*c**3*d*sinh(a + b*x)/b**2 - 12*c**2*d**2*x*sinh(a + b*x)/b**2 - 1
2*c*d**3*x**2*sinh(a + b*x)/b**2 - 4*d**4*x**3*sinh(a + b*x)/b**2 + 12*c**2
*d**2*cosh(a + b*x)/b**3 + 24*c*d**3*x*cosh(a + b*x)/b**3 + 12*d**4*x**2*co
sh(a + b*x)/b**3 - 24*c*d**3*sinh(a + b*x)/b**4 - 24*d**4*x*sinh(a + b*x)/b
**4 + 24*d**4*cosh(a + b*x)/b**5, Ne(b, 0)), ((c**4*x + 2*c**3*d*x**2 + 2*c
**2*d**2*x**3 + c*d**3*x**4 + d**4*x**5/5)*sinh(a), True))
```

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

Optimal. Leaf size=70

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

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

Rubi [A] time = 0.08, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} =$ 0.143, Rules used = {3296, 2637}

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

Antiderivative was successfully verified.

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

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

Rule 2637

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

Rule 3296

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

Rubi steps

$$\int (c+dx)^3 \sinh(a+bx)\,dx = \frac{(c+dx)^3\cosh(a+bx)}{b} - \frac{(3d)\int (c+dx)^2\cosh(a+bx)\,dx}{b}$$
$$= \frac{(c+dx)^3\cosh(a+bx)}{b} - \frac{3d(c+dx)^2\sinh(a+bx)}{b^2} + \frac{\left(6d^2\right)\int (c+dx)\sinh(a+bx)}{b^2}$$
$$= \frac{6d^2(c+dx)\cosh(a+bx)}{b^3} + \frac{(c+dx)^3\cosh(a+bx)}{b} - \frac{3d(c+dx)^2\sinh(a+bx)}{b^2} -$$
$$= \frac{6d^2(c+dx)\cosh(a+bx)}{b^3} + \frac{(c+dx)^3\cosh(a+bx)}{b} - \frac{6d^3\sinh(a+bx)}{b^4} - \frac{3d(c+d}{}$$

Mathematica [A] time = 0.18, size = 61, normalized size = 0.87

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

Antiderivative was successfully verified.

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

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

fricas [A] time = 0.40, size = 109, normalized size = 1.56

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.29, size = 204, normalized size = 2.91

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [B] time = 0.02, size = 308, normalized size = 4.40

$$\frac{\frac{d^3\left((bx+a)^3\cosh(bx+a)-3(bx+a)^2\sinh(bx+a)+6(bx+a)\cosh(bx+a)-6\sinh(bx+a)\right)}{b^3}-\frac{3d^3a\left((bx+a)^2\cosh(bx+a)-2(bx+a)\sinh(bx+a)+2\cosh(bx+a)\right.}{b^3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b*(1/b^3*d^3*((b*x+a)^3*cosh(b*x+a)-3*(b*x+a)^2*sinh(b*x+a)+6*(b*x+a)*cos
h(b*x+a)-6*sinh(b*x+a))-3/b^3*d^3*a*((b*x+a)^2*cosh(b*x+a)-2*(b*x+a)*sinh(b
*x+a)+2*cosh(b*x+a))+3/b^2*d^2*c*((b*x+a)^2*cosh(b*x+a)-2*(b*x+a)*sinh(b*x+
a)+2*cosh(b*x+a))+3/b^3*d^3*a^2*((b*x+a)*cosh(b*x+a)-sinh(b*x+a))-6/b^2*d^2
*a*c*((b*x+a)*cosh(b*x+a)-sinh(b*x+a))+3/b*d*c^2*((b*x+a)*cosh(b*x+a)-sinh(
b*x+a))-1/b^3*d^3*a^3*cosh(b*x+a)+3/b^2*d^2*a^2*c*cosh(b*x+a)-3/b*d*a*c^2*c
osh(b*x+a)+c^3*cosh(b*x+a))
```

maxima [B] time = 0.39, size = 222, normalized size = 3.17

$$\frac{c^3e^{(bx+a)}}{2\,b}+\frac{3\,(bxe^a-e^a)c^2de^{(bx)}}{2\,b^2}+\frac{c^3e^{(-bx-a)}}{2\,b}+\frac{3\,(bx+1)c^2de^{(-bx-a)}}{2\,b^2}+\frac{3\left(b^2x^2e^a-2\,bxe^a+2\,e^a\right)cd^2e^{(bx)}}{2\,b^3}+\frac{3\left(b^2x^2+2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.14, size = 143, normalized size = 2.04

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [A] time = 1.15, size = 202, normalized size = 2.89

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=49

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

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

Rubi [A] time = 0.05, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3296, 2638}

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

Antiderivative was successfully verified.

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

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

Rule 2638

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

Rule 3296

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

Rubi steps

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

Mathematica [A] time = 0.13, size = 44, normalized size = 0.90

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

Antiderivative was successfully verified.

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

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

fricas [A] time = 0.38, size = 62, normalized size = 1.27

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.35, size = 112, normalized size = 2.29

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [B] time = 0.01, size = 147, normalized size = 3.00

$$\frac{\frac{d^2\left((bx+a)^2\cosh(bx+a)-2(bx+a)\sinh(bx+a)+2\cosh(bx+a)\right)}{b^2}-\frac{2d^2a((bx+a)\cosh(bx+a)-\sinh(bx+a))}{b^2}+\frac{2dc((bx+a)\cosh(bx+a)-\sinh(bx+a))}{b}+\frac{d^2}{}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [B] time = 0.47, size = 134, normalized size = 2.73

$$\frac{c^2e^{(bx+a)}}{2\,b}+\frac{(bxe^a-e^a)cde^{(bx)}}{b^2}+\frac{c^2e^{(-bx-a)}}{2\,b}+\frac{(bx+1)cde^{(-bx-a)}}{b^2}+\frac{\left(b^2x^2e^a-2\,bxe^a+2\,e^a\right)d^2e^{(bx)}}{2\,b^3}+\frac{\left(b^2x^2+2\,bx+2\right)d^2}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.12, size = 82, normalized size = 1.67

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [A] time = 0.52, size = 112, normalized size = 2.29

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((c**2*cosh(a + b*x)/b + 2*c*d*x*cosh(a + b*x)/b + d**2*x**2*cosh(
a + b*x)/b - 2*c*d*sinh(a + b*x)/b**2 - 2*d**2*x*sinh(a + b*x)/b**2 + 2*d**
2*cosh(a + b*x)/b**3, Ne(b, 0)), ((c**2*x + c*d*x**2 + d**2*x**3/3)*sinh(a)
, True))
```

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

Optimal. Leaf size=28

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

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

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

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

Antiderivative was successfully verified.

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

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

Rule 2637

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

Rule 3296

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

Rubi steps

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

Mathematica [A] time = 0.05, size = 27, normalized size = 0.96

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

Antiderivative was successfully verified.

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

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

fricas [A] time = 0.39, size = 29, normalized size = 1.04

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [A] time = 0.21, size = 46, normalized size = 1.64

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.01, size = 53, normalized size = 1.89

$$\frac{\frac{d((bx+a)\cosh(bx+a)-\sinh(bx+a))}{b}-\frac{da\cosh(bx+a)}{b}+c\cosh(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b*(1/b*d*((b*x+a)*cosh(b*x+a)-sinh(b*x+a))-1/b*d*a*cosh(b*x+a)+c*cosh(b*x
+a))
```

maxima [B] time = 0.43, size = 68, normalized size = 2.43

$$\frac{ce^{(bx+a)}}{2\,b}+\frac{(bxe^a-e^a)de^{(bx)}}{2\,b^2}+\frac{ce^{(-bx-a)}}{2\,b}+\frac{(bx+1)de^{(-bx-a)}}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.10, size = 35, normalized size = 1.25

$$\frac{c\cosh(a+b\,x)+d\,x\cosh(a+b\,x)}{b}-\frac{d\sinh(a+b\,x)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [A] time = 0.21, size = 46, normalized size = 1.64

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=51

$$\frac{\sinh\left(a-\frac{bc}{d}\right)\mathrm{Chi}\left(\frac{bc}{d}+bx\right)}{d}+\frac{\cosh\left(a-\frac{bc}{d}\right)\mathrm{Shi}\left(\frac{bc}{d}+bx\right)}{d}$$

```
[Out] cosh(a-b*c/d)*Shi(b*c/d+b*x)/d+Chi(b*c/d+b*x)*sinh(a-b*c/d)/d
```

Rubi [A] time = 0.11, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3303, 3298, 3301}

$$\frac{\sinh\left(a-\frac{bc}{d}\right)\mathrm{Chi}\left(\frac{bc}{d}+bx\right)}{d}+\frac{\cosh\left(a-\frac{bc}{d}\right)\mathrm{Shi}\left(\frac{bc}{d}+bx\right)}{d}$$

Antiderivative was successfully verified.

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

```
[Out] (CoshIntegral[(b*c)/d + b*x]*Sinh[a - (b*c)/d])/d + (Cosh[a - (b*c)/d]*Sinh
Integral[(b*c)/d + b*x])/d
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

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

Rubi steps

$$\int \frac{\sinh(a+bx)}{c+dx}\,dx = \cosh\left(a-\frac{bc}{d}\right)\int \frac{\sinh\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx + \sinh\left(a-\frac{bc}{d}\right)\int \frac{\cosh\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx$$
$$= \frac{\mathrm{Chi}\left(\frac{bc}{d}+bx\right)\sinh\left(a-\frac{bc}{d}\right)}{d} + \frac{\cosh\left(a-\frac{bc}{d}\right)\mathrm{Shi}\left(\frac{bc}{d}+bx\right)}{d}$$

Mathematica [**A**] time = 0.07, size = 49, normalized size = 0.96

$$\frac{\sinh\left(a-\frac{bc}{d}\right)\mathrm{Chi}\left(\frac{bc}{d}+bx\right)+\cosh\left(a-\frac{bc}{d}\right)\mathrm{Shi}\left(\frac{bc}{d}+bx\right)}{d}$$

Antiderivative was successfully verified.

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

```
[Out] (CoshIntegral[(b*c)/d + b*x]*Sinh[a - (b*c)/d] + Cosh[a - (b*c)/d]*SinhInte
gral[(b*c)/d + b*x])/d
```

fricas [**A**] time = 0.41, size = 94, normalized size = 1.84

$$\frac{\left(\mathrm{Ei}\left(\frac{bdx+bc}{d}\right)-\mathrm{Ei}\left(-\frac{bdx+bc}{d}\right)\right)\cosh\left(-\frac{bc-ad}{d}\right)+\left(\mathrm{Ei}\left(\frac{bdx+bc}{d}\right)+\mathrm{Ei}\left(-\frac{bdx+bc}{d}\right)\right)\sinh\left(-\frac{bc-ad}{d}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*((Ei((b*d*x + b*c)/d) - Ei(-(b*d*x + b*c)/d))*cosh(-(b*c - a*d)/d) + (E
i((b*d*x + b*c)/d) + Ei(-(b*d*x + b*c)/d))*sinh(-(b*c - a*d)/d))/d
```

giac [**A**] time = 0.19, size = 57, normalized size = 1.12

$$\frac{\mathrm{Ei}\left(\frac{bdx+bc}{d}\right)e^{\left(a-\frac{bc}{d}\right)}-\mathrm{Ei}\left(-\frac{bdx+bc}{d}\right)e^{\left(-a+\frac{bc}{d}\right)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.12, size = 82, normalized size = 1.61

$$\frac{\mathrm{e}^{-\frac{da-cb}{d}}\,\mathrm{Ei}\left(1,bx+a-\frac{da-cb}{d}\right)}{2d}-\frac{\mathrm{e}^{\frac{da-cb}{d}}\,\mathrm{Ei}\left(1,-bx-a-\frac{-da+cb}{d}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2/d*exp(-(a*d-b*c)/d)*Ei(1,b*x+a-(a*d-b*c)/d)-1/2/d*exp((a*d-b*c)/d)*Ei(1
,-b*x-a-(-a*d+b*c)/d)
```

maxima [A] time = 0.57, size = 57, normalized size = 1.12

$$\frac{e^{\left(-a+\frac{bc}{d}\right)}E_1\left(\frac{(dx+c)b}{d}\right)}{2\,d}-\frac{e^{\left(a-\frac{bc}{d}\right)}E_1\left(-\frac{(dx+c)b}{d}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*e^(-a + b*c/d)*exp_integral_e(1, (d*x + c)*b/d)/d - 1/2*e^(a - b*c/d)*e
xp_integral_e(1, -(d*x + c)*b/d)/d
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=71

$$\frac{b\cosh\left(a-\frac{bc}{d}\right)\operatorname{Chi}\left(\frac{bc}{d}+bx\right)}{d^2}+\frac{b\sinh\left(a-\frac{bc}{d}\right)\operatorname{Shi}\left(\frac{bc}{d}+bx\right)}{d^2}-\frac{\sinh(a+bx)}{d(c+dx)}$$

```
[Out] b*Chi(b*c/d+b*x)*cosh(a-b*c/d)/d^2+b*Shi(b*c/d+b*x)*sinh(a-b*c/d)/d^2-sinh(
b*x+a)/d/(d*x+c)
```

Rubi [A] time = 0.13, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3297, 3303, 3298, 3301}

$$\frac{b\cosh\left(a-\frac{bc}{d}\right)\operatorname{Chi}\left(\frac{bc}{d}+bx\right)}{d^2}+\frac{b\sinh\left(a-\frac{bc}{d}\right)\operatorname{Shi}\left(\frac{bc}{d}+bx\right)}{d^2}-\frac{\sinh(a+bx)}{d(c+dx)}$$

Antiderivative was successfully verified.

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

```
[Out] (b*Cosh[a - (b*c)/d]*CoshIntegral[(b*c)/d + b*x])/d^2 - Sinh[a + b*x]/(d*(c
 + d*x)) + (b*Sinh[a - (b*c)/d]*SinhIntegral[(b*c)/d + b*x])/d^2
```

Rule 3297

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

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

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

Rubi steps

$$\begin{aligned}\int \frac{\sinh(a+bx)}{(c+dx)^2}\,dx &= -\frac{\sinh(a+bx)}{d(c+dx)}+\frac{b\int \frac{\cosh(a+bx)}{c+dx}\,dx}{d}\\ &= -\frac{\sinh(a+bx)}{d(c+dx)}+\frac{\left(b\cosh\left(a-\frac{bc}{d}\right)\right)\int \frac{\cosh\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx}{d}+\frac{\left(b\sinh\left(a-\frac{bc}{d}\right)\right)\int \frac{\sinh\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx}{d}\\ &= \frac{b\cosh\left(a-\frac{bc}{d}\right)\text{Chi}\left(\frac{bc}{d}+bx\right)}{d^2}-\frac{\sinh(a+bx)}{d(c+dx)}+\frac{b\sinh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\frac{bc}{d}+bx\right)}{d^2}\end{aligned}$$

Mathematica [A] time = 0.19, size = 65, normalized size = 0.92

$$\frac{b\cosh\left(a-\frac{bc}{d}\right)\text{Chi}\left(b\left(\frac{c}{d}+x\right)\right)+b\sinh\left(a-\frac{bc}{d}\right)\text{Shi}\left(b\left(\frac{c}{d}+x\right)\right)-\frac{d\sinh(a+bx)}{c+dx}}{d^2}$$

Antiderivative was successfully verified.

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

```
[Out] (b*Cosh[a - (b*c)/d]*CoshIntegral[b*(c/d + x)] - (d*Sinh[a + b*x])/(c + d*x
) + b*Sinh[a - (b*c)/d]*SinhIntegral[b*(c/d + x)])/d^2
```

fricas [B] time = 0.39, size = 148, normalized size = 2.08

$$\frac{\left((bdx+bc)\text{Ei}\left(\frac{bdx+bc}{d}\right)+(bdx+bc)\text{Ei}\left(-\frac{bdx+bc}{d}\right)\right)\cosh\left(-\frac{bc-ad}{d}\right)-2\,d\sinh\left(bx+a\right)+\left((bdx+bc)\text{Ei}\left(\frac{bdx+bc}{d}\right)-(b\right.}{2\left(d^3x+cd^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(((b*d*x + b*c)*Ei((b*d*x + b*c)/d) + (b*d*x + b*c)*Ei(-(b*d*x + b*c)/d
))*cosh(-(b*c - a*d)/d) - 2*d*sinh(b*x + a) + ((b*d*x + b*c)*Ei((b*d*x + b*
```

```
c)/d) - (b*d*x + b*c)*Ei(-(b*d*x + b*c)/d))*sinh(-(b*c - a*d)/d))/(d^3*x +
c*d^2)
```

giac [B] time = 0.31, size = 615, normalized size = 8.66

$$\frac{\left((dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)b^2\mathrm{Ei}\left(-\frac{(dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)+bc-ad}{d}\right)e^{\left(\frac{bc-ad}{d}\right)}+b^3c\mathrm{Ei}\left(-\frac{(dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)+bc-ad}{d}\right)e^{\left(\frac{bc-ad}{d}\right)}-ab\right.}{2\left((dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)d^4+bcd^4-ad^5\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.06, size = 133, normalized size = 1.87

$$\frac{b\,\mathrm{e}^{-bx-a}}{2d\,(bdx+cb)}-\frac{b\,\mathrm{e}^{-\frac{da-cb}{d}}\,\mathrm{Ei}\left(1,bx+a-\frac{da-cb}{d}\right)}{2d^2}-\frac{b\,\mathrm{e}^{bx+a}}{2d^2\left(\frac{bc}{d}+bx\right)}-\frac{b\,\mathrm{e}^{\frac{da-cb}{d}}\,\mathrm{Ei}\left(1,-bx-a-\frac{-da+cb}{d}\right)}{2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*b*exp(-b*x-a)/d/(b*d*x+b*c)-1/2*b/d^2*exp(-(a*d-b*c)/d)*Ei(1,b*x+a-(a*d
-b*c)/d)-1/2*b/d^2*exp(b*x+a)/(b*c/d+b*x)-1/2*b/d^2*exp((a*d-b*c)/d)*Ei(1,-
b*x-a-(-a*d+b*c)/d)
```

maxima [A] time = 0.44, size = 80, normalized size = 1.13

$$-\frac{b\left(\frac{e^{\left(-a+\frac{bc}{d}\right)}E_1\left(\frac{(dx+c)b}{d}\right)}{d}+\frac{e^{\left(a-\frac{bc}{d}\right)}E_1\left(-\frac{(dx+c)b}{d}\right)}{d}\right)}{2\,d}-\frac{\sinh\left(bx+a\right)}{(dx+c)d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*b*(e^(-a + b*c/d)*exp_integral_e(1, (d*x + c)*b/d)/d + e^(a - b*c/d)*e
xp_integral_e(1, -(d*x + c)*b/d)/d)/d - sinh(b*x + a)/((d*x + c)*d)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

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

Optimal. Leaf size=104

$$\frac{b^2\sinh\left(a-\frac{bc}{d}\right)\text{Chi}\left(\frac{bc}{d}+bx\right)}{2d^3}+\frac{b^2\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\frac{bc}{d}+bx\right)}{2d^3}-\frac{b\cosh(a+bx)}{2d^2(c+dx)}-\frac{\sinh(a+bx)}{2d(c+dx)^2}$$

```
[Out] -1/2*b*cosh(b*x+a)/d^2/(d*x+c)+1/2*b^2*cosh(a-b*c/d)*Shi(b*c/d+b*x)/d^3+1/2
*b^2*Chi(b*c/d+b*x)*sinh(a-b*c/d)/d^3-1/2*sinh(b*x+a)/d/(d*x+c)^2
```

Rubi [A] time = 0.17, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3297, 3303, 3298, 3301}

$$\frac{b^2\sinh\left(a-\frac{bc}{d}\right)\text{Chi}\left(\frac{bc}{d}+bx\right)}{2d^3}+\frac{b^2\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\frac{bc}{d}+bx\right)}{2d^3}-\frac{b\cosh(a+bx)}{2d^2(c+dx)}-\frac{\sinh(a+bx)}{2d(c+dx)^2}$$

Antiderivative was successfully verified.

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

```
[Out] -(b*Cosh[a + b*x])/(2*d^2*(c + d*x)) + (b^2*CoshIntegral[(b*c)/d + b*x]*Sin
h[a - (b*c)/d])/(2*d^3) - Sinh[a + b*x]/(2*d*(c + d*x)^2) + (b^2*Cosh[a - (
b*c)/d]*SinhIntegral[(b*c)/d + b*x])/(2*d^3)
```

Rule 3297

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

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

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

Rubi steps

$$\int \frac{\sinh(a+bx)}{(c+dx)^3}\,dx = -\frac{\sinh(a+bx)}{2d(c+dx)^2} + \frac{b\int \frac{\cosh(a+bx)}{(c+dx)^2}\,dx}{2d}$$

$$= -\frac{b\cosh(a+bx)}{2d^2(c+dx)} - \frac{\sinh(a+bx)}{2d(c+dx)^2} + \frac{b^2\int \frac{\sinh(a+bx)}{c+dx}\,dx}{2d^2}$$

$$= -\frac{b\cosh(a+bx)}{2d^2(c+dx)} - \frac{\sinh(a+bx)}{2d(c+dx)^2} + \frac{\left(b^2\cosh\left(a-\frac{bc}{d}\right)\right)\int \frac{\sinh\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx}{2d^2} + \frac{\left(b^2\sinh\left(a-\frac{bc}{d}\right)\right.}{2d}$$

$$= -\frac{b\cosh(a+bx)}{2d^2(c+dx)} + \frac{b^2\text{Chi}\left(\frac{bc}{d}+bx\right)\sinh\left(a-\frac{bc}{d}\right)}{2d^3} - \frac{\sinh(a+bx)}{2d(c+dx)^2} + \frac{b^2\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\right.}{2d^3}$$

Mathematica [A] time = 0.45, size = 88, normalized size = 0.85

$$\frac{b^2\sinh\left(a-\frac{bc}{d}\right)\text{Chi}\left(b\left(\frac{c}{d}+x\right)\right)+b^2\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(b\left(\frac{c}{d}+x\right)\right)-\frac{d(b(c+dx)\cosh(a+bx)+d\sinh(a+bx))}{(c+dx)^2}}{2d^3}$$

Antiderivative was successfully verified.

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

```
[Out] (b^2*CoshIntegral[b*(c/d + x)]*Sinh[a - (b*c)/d] - (d*(b*(c + d*x)*Cosh[a +
 b*x] + d*Sinh[a + b*x]))/(c + d*x)^2 + b^2*Cosh[a - (b*c)/d]*SinhIntegral[
b*(c/d + x)])/(2*d^3)
```

fricas [B] time = 0.39, size = 254, normalized size = 2.44

$$-\frac{2\,d^2\sinh\left(bx+a\right)+2\left(bd^2x+bcd\right)\cosh\left(bx+a\right)-\left(\left(b^2d^2x^2+2\,b^2cdx+b^2c^2\right)\text{Ei}\left(\frac{bdx+bc}{d}\right)-\left(b^2d^2x^2+2\,b^2cdx\right.\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(2*d^2*sinh(b*x + a) + 2*(b*d^2*x + b*c*d)*cosh(b*x + a) - ((b^2*d^2*x
^2 + 2*b^2*c*d*x + b^2*c^2)*Ei((b*d*x + b*c)/d) - (b^2*d^2*x^2 + 2*b^2*c*d*
x + b^2*c^2)*Ei(-(b*d*x + b*c)/d))*cosh(-(b*c - a*d)/d) - ((b^2*d^2*x^2 + 2
*b^2*c*d*x + b^2*c^2)*Ei((b*d*x + b*c)/d) + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^
2*c^2)*Ei(-(b*d*x + b*c)/d))*sinh(-(b*c - a*d)/d))/(d^5*x^2 + 2*c*d^4*x + c
^2*d^3)
```

giac [B] time = 0.19, size = 301, normalized size = 2.89

$$\frac{b^2d^2x^2\mathrm{Ei}\left(\frac{bdx+bc}{d}\right)e^{\left(a-\frac{bc}{d}\right)} - b^2d^2x^2\mathrm{Ei}\left(-\frac{bdx+bc}{d}\right)e^{\left(-a+\frac{bc}{d}\right)} + 2\,b^2cdx\mathrm{Ei}\left(\frac{bdx+bc}{d}\right)e^{\left(a-\frac{bc}{d}\right)} - 2\,b^2cdx\mathrm{Ei}\left(-\frac{bdx+bc}{d}\right)e^{\left(-a+\frac{bc}{d}\right)}}{4\,(d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [B] time = 0.06, size = 277, normalized size = 2.66

$$-\frac{b^3\mathrm{e}^{-bx-a}x}{4d\left(b^2d^2x^2+2b^2cdx+c^2b^2\right)}-\frac{b^3\mathrm{e}^{-bx-a}c}{4d^2\left(b^2d^2x^2+2b^2cdx+c^2b^2\right)}+\frac{b^2\mathrm{e}^{-bx-a}}{4d\left(b^2d^2x^2+2b^2cdx+c^2b^2\right)}+\frac{b^2\mathrm{e}^{-\frac{da-cb}{d}}\,\mathrm{Ei}\left(1,bx+\right.}{4d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*b^3*exp(-b*x-a)/d/(b^2*d^2*x^2+2*b^2*c*d*x+b^2*c^2)*x-1/4*b^3*exp(-b*x
-a)/d^2/(b^2*d^2*x^2+2*b^2*c*d*x+b^2*c^2)*c+1/4*b^2*exp(-b*x-a)/d/(b^2*d^2*
x^2+2*b^2*c*d*x+b^2*c^2)+1/4*b^2/d^3*exp(-(a*d-b*c)/d)*Ei(1,b*x+a-(a*d-b*c)
/d)-1/4*b^2/d^3*exp(b*x+a)/(b*c/d+b*x)^2-1/4*b^2/d^3*exp(b*x+a)/(b*c/d+b*x)
-1/4*b^2/d^3*exp((a*d-b*c)/d)*Ei(1,-b*x-a-(-a*d+b*c)/d)
```

maxima [A] time = 0.51, size = 94, normalized size = 0.90

$$-\frac{b\left(\frac{e^{\left(-a+\frac{bc}{d}\right)}E_2\left(\frac{(dx+c)b}{d}\right)}{(dx+c)d}+\frac{e^{\left(a-\frac{bc}{d}\right)}E_2\left(-\frac{(dx+c)b}{d}\right)}{(dx+c)d}\right)}{4\,d}-\frac{\sinh\left(bx+a\right)}{2\,(dx+c)^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*b*(e^(-a + b*c/d)*exp_integral_e(2, (d*x + c)*b/d)/((d*x + c)*d) + e^(
a - b*c/d)*exp_integral_e(2, -(d*x + c)*b/d)/((d*x + c)*d))/d - 1/2*sinh(b*
x + a)/((d*x + c)^2*d)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

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

Optimal. Leaf size=162

$$\frac{3d^4\sinh(a+bx)\cosh(a+bx)}{4b^5}-\frac{3d^3(c+dx)\sinh^2(a+bx)}{2b^4}+\frac{3d^2(c+dx)^2\sinh(a+bx)\cosh(a+bx)}{2b^3}-\frac{d(c+dx)^3\,\mathrm{s}}{b}$$

```
[Out] -3/4*d^4*x/b^4-1/2*d*(d*x+c)^3/b^2-1/10*(d*x+c)^5/d+3/4*d^4*cosh(b*x+a)*sin
h(b*x+a)/b^5+3/2*d^2*(d*x+c)^2*cosh(b*x+a)*sinh(b*x+a)/b^3+1/2*(d*x+c)^4*co
sh(b*x+a)*sinh(b*x+a)/b-3/2*d^3*(d*x+c)*sinh(b*x+a)^2/b^4-d*(d*x+c)^3*sinh(
b*x+a)^2/b^2
```

Rubi [A] time = 0.10, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3311, 32, 2635, 8}

$$-\frac{3d^3(c+dx)\sinh^2(a+bx)}{2b^4}+\frac{3d^2(c+dx)^2\sinh(a+bx)\cosh(a+bx)}{2b^3}-\frac{d(c+dx)^3\sinh^2(a+bx)}{b^2}+\frac{3d^4\sinh(a+bx}{4b}$$

Antiderivative was successfully verified.

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

```
[Out] (-3*d^4*x)/(4*b^4) - (d*(c + d*x)^3)/(2*b^2) - (c + d*x)^5/(10*d) + (3*d^4*
Cosh[a + b*x]*Sinh[a + b*x])/(4*b^5) + (3*d^2*(c + d*x)^2*Cosh[a + b*x]*Sin
h[a + b*x])/(2*b^3) + ((c + d*x)^4*Cosh[a + b*x]*Sinh[a + b*x])/(2*b) - (3*
d^3*(c + d*x)*Sinh[a + b*x]^2)/(2*b^4) - (d*(c + d*x)^3*Sinh[a + b*x]^2)/b^
2
```

Rule 8

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

Rule 32

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

Rule 2635

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

Rule 3311

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

Rubi steps

$$\int (c+dx)^4 \sinh^2(a+bx)\,dx = \frac{(c+dx)^4\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{d(c+dx)^3\sinh^2(a+bx)}{b^2} - \frac{1}{2}\int (c+dx)^4$$
$$= -\frac{(c+dx)^5}{10d} + \frac{3d^2(c+dx)^2\cosh(a+bx)\sinh(a+bx)}{2b^3} + \frac{(c+dx)^4\cosh(a+bx)\,\mathrm{s}}{2b}$$
$$= -\frac{d(c+dx)^3}{2b^2} - \frac{(c+dx)^5}{10d} + \frac{3d^4\cosh(a+bx)\sinh(a+bx)}{4b^5} + \frac{3d^2(c+dx)^2\cosh(}{2}$$
$$= -\frac{3d^4x}{4b^4} - \frac{d(c+dx)^3}{2b^2} - \frac{(c+dx)^5}{10d} + \frac{3d^4\cosh(a+bx)\sinh(a+bx)}{4b^5} + \frac{3d^2(c+dx)}{}$$

Mathematica [A] time = 0.58, size = 132, normalized size = 0.81

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

Antiderivative was successfully verified.

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

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

fricas [B] time = 0.40, size = 312, normalized size = 1.93

$$-\frac{2\,b^5d^4x^5+10\,b^5cd^3x^4+20\,b^5c^2d^2x^3+20\,b^5c^3dx^2+10\,b^5c^4x+5\left(2\,b^3d^4x^3+6\,b^3cd^3x^2+2\,b^3c^3d+3\,bcd^3+3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

giac [B] time = 0.30, size = 374, normalized size = 2.31

$$-\frac{1}{10}\,d^4x^5-\frac{1}{2}\,cd^3x^4-c^2d^2x^3-c^3dx^2-\frac{1}{2}\,c^4x+\frac{\left(2\,b^4d^4x^4+8\,b^4cd^3x^3+12\,b^4c^2d^2x^2-4\,b^3d^4x^3+8\,b^4c^3dx-12\,b^3cd^3x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/10*d^4*x^5 - 1/2*c*d^3*x^4 - c^2*d^2*x^3 - c^3*d*x^2 - 1/2*c^4*x + 1/16*
(2*b^4*d^4*x^4 + 8*b^4*c*d^3*x^3 + 12*b^4*c^2*d^2*x^2 - 4*b^3*d^4*x^3 + 8*b
^4*c^3*d*x - 12*b^3*c*d^3*x^2 + 2*b^4*c^4 - 12*b^3*c^2*d^2*x + 6*b^2*d^4*x^
2 - 4*b^3*c^3*d + 12*b^2*c*d^3*x + 6*b^2*c^2*d^2 - 6*b*d^4*x - 6*b*c*d^3 +
3*d^4)*e^(2*b*x + 2*a)/b^5 - 1/16*(2*b^4*d^4*x^4 + 8*b^4*c*d^3*x^3 + 12*b^4
*c^2*d^2*x^2 + 4*b^3*d^4*x^3 + 8*b^4*c^3*d*x + 12*b^3*c*d^3*x^2 + 2*b^4*c^4
 + 12*b^3*c^2*d^2*x + 6*b^2*d^4*x^2 + 4*b^3*c^3*d + 12*b^2*c*d^3*x + 6*b^2*
c^2*d^2 + 6*b*d^4*x + 6*b*c*d^3 + 3*d^4)*e^(-2*b*x - 2*a)/b^5
```

maple [B] time = 0.04, size = 910, normalized size = 5.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b*(12/b^3*d^3*c*a^2*(1/2*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)-1/4*(b*x+a)^2-1/
4*cosh(b*x+a)^2)-12/b^2*d^2*c^2*a*(1/2*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)-1/4*
(b*x+a)^2-1/4*cosh(b*x+a)^2)-12/b^3*d^3*c*a*(1/2*(b*x+a)^2*cosh(b*x+a)*sinh
(b*x+a)-1/6*(b*x+a)^3-1/2*(b*x+a)*cosh(b*x+a)^2+1/4*cosh(b*x+a)*sinh(b*x+a)
+1/4*b*x+1/4*a)-4/b*d*a*c^3*(1/2*cosh(b*x+a)*sinh(b*x+a)-1/2*b*x-1/2*a)+1/b
^4*d^4*(1/2*(b*x+a)^4*cosh(b*x+a)*sinh(b*x+a)-1/10*(b*x+a)^5-(b*x+a)^3*cosh
(b*x+a)^2+3/2*(b*x+a)^2*cosh(b*x+a)*sinh(b*x+a)+1/2*(b*x+a)^3-3/2*(b*x+a)*c
osh(b*x+a)^2+3/4*cosh(b*x+a)*sinh(b*x+a)+3/4*b*x+3/4*a)+1/b^4*d^4*a^4*(1/2*
cosh(b*x+a)*sinh(b*x+a)-1/2*b*x-1/2*a)-4/b^4*d^4*a*(1/2*(b*x+a)^3*cosh(b*x+
a)*sinh(b*x+a)-1/8*(b*x+a)^4-3/4*(b*x+a)^2*cosh(b*x+a)^2+3/4*(b*x+a)*cosh(b
*x+a)*sinh(b*x+a)+3/8*(b*x+a)^2-3/8*cosh(b*x+a)^2)+6/b^4*d^4*a^2*(1/2*(b*x+
a)^2*cosh(b*x+a)*sinh(b*x+a)-1/6*(b*x+a)^3-1/2*(b*x+a)*cosh(b*x+a)^2+1/4*co
sh(b*x+a)*sinh(b*x+a)+1/4*b*x+1/4*a)-4/b^4*d^4*a^3*(1/2*(b*x+a)*cosh(b*x+a)
*sinh(b*x+a)-1/4*(b*x+a)^2-1/4*cosh(b*x+a)^2)+4/b^3*d^3*c*(1/2*(b*x+a)^3*co
```

```
sh(b*x+a)*sinh(b*x+a)-1/8*(b*x+a)^4-3/4*(b*x+a)^2*cosh(b*x+a)^2+3/4*(b*x+a)
*cosh(b*x+a)*sinh(b*x+a)+3/8*(b*x+a)^2-3/8*cosh(b*x+a)^2)+6/b^2*d^2*c^2*(1/
2*(b*x+a)^2*cosh(b*x+a)*sinh(b*x+a)-1/6*(b*x+a)^3-1/2*(b*x+a)*cosh(b*x+a)^2
+1/4*cosh(b*x+a)*sinh(b*x+a)+1/4*b*x+1/4*a)+c^4*(1/2*cosh(b*x+a)*sinh(b*x+a
)-1/2*b*x-1/2*a)+4/b*d*c^3*(1/2*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)-1/4*(b*x+a)
^2-1/4*cosh(b*x+a)^2)-4/b^3*d^3*a^3*c*(1/2*cosh(b*x+a)*sinh(b*x+a)-1/2*b*x-
1/2*a)+6/b^2*d^2*a^2*c^2*(1/2*cosh(b*x+a)*sinh(b*x+a)-1/2*b*x-1/2*a))
```

maxima [B] time = 0.47, size = 382, normalized size = 2.36

$$-\frac{1}{4}\left(4\,x^2-\frac{\left(2\,bxe^{(2\,a)}-e^{(2\,a)}\right)e^{(2\,bx)}}{b^2}+\frac{(2\,bx+1)e^{(-2\,bx-2\,a)}}{b^2}\right)c^3d-\frac{1}{8}\left(8\,x^3-\frac{3\left(2\,b^2x^2e^{(2\,a)}-2\,bxe^{(2\,a)}+e^{(2\,a)}\right)e^{(2\,bx)}}{b^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(4*x^2 - (2*b*x*e^(2*a) - e^(2*a))*e^(2*b*x)/b^2 + (2*b*x + 1)*e^(-2*b
*x - 2*a)/b^2)*c^3*d - 1/8*(8*x^3 - 3*(2*b^2*x^2*e^(2*a) - 2*b*x*e^(2*a) +
e^(2*a))*e^(2*b*x)/b^3 + 3*(2*b^2*x^2 + 2*b*x + 1)*e^(-2*b*x - 2*a)/b^3)*c^
2*d^2 - 1/8*(4*x^4 - (4*b^3*x^3*e^(2*a) - 6*b^2*x^2*e^(2*a) + 6*b*x*e^(2*a)
 - 3*e^(2*a))*e^(2*b*x)/b^4 + (4*b^3*x^3 + 6*b^2*x^2 + 6*b*x + 3)*e^(-2*b*x
 - 2*a)/b^4)*c*d^3 - 1/80*(8*x^5 - 5*(2*b^4*x^4*e^(2*a) - 4*b^3*x^3*e^(2*a)
 + 6*b^2*x^2*e^(2*a) - 6*b*x*e^(2*a) + 3*e^(2*a))*e^(2*b*x)/b^5 + 5*(2*b^4*
x^4 + 4*b^3*x^3 + 6*b^2*x^2 + 6*b*x + 3)*e^(-2*b*x - 2*a)/b^5)*d^4 - 1/8*c^
4*(4*x - e^(2*b*x + 2*a)/b + e^(-2*b*x - 2*a)/b)
```

mupad [B] time = 0.69, size = 334, normalized size = 2.06

$$\frac{c^4\sinh\left(2\,a+2\,b\,x\right)}{4\,b}-\frac{d^4\,x^5}{10}-c^3\,d\,x^2-\frac{c\,d^3\,x^4}{2}-\frac{c^4\,x}{2}+\frac{3\,d^4\sinh\left(2\,a+2\,b\,x\right)}{8\,b^5}-c^2\,d^2\,x^3-\frac{c^3\,d\cosh\left(2\,a+2\,b\,x\right)}{2\,b^2}-\frac{3\,c\,d^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (c^4*sinh(2*a + 2*b*x))/(4*b) - (d^4*x^5)/10 - c^3*d*x^2 - (c*d^3*x^4)/2 -
(c^4*x)/2 + (3*d^4*sinh(2*a + 2*b*x))/(8*b^5) - c^2*d^2*x^3 - (c^3*d*cosh(2
*a + 2*b*x))/(2*b^2) - (3*c*d^3*cosh(2*a + 2*b*x))/(4*b^4) - (3*d^4*x*cosh(
2*a + 2*b*x))/(4*b^4) + (3*c^2*d^2*sinh(2*a + 2*b*x))/(4*b^3) - (d^4*x^3*co
sh(2*a + 2*b*x))/(2*b^2) + (d^4*x^4*sinh(2*a + 2*b*x))/(4*b) + (3*d^4*x^2*s
inh(2*a + 2*b*x))/(4*b^3) + (3*c^2*d^2*x^2*sinh(2*a + 2*b*x))/(2*b) + (c^3*
d*x*sinh(2*a + 2*b*x))/b + (3*c*d^3*x*sinh(2*a + 2*b*x))/(2*b^3) - (3*c^2*d
^2*x*cosh(2*a + 2*b*x))/(2*b^2) - (3*c*d^3*x^2*cosh(2*a + 2*b*x))/(2*b^2) +
 (c*d^3*x^3*sinh(2*a + 2*b*x))/b
```

sympy [A] time = 4.75, size = 660, normalized size = 4.07

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=134

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

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

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

$$\frac{3d^2(c+dx)\sinh(a+bx)\cosh(a+bx)}{4b^3}-\frac{3d(c+dx)^2\sinh^2(a+bx)}{4b^2}-\frac{3d^3\sinh^2(a+bx)}{8b^4}+\frac{(c+dx)^3\sinh(a+bx)\,\mathrm{c}}{2b}$$

Antiderivative was successfully verified.

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

```
[Out] (-3*c*d^2*x)/(4*b^2) - (3*d^3*x^2)/(8*b^2) - (c + d*x)^4/(8*d) + (3*d^2*(c
+ d*x)*Cosh[a + b*x]*Sinh[a + b*x])/(4*b^3) + ((c + d*x)^3*Cosh[a + b*x]*Si
nh[a + b*x])/(2*b) - (3*d^3*Sinh[a + b*x]^2)/(8*b^4) - (3*d*(c + d*x)^2*Sin
h[a + b*x]^2)/(4*b^2)
```

Rule 32

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

Rule 3310

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

Rule 3311

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

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

Rubi steps

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

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

$$= -\frac{3cd^2x}{4b^2} - \frac{3d^3x^2}{8b^2} - \frac{(c+dx)^4}{8d} + \frac{3d^2(c+dx)\cosh(a+bx)\sinh(a+bx)}{4b^3} + \frac{(c+dx)}{}$$

Mathematica [A] time = 0.33, size = 104, normalized size = 0.78

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

Antiderivative was successfully verified.

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

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

fricas [A] time = 0.40, size = 209, normalized size = 1.56

$$-\frac{2\,b^4d^3x^4+8\,b^4cd^2x^3+12\,b^4c^2dx^2+8\,b^4c^3x+3\left(2\,b^2d^3x^2+4\,b^2cd^2x+2\,b^2c^2d+d^3\right)\cosh\left(bx+a\right)^2-4\left(2\,b^3d^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/16*(2*b^4*d^3*x^4 + 8*b^4*c*d^2*x^3 + 12*b^4*c^2*d*x^2 + 8*b^4*c^3*x + 3
*(2*b^2*d^3*x^2 + 4*b^2*c*d^2*x + 2*b^2*c^2*d + d^3)*cosh(b*x + a)^2 - 4*(2
*b^3*d^3*x^3 + 6*b^3*c*d^2*x^2 + 2*b^3*c^3 + 3*b*c*d^2 + 3*(2*b^3*c^2*d + b
*d^3)*x)*cosh(b*x + a)*sinh(b*x + a) + 3*(2*b^2*d^3*x^2 + 4*b^2*c*d^2*x + 2
*b^2*c^2*d + d^3)*sinh(b*x + a)^2)/b^4
```

giac [B] time = 0.20, size = 243, normalized size = 1.81

$$-\frac{1}{8}d^3x^4-\frac{1}{2}cd^2x^3-\frac{3}{4}c^2dx^2-\frac{1}{2}c^3x+\frac{\left(4\,b^3d^3x^3+12\,b^3cd^2x^2+12\,b^3c^2dx-6\,b^2d^3x^2+4\,b^3c^3-12\,b^2cd^2x-6\,b^2c^2d\right.}{32\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8*d^3*x^4 - 1/2*c*d^2*x^3 - 3/4*c^2*d*x^2 - 1/2*c^3*x + 1/32*(4*b^3*d^3*
x^3 + 12*b^3*c*d^2*x^2 + 12*b^3*c^2*d*x - 6*b^2*d^3*x^2 + 4*b^3*c^3 - 12*b^
2*c*d^2*x - 6*b^2*c^2*d + 6*b*d^3*x + 6*b*c*d^2 - 3*d^3)*e^(2*b*x + 2*a)/b^
4 - 1/32*(4*b^3*d^3*x^3 + 12*b^3*c*d^2*x^2 + 12*b^3*c^2*d*x + 6*b^2*d^3*x^2
 + 4*b^3*c^3 + 12*b^2*c*d^2*x + 6*b^2*c^2*d + 6*b*d^3*x + 6*b*c*d^2 + 3*d^3
)*e^(-2*b*x - 2*a)/b^4
```

maple [B] time = 0.02, size = 523, normalized size = 3.90

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [B] time = 0.64, size = 263, normalized size = 1.96

$$-\frac{3}{16}\left(4x^2-\frac{\left(2bxe^{(2a)}-e^{(2a)}\right)e^{(2bx)}}{b^2}+\frac{(2bx+1)e^{(-2bx-2a)}}{b^2}\right)c^2d-\frac{1}{16}\left(8x^3-\frac{3\left(2b^2x^2e^{(2a)}-2bxe^{(2a)}+e^{(2a)}\right)e^{(2bx}}{b^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
+ e^(2*a))*e^(2*b*x)/b^3 + 3*(2*b^2*x^2 + 2*b*x + 1)*e^(-2*b*x - 2*a)/b^3)*
c*d^2 - 1/32*(4*x^4 - (4*b^3*x^3*e^(2*a) - 6*b^2*x^2*e^(2*a) + 6*b*x*e^(2*a
) - 3*e^(2*a))*e^(2*b*x)/b^4 + (4*b^3*x^3 + 6*b^2*x^2 + 6*b*x + 3)*e^(-2*b*
x - 2*a)/b^4)*d^3 - 1/8*c^3*(4*x - e^(2*b*x + 2*a)/b + e^(-2*b*x - 2*a)/b)
```

mupad [B] time = 0.38, size = 229, normalized size = 1.71

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [A] time = 2.56, size = 456, normalized size = 3.40

$$\begin{cases} \frac{c^3x\sinh^2(a+bx)}{2} - \frac{c^3x\cosh^2(a+bx)}{2} + \frac{3c^2dx^2\sinh^2(a+bx)}{4} - \frac{3c^2dx^2\cosh^2(a+bx)}{4} + \frac{cd^2x^3\sinh^2(a+bx)}{2} - \frac{cd^2x^3\cosh^2(a+bx)}{2} + \frac{d^3x^4\sinh^2}{8} \\ \left(c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4}\right)\sinh^2(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*sinh(b*x+a)**2,x)
```

```
[Out] Piecewise((c**3*x*sinh(a + b*x)**2/2 - c**3*x*cosh(a + b*x)**2/2 + 3*c**2*d
*x**2*sinh(a + b*x)**2/4 - 3*c**2*d*x**2*cosh(a + b*x)**2/4 + c*d**2*x**3*s
inh(a + b*x)**2/2 - c*d**2*x**3*cosh(a + b*x)**2/2 + d**3*x**4*sinh(a + b*x
)**2/8 - d**3*x**4*cosh(a + b*x)**2/8 + c**3*sinh(a + b*x)*cosh(a + b*x)/(2
*b) + 3*c**2*d*x*sinh(a + b*x)*cosh(a + b*x)/(2*b) + 3*c*d**2*x**2*sinh(a +
 b*x)*cosh(a + b*x)/(2*b) + d**3*x**3*sinh(a + b*x)*cosh(a + b*x)/(2*b) - 3
*c**2*d*cosh(a + b*x)**2/(4*b**2) - 3*c*d**2*x*sinh(a + b*x)**2/(4*b**2) -
3*c*d**2*x*cosh(a + b*x)**2/(4*b**2) - 3*d**3*x**2*sinh(a + b*x)**2/(8*b**2
) - 3*d**3*x**2*cosh(a + b*x)**2/(8*b**2) + 3*c*d**2*sinh(a + b*x)*cosh(a +
 b*x)/(4*b**3) + 3*d**3*x*sinh(a + b*x)*cosh(a + b*x)/(4*b**3) - 3*d**3*cos
h(a + b*x)**2/(8*b**4), Ne(b, 0)), ((c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3
 + d**3*x**4/4)*sinh(a)**2, True))
```

3.10 $\int (c+dx)^2 \sinh^2(a+bx)\,dx$

Optimal. Leaf size=95

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

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

Rubi [A] time = 0.05, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3311, 32, 2635, 8}

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

Antiderivative was successfully verified.

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

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

Rule 8

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

Rule 32

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

Rule 2635

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

Rule 3311

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

```
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rubi steps

$$\int (c+dx)^2\sinh^2(a+bx)\,dx = \frac{(c+dx)^2\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{d(c+dx)\sinh^2(a+bx)}{2b^2} - \frac{1}{2}\int (c+dx)^2\,dx$$
$$= -\frac{(c+dx)^3}{6d} + \frac{d^2\cosh(a+bx)\sinh(a+bx)}{4b^3} + \frac{(c+dx)^2\cosh(a+bx)\sinh(a+bx)}{2b}$$
$$= -\frac{d^2x}{4b^2} - \frac{(c+dx)^3}{6d} + \frac{d^2\cosh(a+bx)\sinh(a+bx)}{4b^3} + \frac{(c+dx)^2\cosh(a+bx)\sinh(}{2b}$$

Mathematica [A] time = 0.25, size = 75, normalized size = 0.79

$$\frac{3\sinh(2(a+bx))\left(2b^2(c+dx)^2+d^2\right)-6bd(c+dx)\cosh(2(a+bx))-4b^3x\left(3c^2+3cdx+d^2x^2\right)}{24b^3}$$

Antiderivative was successfully verified.

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

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

fricas [A] time = 0.38, size = 123, normalized size = 1.29

$$-\frac{2\,b^3d^2x^3+6\,b^3cdx^2+6\,b^3c^2x+3\left(bd^2x+bcd\right)\cosh\left(bx+a\right)^2-3\left(2\,b^2d^2x^2+4\,b^2cdx+2\,b^2c^2+d^2\right)\cosh\left(bx+\right.}{12\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/12*(2*b^3*d^2*x^3 + 6*b^3*c*d*x^2 + 6*b^3*c^2*x + 3*(b*d^2*x + b*c*d)*co
sh(b*x + a)^2 - 3*(2*b^2*d^2*x^2 + 4*b^2*c*d*x + 2*b^2*c^2 + d^2)*cosh(b*x
+ a)*sinh(b*x + a) + 3*(b*d^2*x + b*c*d)*sinh(b*x + a)^2)/b^3
```

giac [A] time = 0.20, size = 136, normalized size = 1.43

$$-\frac{1}{6}\,d^2x^3-\frac{1}{2}\,cdx^2-\frac{1}{2}\,c^2x+\frac{\left(2\,b^2d^2x^2+4\,b^2cdx+2\,b^2c^2-2\,bd^2x-2\,bcd+d^2\right)e^{(2\,bx+2\,a)}}{16\,b^3}-\frac{\left(2\,b^2d^2x^2+4\,b^2cdx+2\,b^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [B] time = 0.01, size = 262, normalized size = 2.76

$$\frac{\frac{d^2\left(\frac{(bx+a)^2\cosh(bx+a)\sinh(bx+a)}{2}-\frac{(bx+a)^3}{6}-\frac{(bx+a)\left(\cosh^2(bx+a)\right)}{2}+\frac{\cosh(bx+a)\sinh(bx+a)}{4}+\frac{bx}{4}+\frac{a}{4}\right)}{b^2}-\frac{2d^2a\left(\frac{(bx+a)\cosh(bx+a)\sinh(bx+a)}{2}-\frac{(bx+a)^2}{4}-\frac{\left(\cosh^2(bx+a)\right)}{4}\right.}{b^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b*(1/b^2*d^2*(1/2*(b*x+a)^2*cosh(b*x+a)*sinh(b*x+a)-1/6*(b*x+a)^3-1/2*(b*
x+a)*cosh(b*x+a)^2+1/4*cosh(b*x+a)*sinh(b*x+a)+1/4*b*x+1/4*a)-2/b^2*d^2*a*(
1/2*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)-1/4*(b*x+a)^2-1/4*cosh(b*x+a)^2)+1/b^2*
d^2*a^2*(1/2*cosh(b*x+a)*sinh(b*x+a)-1/2*b*x-1/2*a)+2/b*c*d*(1/2*(b*x+a)*co
sh(b*x+a)*sinh(b*x+a)-1/4*(b*x+a)^2-1/4*cosh(b*x+a)^2)-2/b*c*d*a*(1/2*cosh(
b*x+a)*sinh(b*x+a)-1/2*b*x-1/2*a)+c^2*(1/2*cosh(b*x+a)*sinh(b*x+a)-1/2*b*x-
1/2*a))
```

maxima [A] time = 0.48, size = 165, normalized size = 1.74

$$-\frac{1}{8}\left(4x^2-\frac{\left(2bxe^{(2a)}-e^{(2a)}\right)e^{(2bx)}}{b^2}+\frac{(2bx+1)e^{(-2bx-2a)}}{b^2}\right)cd-\frac{1}{48}\left(8x^3-\frac{3\left(2b^2x^2e^{(2a)}-2bxe^{(2a)}+e^{(2a)}\right)e^{(2bx)}}{b^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8*(4*x^2 - (2*b*x*e^(2*a) - e^(2*a))*e^(2*b*x)/b^2 + (2*b*x + 1)*e^(-2*b
*x - 2*a)/b^2)*c*d - 1/48*(8*x^3 - 3*(2*b^2*x^2*e^(2*a) - 2*b*x*e^(2*a) + e
^(2*a))*e^(2*b*x)/b^3 + 3*(2*b^2*x^2 + 2*b*x + 1)*e^(-2*b*x - 2*a)/b^3)*d^2
 - 1/8*c^2*(4*x - e^(2*b*x + 2*a)/b + e^(-2*b*x - 2*a)/b)
```

mupad [B] time = 0.18, size = 127, normalized size = 1.34

$$\frac{c^2\sinh(2a+2bx)}{4b}-\frac{d^2x^3}{6}-\frac{c^2x}{2}+\frac{d^2\sinh(2a+2bx)}{8b^3}-\frac{cdx^2}{2}-\frac{d^2x\cosh(2a+2bx)}{4b^2}+\frac{d^2x^2\sinh(2a+2bx)}{4b}-$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [A] time = 1.21, size = 264, normalized size = 2.78

$$\begin{cases} \frac{c^2x\sinh^2(a+bx)}{2} - \frac{c^2x\cosh^2(a+bx)}{2} + \frac{cdx^2\sinh^2(a+bx)}{2} - \frac{cdx^2\cosh^2(a+bx)}{2} + \frac{d^2x^3\sinh^2(a+bx)}{6} - \frac{d^2x^3\cosh^2(a+bx)}{6} + \frac{c^2\sinh(a+bx)\cos}{2b} \\ \left(c^2x + cdx^2 + \frac{d^2x^3}{3}\right)\sinh^2(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.11 $\int (c+dx)\sinh^2(a+bx)\,dx$

Optimal. Leaf size=55

$$-\frac{d\sinh^2(a+bx)}{4b^2}+\frac{(c+dx)\sinh(a+bx)\cosh(a+bx)}{2b}-\frac{cx}{2}-\frac{dx^2}{4}$$

```
[Out] -1/2*c*x-1/4*d*x^2+1/2*(d*x+c)*cosh(b*x+a)*sinh(b*x+a)/b-1/4*d*sinh(b*x+a)^
2/b^2
```

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {3310}

$$-\frac{d\sinh^2(a+bx)}{4b^2}+\frac{(c+dx)\sinh(a+bx)\cosh(a+bx)}{2b}-\frac{cx}{2}-\frac{dx^2}{4}$$

Antiderivative was successfully verified.

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

```
[Out] -(c*x)/2 - (d*x^2)/4 + ((c + d*x)*Cosh[a + b*x]*Sinh[a + b*x])/(2*b) - (d*S
inh[a + b*x]^2)/(4*b^2)
```

Rule 3310

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

Rubi steps

$$\begin{aligned}\int (c+dx)\sinh^2(a+bx)\,dx &= \frac{(c+dx)\cosh(a+bx)\sinh(a+bx)}{2b}-\frac{d\sinh^2(a+bx)}{4b^2}-\frac{1}{2}\int (c+dx)\,dx\\ &= -\frac{cx}{2}-\frac{dx^2}{4}+\frac{(c+dx)\cosh(a+bx)\sinh(a+bx)}{2b}-\frac{d\sinh^2(a+bx)}{4b^2}\end{aligned}$$

Mathematica [A] time = 0.14, size = 52, normalized size = 0.95

$$\frac{2b((c+dx)\sinh(2(a+bx))-2ac-bx(2c+dx))-d\cosh(2(a+bx))}{8b^2}$$

Antiderivative was successfully verified.

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

```
[Out] (-(d*Cosh[2*(a + b*x)]) + 2*b*(-2*a*c - b*x*(2*c + d*x) + (c + d*x)*Sinh[2*
(a + b*x)]))/(8*b^2)
```

fricas [A] time = 0.39, size = 64, normalized size = 1.16

$$-\frac{2\,b^2dx^2 + 4\,b^2cx + d\cosh\left(bx+a\right)^2 - 4\,\left(bdx+bc\right)\cosh\left(bx+a\right)\sinh\left(bx+a\right) + d\sinh\left(bx+a\right)^2}{8\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [A] time = 0.18, size = 63, normalized size = 1.15

$$-\frac{1}{4}\,dx^2 - \frac{1}{2}\,cx + \frac{\left(2\,bdx + 2\,bc - d\right)e^{\left(2\,bx+2\,a\right)}}{16\,b^2} - \frac{\left(2\,bdx + 2\,bc + d\right)e^{\left(-2\,bx-2\,a\right)}}{16\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [B] time = 0.01, size = 103, normalized size = 1.87

$$\frac{\frac{d\left(\frac{(bx+a)\cosh(bx+a)\sinh(bx+a)}{2} - \frac{(bx+a)^2}{4} - \frac{\left(\cosh^2(bx+a)\right)}{4}\right)}{b} - \frac{da\left(\frac{\cosh(bx+a)\sinh(bx+a)}{2} - \frac{bx}{2} - \frac{a}{2}\right)}{b} + c\left(\frac{\cosh(bx+a)\sinh(bx+a)}{2} - \frac{bx}{2} - \frac{a}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b*(1/b*d*(1/2*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)-1/4*(b*x+a)^2-1/4*cosh(b*x+
a)^2)-1/b*d*a*(1/2*cosh(b*x+a)*sinh(b*x+a)-1/2*b*x-1/2*a)+c*(1/2*cosh(b*x+a
)*sinh(b*x+a)-1/2*b*x-1/2*a))
```

maxima [A] time = 0.45, size = 88, normalized size = 1.60

$$-\frac{1}{16}\left(4\,x^2 - \frac{\left(2\,bxe^{(2\,a)} - e^{(2\,a)}\right)e^{(2\,bx)}}{b^2} + \frac{\left(2\,bx+1\right)e^{(-2\,bx-2\,a)}}{b^2}\right)d - \frac{1}{8}\,c\left(4\,x - \frac{e^{(2\,bx+2\,a)}}{b} + \frac{e^{(-2\,bx-2\,a)}}{b}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.09, size = 60, normalized size = 1.09

$$-\frac{\frac{d\cosh(2\,a+2\,b\,x)}{2}+b^2\,d\,x^2-b\,c\sinh\left(2\,a+2\,b\,x\right)+2\,b^2\,c\,x-b\,d\,x\sinh\left(2\,a+2\,b\,x\right)}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -((d*cosh(2*a + 2*b*x))/2 + b^2*d*x^2 - b*c*sinh(2*a + 2*b*x) + 2*b^2*c*x -
 b*d*x*sinh(2*a + 2*b*x))/(4*b^2)
```

sympy [A] time = 0.52, size = 126, normalized size = 2.29

$$\begin{cases} \frac{cx\sinh^2(a+bx)}{2} - \frac{cx\cosh^2(a+bx)}{2} + \frac{dx^2\sinh^2(a+bx)}{4} - \frac{dx^2\cosh^2(a+bx)}{4} + \frac{c\sinh(a+bx)\cosh(a+bx)}{2b} + \frac{dx\sinh(a+bx)\cosh(a+bx)}{2b} - \frac{d\cosh^2(a+bx)}{4b^2} \\ \left(cx + \frac{dx^2}{2}\right)\sinh^2(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((c*x*sinh(a + b*x)**2/2 - c*x*cosh(a + b*x)**2/2 + d*x**2*sinh(a
+ b*x)**2/4 - d*x**2*cosh(a + b*x)**2/4 + c*sinh(a + b*x)*cosh(a + b*x)/(2*
b) + d*x*sinh(a + b*x)*cosh(a + b*x)/(2*b) - d*cosh(a + b*x)**2/(4*b**2), N
e(b, 0)), ((c*x + d*x**2/2)*sinh(a)**2, True))
```

3.12 $\int \frac{\sinh^2(a+bx)}{c+dx}\,dx$

Optimal. Leaf size=78

$$\frac{\cosh\left(2a-\frac{2bc}{d}\right)\text{Chi}\left(\frac{2bc}{d}+2bx\right)}{2d}+\frac{\sinh\left(2a-\frac{2bc}{d}\right)\text{Shi}\left(\frac{2bc}{d}+2bx\right)}{2d}-\frac{\log(c+dx)}{2d}$$

```
[Out] 1/2*Chi(2*b*c/d+2*b*x)*cosh(2*a-2*b*c/d)/d-1/2*ln(d*x+c)/d+1/2*Shi(2*b*c/d+
2*b*x)*sinh(2*a-2*b*c/d)/d
```

Rubi [A] time = 0.17, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3312, 3303, 3298, 3301}

$$\frac{\cosh\left(2a-\frac{2bc}{d}\right)\text{Chi}\left(\frac{2bc}{d}+2bx\right)}{2d}+\frac{\sinh\left(2a-\frac{2bc}{d}\right)\text{Shi}\left(\frac{2bc}{d}+2bx\right)}{2d}-\frac{\log(c+dx)}{2d}$$

Antiderivative was successfully verified.

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

```
[Out] (Cosh[2*a - (2*b*c)/d]*CoshIntegral[(2*b*c)/d + 2*b*x])/(2*d) - Log[c + d*x
]/(2*d) + (Sinh[2*a - (2*b*c)/d]*SinhIntegral[(2*b*c)/d + 2*b*x])/(2*d)
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

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

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}\int \frac{\sinh^2(a+bx)}{c+dx}\,dx &= -\int \left(\frac{1}{2(c+dx)}-\frac{\cosh(2a+2bx)}{2(c+dx)}\right)dx\\ &= -\frac{\log(c+dx)}{2d}+\frac{1}{2}\int \frac{\cosh(2a+2bx)}{c+dx}\,dx\\ &= -\frac{\log(c+dx)}{2d}+\frac{1}{2}\cosh\left(2a-\frac{2bc}{d}\right)\int \frac{\cosh\left(\frac{2bc}{d}+2bx\right)}{c+dx}\,dx+\frac{1}{2}\sinh\left(2a-\frac{2bc}{d}\right)\int \frac{\sinh}{}\\ &= \frac{\cosh\left(2a-\frac{2bc}{d}\right)\text{Chi}\left(\frac{2bc}{d}+2bx\right)}{2d}-\frac{\log(c+dx)}{2d}+\frac{\sinh\left(2a-\frac{2bc}{d}\right)\text{Shi}\left(\frac{2bc}{d}+2bx\right)}{2d}\end{aligned}$$

Mathematica [A] time = 0.11, size = 66, normalized size = 0.85

$$\frac{\cosh\left(2a-\frac{2bc}{d}\right)\text{Chi}\left(\frac{2b(c+dx)}{d}\right)+\sinh\left(2a-\frac{2bc}{d}\right)\text{Shi}\left(\frac{2b(c+dx)}{d}\right)-\log(c+dx)}{2d}$$

Antiderivative was successfully verified.

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

```
[Out] (Cosh[2*a - (2*b*c)/d]*CoshIntegral[(2*b*(c + d*x))/d] - Log[c + d*x] + Sin
h[2*a - (2*b*c)/d]*SinhIntegral[(2*b*(c + d*x))/d])/(2*d)
```

fricas [A] time = 0.42, size = 104, normalized size = 1.33

$$\frac{\left(\text{Ei}\left(\frac{2\,(bdx+bc)}{d}\right)+\text{Ei}\left(-\frac{2\,(bdx+bc)}{d}\right)\right)\cosh\left(-\frac{2\,(bc-ad)}{d}\right)+\left(\text{Ei}\left(\frac{2\,(bdx+bc)}{d}\right)-\text{Ei}\left(-\frac{2\,(bdx+bc)}{d}\right)\right)\sinh\left(-\frac{2\,(bc-ad)}{d}\right)-2\,\log(}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*((Ei(2*(b*d*x + b*c)/d) + Ei(-2*(b*d*x + b*c)/d))*cosh(-2*(b*c - a*d)/d
) + (Ei(2*(b*d*x + b*c)/d) - Ei(-2*(b*d*x + b*c)/d))*sinh(-2*(b*c - a*d)/d)
 - 2*log(d*x + c))/d
```

giac [A] time = 0.38, size = 68, normalized size = 0.87

$$\frac{\mathrm{Ei}\left(\frac{2\,(bdx+bc)}{d}\right)e^{\left(2\,a-\frac{2\,bc}{d}\right)}+\mathrm{Ei}\left(-\frac{2\,(bdx+bc)}{d}\right)e^{\left(-2\,a+\frac{2\,bc}{d}\right)}-2\,\log\left(dx+c\right)}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(Ei(2*(b*d*x + b*c)/d)*e^(2*a - 2*b*c/d) + Ei(-2*(b*d*x + b*c)/d)*e^(-2
*a + 2*b*c/d) - 2*log(d*x + c))/d
```

maple [A] time = 0.18, size = 97, normalized size = 1.24

$$-\frac{\ln\left(dx+c\right)}{2d}-\frac{\mathrm{e}^{-\frac{2(da-cb)}{d}}\,\mathrm{Ei}\left(1,2bx+2a-\frac{2(da-cb)}{d}\right)}{4d}-\frac{\mathrm{e}^{\frac{2da-2cb}{d}}\,\mathrm{Ei}\left(1,-2bx-2a-\frac{2(-da+cb)}{d}\right)}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*ln(d*x+c)/d-1/4/d*exp(-2*(a*d-b*c)/d)*Ei(1,2*b*x+2*a-2*(a*d-b*c)/d)-1/
4/d*exp(2*(a*d-b*c)/d)*Ei(1,-2*b*x-2*a-2*(-a*d+b*c)/d)
```

maxima [A] time = 0.47, size = 72, normalized size = 0.92

$$-\frac{e^{\left(-2\,a+\frac{2\,bc}{d}\right)}E_1\left(\frac{2\,(dx+c)b}{d}\right)}{4\,d}-\frac{e^{\left(2\,a-\frac{2\,bc}{d}\right)}E_1\left(-\frac{2\,(dx+c)b}{d}\right)}{4\,d}-\frac{\log\left(dx+c\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*e^(-2*a + 2*b*c/d)*exp_integral_e(1, 2*(d*x + c)*b/d)/d - 1/4*e^(2*a -
 2*b*c/d)*exp_integral_e(1, -2*(d*x + c)*b/d)/d - 1/2*log(d*x + c)/d
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.13 $\int \frac{\sinh^2(a+bx)}{(c+dx)^2} dx$

Optimal. Leaf size=81

$$\frac{b\sinh\left(2a-\frac{2bc}{d}\right)\text{Chi}\left(\frac{2bc}{d}+2bx\right)}{d^2}+\frac{b\cosh\left(2a-\frac{2bc}{d}\right)\text{Shi}\left(\frac{2bc}{d}+2bx\right)}{d^2}-\frac{\sinh^2(a+bx)}{d(c+dx)}$$

```
[Out] b*cosh(2*a-2*b*c/d)*Shi(2*b*c/d+2*b*x)/d^2+b*Chi(2*b*c/d+2*b*x)*sinh(2*a-2*
b*c/d)/d^2-sinh(b*x+a)^2/d/(d*x+c)
```

Rubi [A] time = 0.15, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3313, 12, 3303, 3298, 3301}

$$\frac{b\sinh\left(2a-\frac{2bc}{d}\right)\text{Chi}\left(\frac{2bc}{d}+2bx\right)}{d^2}+\frac{b\cosh\left(2a-\frac{2bc}{d}\right)\text{Shi}\left(\frac{2bc}{d}+2bx\right)}{d^2}-\frac{\sinh^2(a+bx)}{d(c+dx)}$$

Antiderivative was successfully verified.

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

```
[Out] (b*CoshIntegral[(2*b*c)/d + 2*b*x]*Sinh[2*a - (2*b*c)/d])/d^2 - Sinh[a + b*
x]^2/(d*(c + d*x)) + (b*Cosh[2*a - (2*b*c)/d]*SinhIntegral[(2*b*c)/d + 2*b*
x])/d^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

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

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sinh^2(a+bx)}{(c+dx)^2}\,dx &= -\frac{\sinh^2(a+bx)}{d(c+dx)} - \frac{(2ib)\int \frac{i\sinh(2a+2bx)}{2(c+dx)}\,dx}{d} \\
&= -\frac{\sinh^2(a+bx)}{d(c+dx)} + \frac{b\int \frac{\sinh(2a+2bx)}{c+dx}\,dx}{d} \\
&= -\frac{\sinh^2(a+bx)}{d(c+dx)} + \frac{\left(b\cosh\left(2a-\frac{2bc}{d}\right)\right)\int \frac{\sinh\left(\frac{2bc}{d}+2bx\right)}{c+dx}\,dx}{d} + \frac{\left(b\sinh\left(2a-\frac{2bc}{d}\right)\right)\int \frac{\cosh\left(\frac{2bc}{d}+2bx\right)}{c+dx}\,dx}{d} \\
&= \frac{b\mathrm{Chi}\left(\frac{2bc}{d}+2bx\right)\sinh\left(2a-\frac{2bc}{d}\right)}{d^2} - \frac{\sinh^2(a+bx)}{d(c+dx)} + \frac{b\cosh\left(2a-\frac{2bc}{d}\right)\mathrm{Shi}\left(\frac{2bc}{d}+2bx\right)}{d^2}
\end{aligned}$$

Mathematica [A] time = 0.36, size = 75, normalized size = 0.93

$$\frac{b\sinh\left(2a-\frac{2bc}{d}\right)\mathrm{Chi}\left(\frac{2b(c+dx)}{d}\right)+b\cosh\left(2a-\frac{2bc}{d}\right)\mathrm{Shi}\left(\frac{2b(c+dx)}{d}\right)-\frac{d\sinh^2(a+bx)}{c+dx}}{d^2}$$

Antiderivative was successfully verified.

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

```
[Out] (b*CoshIntegral[(2*b*(c + d*x))/d]*Sinh[2*a - (2*b*c)/d] - (d*Sinh[a + b*x]
^2)/(c + d*x) + b*Cosh[2*a - (2*b*c)/d]*SinhIntegral[(2*b*(c + d*x))/d])/d^
2
```

fricas [B] time = 0.41, size = 166, normalized size = 2.05

$$-\frac{d\cosh(bx+a)^2+d\sinh(bx+a)^2-\left((bdx+bc)\mathrm{Ei}\left(\frac{2(bdx+bc)}{d}\right)-(bdx+bc)\mathrm{Ei}\left(-\frac{2(bdx+bc)}{d}\right)\right)\cosh\left(-\frac{2(bc-ad)}{d}\right)-\left(\right.}{2\left(d^3x+cd^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(d*cosh(b*x + a)^2 + d*sinh(b*x + a)^2 - ((b*d*x + b*c)*Ei(2*(b*d*x +
b*c)/d) - (b*d*x + b*c)*Ei(-2*(b*d*x + b*c)/d))*cosh(-2*(b*c - a*d)/d) - ((
b*d*x + b*c)*Ei(2*(b*d*x + b*c)/d) + (b*d*x + b*c)*Ei(-2*(b*d*x + b*c)/d))*
sinh(-2*(b*c - a*d)/d) - d)/(d^3*x + c*d^2)
```

giac [B] time = 0.36, size = 574, normalized size = 7.09

$$-\frac{\left(2(dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)b^2\mathrm{Ei}\left(-\frac{2\left((dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)+bc-ad\right)}{d}\right)e^{\left(\frac{2(bc-ad)}{d}\right)}+2b^3c\mathrm{Ei}\left(-\frac{2\left((dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)+bc-ad\right)}{d}\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.14, size = 152, normalized size = 1.88

$$\frac{1}{2d(dx+c)}-\frac{b\,\mathrm{e}^{-2bx-2a}}{4(bdx+cb)d}+\frac{b\,\mathrm{e}^{-\frac{2(da-cb)}{d}}\,\mathrm{Ei}\left(1,2bx+2a-\frac{2(da-cb)}{d}\right)}{2d^2}-\frac{b\,\mathrm{e}^{2bx+2a}}{4d^2\left(\frac{bc}{d}+bx\right)}-\frac{b\,\mathrm{e}^{\frac{2da-2cb}{d}}\,\mathrm{Ei}\left(1,-2bx-2a-\frac{2(-\right.}{}\right.}{2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2/d/(d*x+c)-1/4*b*exp(-2*b*x-2*a)/(b*d*x+b*c)/d+1/2*b/d^2*exp(-2*(a*d-b*c
)/d)*Ei(1,2*b*x+2*a-2*(a*d-b*c)/d)-1/4*b/d^2*exp(2*b*x+2*a)/(b*c/d+b*x)-1/2
*b/d^2*exp(2*(a*d-b*c)/d)*Ei(1,-2*b*x-2*a-2*(-a*d+b*c)/d)
```

maxima [A] time = 0.53, size = 88, normalized size = 1.09

$$-\frac{e^{\left(-2\,a+\frac{2\,bc}{d}\right)}E_{2}\left(\frac{2\,(dx+c)b}{d}\right)}{4\,(dx+c)d}-\frac{e^{\left(2\,a-\frac{2\,bc}{d}\right)}E_{2}\left(-\frac{2\,(dx+c)b}{d}\right)}{4\,(dx+c)d}+\frac{1}{2\,\left(d^{2}x+cd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*e^(-2*a + 2*b*c/d)*exp_integral_e(2, 2*(d*x + c)*b/d)/((d*x + c)*d) -
1/4*e^(2*a - 2*b*c/d)*exp_integral_e(2, -2*(d*x + c)*b/d)/((d*x + c)*d) + 1
/2/(d^2*x + c*d)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.14 $\int \frac{\sinh^2(a+bx)}{(c+dx)^3}\,dx$

Optimal. Leaf size=112

$$\frac{b^2\cosh\left(2a-\frac{2bc}{d}\right)\text{Chi}\left(\frac{2bc}{d}+2bx\right)}{d^3}+\frac{b^2\sinh\left(2a-\frac{2bc}{d}\right)\text{Shi}\left(\frac{2bc}{d}+2bx\right)}{d^3}-\frac{b\sinh(a+bx)\cosh(a+bx)}{d^2(c+dx)}-\frac{\sinh^2(a+}{2d(c+dx}$$

```
[Out] b^2*Chi(2*b*c/d+2*b*x)*cosh(2*a-2*b*c/d)/d^3+b^2*Shi(2*b*c/d+2*b*x)*sinh(2*
a-2*b*c/d)/d^3-b*cosh(b*x+a)*sinh(b*x+a)/d^2/(d*x+c)-1/2*sinh(b*x+a)^2/d/(d
*x+c)^2
```

Rubi [A] time = 0.20, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {3314, 31, 3312, 3303, 3298, 3301}

$$\frac{b^2\cosh\left(2a-\frac{2bc}{d}\right)\text{Chi}\left(\frac{2bc}{d}+2bx\right)}{d^3}+\frac{b^2\sinh\left(2a-\frac{2bc}{d}\right)\text{Shi}\left(\frac{2bc}{d}+2bx\right)}{d^3}-\frac{b\sinh(a+bx)\cosh(a+bx)}{d^2(c+dx)}-\frac{\sinh^2(a+}{2d(c+dx}$$

Antiderivative was successfully verified.

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

```
[Out] (b^2*Cosh[2*a - (2*b*c)/d]*CoshIntegral[(2*b*c)/d + 2*b*x])/d^3 - (b*Cosh[a
 + b*x]*Sinh[a + b*x])/(d^2*(c + d*x)) - Sinh[a + b*x]^2/(2*d*(c + d*x)^2)
+ (b^2*Sinh[2*a - (2*b*c)/d]*SinhIntegral[(2*b*c)/d + 2*b*x])/d^3
```

Rule 31

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

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

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

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

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

Rubi steps

$$\int \frac{\sinh^2(a+bx)}{(c+dx)^3}\,dx = -\frac{b\cosh(a+bx)\sinh(a+bx)}{d^2(c+dx)} - \frac{\sinh^2(a+bx)}{2d(c+dx)^2} + \frac{b^2\int \frac{1}{c+dx}\,dx}{d^2} + \frac{\left(2b^2\right)\int \frac{\sinh^2(a+bx)}{c+dx}\,dx}{d^2}$$

$$= \frac{b^2\log(c+dx)}{d^3} - \frac{b\cosh(a+bx)\sinh(a+bx)}{d^2(c+dx)} - \frac{\sinh^2(a+bx)}{2d(c+dx)^2} - \frac{\left(2b^2\right)\int\left(\frac{1}{2(c+dx)} - \frac{\cosh(2\ldots}{2(c\ldots}\right.}{d^2}$$

$$= -\frac{b\cosh(a+bx)\sinh(a+bx)}{d^2(c+dx)} - \frac{\sinh^2(a+bx)}{2d(c+dx)^2} + \frac{b^2\int \frac{\cosh(2a+2bx)}{c+dx}\,dx}{d^2}$$

$$= -\frac{b\cosh(a+bx)\sinh(a+bx)}{d^2(c+dx)} - \frac{\sinh^2(a+bx)}{2d(c+dx)^2} + \frac{\left(b^2\cosh\left(2a-\frac{2bc}{d}\right)\right)\int \frac{\cosh\left(\frac{2bc}{d}+2bx\right)}{c+dx}\,dx}{d^2}$$

$$= \frac{b^2\cosh\left(2a-\frac{2bc}{d}\right)\operatorname{Chi}\left(\frac{2bc}{d}+2bx\right)}{d^3} - \frac{b\cosh(a+bx)\sinh(a+bx)}{d^2(c+dx)} - \frac{\sinh^2(a+bx)}{2d(c+dx)^2} + \frac{b^2 \ldots}{}$$

Mathematica [A] time = 0.77, size = 102, normalized size = 0.91

$$\frac{2b^2\cosh\left(2a-\frac{2bc}{d}\right)\text{Chi}\left(\frac{2b(c+dx)}{d}\right)+2b^2\sinh\left(2a-\frac{2bc}{d}\right)\text{Shi}\left(\frac{2b(c+dx)}{d}\right)-\frac{d\left(b(c+dx)\sinh(2(a+bx))+d\sinh^2(a+bx)\right)}{(c+dx)^2}}{2d^3}$$

Antiderivative was successfully verified.

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

```
[Out] (2*b^2*Cosh[2*a - (2*b*c)/d]*CoshIntegral[(2*b*(c + d*x))/d] - (d*(d*Sinh[a
 + b*x]^2 + b*(c + d*x)*Sinh[2*(a + b*x)]))/(c + d*x)^2 + 2*b^2*Sinh[2*a -
(2*b*c)/d]*SinhIntegral[(2*b*(c + d*x))/d])/(2*d^3)
```

fricas [B] time = 0.38, size = 280, normalized size = 2.50

$$-\frac{d^2\cosh(bx+a)^2+d^2\sinh(bx+a)^2+4\left(bd^2x+bcd\right)\cosh(bx+a)\sinh(bx+a)-d^2-2\left(\left(b^2d^2x^2+2\,b^2cdx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(d^2*cosh(b*x + a)^2 + d^2*sinh(b*x + a)^2 + 4*(b*d^2*x + b*c*d)*cosh(
b*x + a)*sinh(b*x + a) - d^2 - 2*((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*Ei(
2*(b*d*x + b*c)/d) + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*Ei(-2*(b*d*x + b
*c)/d))*cosh(-2*(b*c - a*d)/d) - 2*((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*E
i(2*(b*d*x + b*c)/d) - (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*Ei(-2*(b*d*x +
 b*c)/d))*sinh(-2*(b*c - a*d)/d))/(d^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

giac [B] time = 0.18, size = 330, normalized size = 2.95

$$\frac{4\,b^2d^2x^2\text{Ei}\left(\frac{2\,(bdx+bc)}{d}\right)e^{\left(2\,a-\frac{2\,bc}{d}\right)}+4\,b^2d^2x^2\text{Ei}\left(-\frac{2\,(bdx+bc)}{d}\right)e^{\left(-2\,a+\frac{2\,bc}{d}\right)}+8\,b^2cdx\text{Ei}\left(\frac{2\,(bdx+bc)}{d}\right)e^{\left(2\,a-\frac{2\,bc}{d}\right)}+8\,b^2cdx\text{Ei}\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
(-2*b*x - 2*a) - 2*b*c*d*e^(2*b*x + 2*a) + 2*b*c*d*e^(-2*b*x - 2*a) - d^2*e
^(2*b*x + 2*a) - d^2*e^(-2*b*x - 2*a) + 2*d^2)/(d^5*x^2 + 2*c*d^4*x + c^2*d
^3)
```

maple [B] time = 0.15, size = 299, normalized size = 2.67

$$\frac{1}{4d\left(dx+c\right)^{2}}+\frac{b^{3}\mathrm{e}^{-2bx-2a}x}{4d\left(b^{2}d^{2}x^{2}+2b^{2}cdx+c^{2}b^{2}\right)}+\frac{b^{3}\mathrm{e}^{-2bx-2a}c}{4d^{2}\left(b^{2}d^{2}x^{2}+2b^{2}cdx+c^{2}b^{2}\right)}-\frac{b^{2}\mathrm{e}^{-2bx-2a}}{8d\left(b^{2}d^{2}x^{2}+2b^{2}cdx+c^{2}b^{2}\right)}-\frac{b^{2}\mathrm{e}^{-}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [A] time = 0.71, size = 99, normalized size = 0.88

$$\frac{1}{4\left(d^{3}x^{2}+2\,cd^{2}x+c^{2}d\right)}-\frac{e^{\left(-2\,a+\frac{2\,bc}{d}\right)}E_{3}\left(\frac{2\,(dx+c)b}{d}\right)}{4\,(dx+c)^{2}d}-\frac{e^{\left(2\,a-\frac{2\,bc}{d}\right)}E_{3}\left(-\frac{2\,(dx+c)b}{d}\right)}{4\,(dx+c)^{2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4/(d^3*x^2 + 2*c*d^2*x + c^2*d) - 1/4*e^(-2*a + 2*b*c/d)*exp_integral_e(3
, 2*(d*x + c)*b/d)/((d*x + c)^2*d) - 1/4*e^(2*a - 2*b*c/d)*exp_integral_e(3
, -2*(d*x + c)*b/d)/((d*x + c)^2*d)
```

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

$$\int \frac{\sinh\left(a+b\,x\right)^2}{\left(c+d\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(a + b*x)^2/(c + d*x)^3, x)
```

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

$$\int \frac{\sinh^2(a+bx)}{(c+dx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**2/(d*x+c)**3,x)
```

```
[Out] Integral(sinh(a + b*x)**2/(c + d*x)**3, x)
```

3.15 $\int \frac{\sinh^2(a+bx)}{(c+dx)^4} dx$

Optimal. Leaf size=162

$$\frac{2b^3 \sinh\left(2a - \frac{2bc}{d}\right) \text{Chi}\left(\frac{2bc}{d} + 2bx\right)}{3d^4} + \frac{2b^3 \cosh\left(2a - \frac{2bc}{d}\right) \text{Shi}\left(\frac{2bc}{d} + 2bx\right)}{3d^4} - \frac{2b^2 \sinh^2(a + bx)}{3d^3(c + dx)} - \frac{b \sinh(a + bx) \text{co}}{3d^2(c + d}$$

```
[Out] -1/3*b^2/d^3/(d*x+c)+2/3*b^3*cosh(2*a-2*b*c/d)*Shi(2*b*c/d+2*b*x)/d^4+2/3*b
^3*Chi(2*b*c/d+2*b*x)*sinh(2*a-2*b*c/d)/d^4-1/3*b*cosh(b*x+a)*sinh(b*x+a)/d
^2/(d*x+c)^2-1/3*sinh(b*x+a)^2/d/(d*x+c)^3-2/3*b^2*sinh(b*x+a)^2/d^3/(d*x+c
)
```

Rubi [A] time = 0.19, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {3314, 32, 3313, 12, 3303, 3298, 3301}

$$\frac{2b^3 \sinh\left(2a - \frac{2bc}{d}\right) \text{Chi}\left(\frac{2bc}{d} + 2bx\right)}{3d^4} + \frac{2b^3 \cosh\left(2a - \frac{2bc}{d}\right) \text{Shi}\left(\frac{2bc}{d} + 2bx\right)}{3d^4} - \frac{2b^2 \sinh^2(a + bx)}{3d^3(c + dx)} - \frac{b \sinh(a + bx) \text{co}}{3d^2(c + d}$$

Antiderivative was successfully verified.

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

```
[Out] -b^2/(3*d^3*(c + d*x)) + (2*b^3*CoshIntegral[(2*b*c)/d + 2*b*x]*Sinh[2*a -
(2*b*c)/d])/(3*d^4) - (b*Cosh[a + b*x]*Sinh[a + b*x])/(3*d^2*(c + d*x)^2) -
 Sinh[a + b*x]^2/(3*d*(c + d*x)^3) - (2*b^2*Sinh[a + b*x]^2)/(3*d^3*(c + d*
x)) + (2*b^3*Cosh[2*a - (2*b*c)/d]*SinhIntegral[(2*b*c)/d + 2*b*x])/(3*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 32

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

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

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

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3314

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

Rubi steps

$$\int \frac{\sinh^2(a+bx)}{(c+dx)^4}\,dx = -\frac{b\cosh(a+bx)\sinh(a+bx)}{3d^2(c+dx)^2} - \frac{\sinh^2(a+bx)}{3d(c+dx)^3} + \frac{b^2\int\frac{1}{(c+dx)^2}\,dx}{3d^2} + \frac{\left(2b^2\right)\int\frac{\sinh^2(a+bx)}{(c+dx)^2}\,dx}{3d^2}$$

$$= -\frac{b^2}{3d^3(c+dx)} - \frac{b\cosh(a+bx)\sinh(a+bx)}{3d^2(c+dx)^2} - \frac{\sinh^2(a+bx)}{3d(c+dx)^3} - \frac{2b^2\sinh^2(a+bx)}{3d^3(c+dx)} - \frac{\left(4ib\right.}{}$$

$$= -\frac{b^2}{3d^3(c+dx)} - \frac{b\cosh(a+bx)\sinh(a+bx)}{3d^2(c+dx)^2} - \frac{\sinh^2(a+bx)}{3d(c+dx)^3} - \frac{2b^2\sinh^2(a+bx)}{3d^3(c+dx)} + \frac{\left(2b\right.}{}$$

$$= -\frac{b^2}{3d^3(c+dx)} - \frac{b\cosh(a+bx)\sinh(a+bx)}{3d^2(c+dx)^2} - \frac{\sinh^2(a+bx)}{3d(c+dx)^3} - \frac{2b^2\sinh^2(a+bx)}{3d^3(c+dx)} + \frac{\left(2b\right.}{}$$

$$= -\frac{b^2}{3d^3(c+dx)} + \frac{2b^3\text{Chi}\left(\frac{2bc}{d}+2bx\right)\sinh\left(2a-\frac{2bc}{d}\right)}{3d^4} - \frac{b\cosh(a+bx)\sinh(a+bx)}{3d^2(c+dx)^2} - \frac{\sin}{3a}$$

Mathematica [A] time = 0.76, size = 123, normalized size = 0.76

$$\frac{4b^3\sinh\left(2a-\frac{2bc}{d}\right)\text{Chi}\left(\frac{2b(c+dx)}{d}\right) + 4b^3\cosh\left(2a-\frac{2bc}{d}\right)\text{Shi}\left(\frac{2b(c+dx)}{d}\right) - \frac{d\left(\cosh(2(a+bx))\left(2b^2(c+dx)^2+d^2\right)+d(b(c+dx)\sinh(2\right.}{(c+dx)^3}}{6d^4}$$

Antiderivative was successfully verified.

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

```
[Out] (4*b^3*CoshIntegral[(2*b*(c + d*x))/d]*Sinh[2*a - (2*b*c)/d] - (d*((d^2 + 2
*b^2*(c + d*x)^2)*Cosh[2*(a + b*x)] + d*(-d + b*(c + d*x)*Sinh[2*(a + b*x)]
)))/(c + d*x)^3 + 4*b^3*Cosh[2*a - (2*b*c)/d]*SinhIntegral[(2*b*(c + d*x))/
d])/(6*d^4)
```

fricas [B] time = 0.40, size = 411, normalized size = 2.54

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
4*b^2*c*d^2*x + 2*b^2*c^2*d + d^3)*sinh(b*x + a)^2 + 2*((b^3*d^3*x^3 + 3*b^
3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*Ei(2*(b*d*x + b*c)/d) - (b^3*d^3*x^3
 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*Ei(-2*(b*d*x + b*c)/d))*cosh(
-2*(b*c - a*d)/d) + 2*((b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3
*c^3)*Ei(2*(b*d*x + b*c)/d) + (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*
x + b^3*c^3)*Ei(-2*(b*d*x + b*c)/d))*sinh(-2*(b*c - a*d)/d))/(d^7*x^3 + 3*c
*d^6*x^2 + 3*c^2*d^5*x + c^3*d^4)
```

giac [B] time = 0.22, size = 537, normalized size = 3.31

$$\frac{4\,b^3d^3x^3\mathrm{Ei}\left(\frac{2\,(bdx+bc)}{d}\right)e^{\left(2\,a-\frac{2\,bc}{d}\right)}-4\,b^3d^3x^3\mathrm{Ei}\left(-\frac{2\,(bdx+bc)}{d}\right)e^{\left(-2\,a+\frac{2\,bc}{d}\right)}+12\,b^3cd^2x^2\mathrm{Ei}\left(\frac{2\,(bdx+bc)}{d}\right)e^{\left(2\,a-\frac{2\,bc}{d}\right)}-12\,b^3cd^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/12*(4*b^3*d^3*x^3*Ei(2*(b*d*x + b*c)/d)*e^(2*a - 2*b*c/d) - 4*b^3*d^3*x^3
*Ei(-2*(b*d*x + b*c)/d)*e^(-2*a + 2*b*c/d) + 12*b^3*c*d^2*x^2*Ei(2*(b*d*x +
 b*c)/d)*e^(2*a - 2*b*c/d) - 12*b^3*c*d^2*x^2*Ei(-2*(b*d*x + b*c)/d)*e^(-2*
a + 2*b*c/d) + 12*b^3*c^2*d*x*Ei(2*(b*d*x + b*c)/d)*e^(2*a - 2*b*c/d) - 12*
b^3*c^2*d*x*Ei(-2*(b*d*x + b*c)/d)*e^(-2*a + 2*b*c/d) - 2*b^2*d^3*x^2*e^(2*
b*x + 2*a) - 2*b^2*d^3*x^2*e^(-2*b*x - 2*a) + 4*b^3*c^3*Ei(2*(b*d*x + b*c)/
d)*e^(2*a - 2*b*c/d) - 4*b^3*c^3*Ei(-2*(b*d*x + b*c)/d)*e^(-2*a + 2*b*c/d)
- 4*b^2*c*d^2*x*e^(2*b*x + 2*a) - 4*b^2*c*d^2*x*e^(-2*b*x - 2*a) - 2*b^2*c^
2*d*e^(2*b*x + 2*a) - b*d^3*x*e^(2*b*x + 2*a) - 2*b^2*c^2*d*e^(-2*b*x - 2*a
) + b*d^3*x*e^(-2*b*x - 2*a) - b*c*d^2*e^(2*b*x + 2*a) + b*c*d^2*e^(-2*b*x
- 2*a) - d^3*e^(2*b*x + 2*a) - d^3*e^(-2*b*x - 2*a) + 2*d^3)/(d^7*x^3 + 3*c
*d^6*x^2 + 3*c^2*d^5*x + c^3*d^4)
```

maple [B] time = 0.16, size = 555, normalized size = 3.43

$$\frac{1}{6d\,(dx+c)^3}-\frac{b^5\mathrm{e}^{-2bx-2a}x^2}{6d\left(b^3d^3x^3+3b^3c\,d^2x^2+3b^3c^2dx+c^3b^3\right)}-\frac{b^5\mathrm{e}^{-2bx-2a}cx}{3d^2\left(b^3d^3x^3+3b^3c\,d^2x^2+3b^3c^2dx+c^3b^3\right)}-\frac{}{6d^3\left(b^3d^3x^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
3*x^3+3*b^3*c*d^2*x^2+3*b^3*c^2*d*x+b^3*c^3)*x+1/12*b^4*exp(-2*b*x-2*a)/d^2
/(b^3*d^3*x^3+3*b^3*c*d^2*x^2+3*b^3*c^2*d*x+b^3*c^3)*c-1/12*b^3*exp(-2*b*x-
2*a)/d/(b^3*d^3*x^3+3*b^3*c*d^2*x^2+3*b^3*c^2*d*x+b^3*c^3)+1/3*b^3/d^4*exp(
-2*(a*d-b*c)/d)*Ei(1,2*b*x+2*a-2*(a*d-b*c)/d)-1/12*b^3/d^4*exp(2*b*x+2*a)/(
b*c/d+b*x)^3-1/12*b^3/d^4*exp(2*b*x+2*a)/(b*c/d+b*x)^2-1/6*b^3/d^4*exp(2*b*
x+2*a)/(b*c/d+b*x)-1/3*b^3/d^4*exp(2*(a*d-b*c)/d)*Ei(1,-2*b*x-2*a-2*(-a*d+b
*c)/d)
```

maxima [A] time = 0.47, size = 110, normalized size = 0.68

$$\frac{1}{6\left(d^4x^3+3\,cd^3x^2+3\,c^2d^2x+c^3d\right)}-\frac{e^{\left(-2\,a+\frac{2\,bc}{d}\right)}E_4\left(\frac{2\,(dx+c)b}{d}\right)}{4\,(dx+c)^3d}-\frac{e^{\left(2\,a-\frac{2\,bc}{d}\right)}E_4\left(-\frac{2\,(dx+c)b}{d}\right)}{4\,(dx+c)^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6/(d^4*x^3 + 3*c*d^3*x^2 + 3*c^2*d^2*x + c^3*d) - 1/4*e^(-2*a + 2*b*c/d)*
exp_integral_e(4, 2*(d*x + c)*b/d)/((d*x + c)^3*d) - 1/4*e^(2*a - 2*b*c/d)*
exp_integral_e(4, -2*(d*x + c)*b/d)/((d*x + c)^3*d)
```

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

$$\int \frac{\sinh\left(a+b\,x\right)^2}{\left(c+d\,x\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(a + b*x)^2/(c + d*x)^4, x)
```

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

$$\int \frac{\sinh^2\left(a+bx\right)}{\left(c+dx\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(sinh(a + b*x)**2/(c + d*x)**4, x)
```

3.16 $\int (c+dx)^4 \sinh^3(a+bx)\,dx$

Optimal. Leaf size=225

$$\frac{8d^4\cosh^3(a+bx)}{81b^5}-\frac{488d^4\cosh(a+bx)}{27b^5}-\frac{8d^3(c+dx)\sinh^3(a+bx)}{27b^4}+\frac{160d^3(c+dx)\sinh(a+bx)}{9b^4}-\frac{80d^2(c+dx)^2}{9b^3}$$

```
[Out] -488/27*d^4*cosh(b*x+a)/b^5-80/9*d^2*(d*x+c)^2*cosh(b*x+a)/b^3-2/3*(d*x+c)^
4*cosh(b*x+a)/b+8/81*d^4*cosh(b*x+a)^3/b^5+160/9*d^3*(d*x+c)*sinh(b*x+a)/b^
4+8/3*d*(d*x+c)^3*sinh(b*x+a)/b^2+4/9*d^2*(d*x+c)^2*cosh(b*x+a)*sinh(b*x+a)
^2/b^3+1/3*(d*x+c)^4*cosh(b*x+a)*sinh(b*x+a)^2/b-8/27*d^3*(d*x+c)*sinh(b*x+
a)^3/b^4-4/9*d*(d*x+c)^3*sinh(b*x+a)^3/b^2
```

Rubi [A] time = 0.36, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3311, 3296, 2638, 2633}

$$-\frac{8d^3(c+dx)\sinh^3(a+bx)}{27b^4}+\frac{160d^3(c+dx)\sinh(a+bx)}{9b^4}-\frac{80d^2(c+dx)^2\cosh(a+bx)}{9b^3}+\frac{4d^2(c+dx)^2\sinh^2(a+bx)}{9b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^4*Sinh[a + b*x]^3,x]
```

```
[Out] (-488*d^4*Cosh[a + b*x])/(27*b^5) - (80*d^2*(c + d*x)^2*Cosh[a + b*x])/(9*b
^3) - (2*(c + d*x)^4*Cosh[a + b*x])/(3*b) + (8*d^4*Cosh[a + b*x]^3)/(81*b^5
) + (160*d^3*(c + d*x)*Sinh[a + b*x])/(9*b^4) + (8*d*(c + d*x)^3*Sinh[a + b
*x])/(3*b^2) + (4*d^2*(c + d*x)^2*Cosh[a + b*x]*Sinh[a + b*x]^2)/(9*b^3) +
((c + d*x)^4*Cosh[a + b*x]*Sinh[a + b*x]^2)/(3*b) - (8*d^3*(c + d*x)*Sinh[a
 + b*x]^3)/(27*b^4) - (4*d*(c + d*x)^3*Sinh[a + b*x]^3)/(9*b^2)
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2638

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

Rule 3296

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

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

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

Rubi steps

$$\int (c+dx)^4 \sinh^3(a+bx)\,dx = \frac{(c+dx)^4\cosh(a+bx)\sinh^2(a+bx)}{3b} - \frac{4d(c+dx)^3\sinh^3(a+bx)}{9b^2} - \frac{2}{3}\int (c+dx$$

$$= -\frac{2(c+dx)^4\cosh(a+bx)}{3b} + \frac{4d^2(c+dx)^2\cosh(a+bx)\sinh^2(a+bx)}{9b^3} + \frac{(c+dx)}{}$$

$$= -\frac{8d^2(c+dx)^2\cosh(a+bx)}{9b^3} - \frac{2(c+dx)^4\cosh(a+bx)}{3b} + \frac{8d(c+dx)^3\sinh(a+b}{3b^2}$$

$$= -\frac{8d^4\cosh(a+bx)}{27b^5} - \frac{80d^2(c+dx)^2\cosh(a+bx)}{9b^3} - \frac{2(c+dx)^4\cosh(a+bx)}{3b} + \frac{8}{}$$

$$= -\frac{56d^4\cosh(a+bx)}{27b^5} - \frac{80d^2(c+dx)^2\cosh(a+bx)}{9b^3} - \frac{2(c+dx)^4\cosh(a+bx)}{3b} +$$

$$= -\frac{488d^4\cosh(a+bx)}{27b^5} - \frac{80d^2(c+dx)^2\cosh(a+bx)}{9b^3} - \frac{2(c+dx)^4\cosh(a+bx)}{3b}$$

Mathematica [A] time = 0.87, size = 150, normalized size = 0.67

$$\frac{-24bd(c+dx)\sinh(a+bx)\left(\cosh(2(a+bx))\left(3b^2(c+dx)^2+2d^2\right)-39b^2(c+dx)^2-242d^2\right)-243\cosh(a+bx}{324b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^4*Sinh[a + b*x]^3,x]
```

```
[Out] (-243*(24*d^4 + 12*b^2*d^2*(c + d*x)^2 + b^4*(c + d*x)^4)*Cosh[a + b*x] + (
8*d^4 + 36*b^2*d^2*(c + d*x)^2 + 27*b^4*(c + d*x)^4)*Cosh[3*(a + b*x)] - 24
*b*d*(c + d*x)*(-242*d^2 - 39*b^2*(c + d*x)^2 + (2*d^2 + 3*b^2*(c + d*x)^2)
*Cosh[2*(a + b*x)])*Sinh[a + b*x])/(324*b^5)
```

fricas [B] time = 0.40, size = 528, normalized size = 2.35

$$\frac{\left(27\,b^4d^4x^4+108\,b^4cd^3x^3+27\,b^4c^4+36\,b^2c^2d^2+8\,d^4+18\left(9\,b^4c^2d^2+2\,b^2d^4\right)x^2+36\left(3\,b^4c^3d+2\,b^2cd^3\right)x\right)\cosh}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^4*sinh(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/324*((27*b^4*d^4*x^4 + 108*b^4*c*d^3*x^3 + 27*b^4*c^4 + 36*b^2*c^2*d^2 +
8*d^4 + 18*(9*b^4*c^2*d^2 + 2*b^2*d^4)*x^2 + 36*(3*b^4*c^3*d + 2*b^2*c*d^3)
*x)*cosh(b*x + a)^3 + 3*(27*b^4*d^4*x^4 + 108*b^4*c*d^3*x^3 + 27*b^4*c^4 +
36*b^2*c^2*d^2 + 8*d^4 + 18*(9*b^4*c^2*d^2 + 2*b^2*d^4)*x^2 + 36*(3*b^4*c^3
*d + 2*b^2*c*d^3)*x)*cosh(b*x + a)*sinh(b*x + a)^2 - 12*(3*b^3*d^4*x^3 + 9*
b^3*c*d^3*x^2 + 3*b^3*c^3*d + 2*b*c*d^3 + (9*b^3*c^2*d^2 + 2*b*d^4)*x)*sinh
(b*x + a)^3 - 243*(b^4*d^4*x^4 + 4*b^4*c*d^3*x^3 + b^4*c^4 + 12*b^2*c^2*d^2
 + 24*d^4 + 6*(b^4*c^2*d^2 + 2*b^2*d^4)*x^2 + 4*(b^4*c^3*d + 6*b^2*c*d^3)*x
)*cosh(b*x + a) + 36*(27*b^3*d^4*x^3 + 81*b^3*c*d^3*x^2 + 27*b^3*c^3*d + 16
2*b*c*d^3 - (3*b^3*d^4*x^3 + 9*b^3*c*d^3*x^2 + 3*b^3*c^3*d + 2*b*c*d^3 + (9
*b^3*c^2*d^2 + 2*b*d^4)*x)*cosh(b*x + a)^2 + 81*(b^3*c^2*d^2 + 2*b*d^4)*x)*
sinh(b*x + a))/b^5
```

giac [B] time = 0.22, size = 654, normalized size = 2.91

$$\frac{\left(27\,b^4d^4x^4+108\,b^4cd^3x^3+162\,b^4c^2d^2x^2-36\,b^3d^4x^3+108\,b^4c^3dx-108\,b^3cd^3x^2+27\,b^4c^4-108\,b^3c^2d^2x+36\,b^2}{648\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^4*sinh(b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/648*(27*b^4*d^4*x^4 + 108*b^4*c*d^3*x^3 + 162*b^4*c^2*d^2*x^2 - 36*b^3*d^
4*x^3 + 108*b^4*c^3*d*x - 108*b^3*c*d^3*x^2 + 27*b^4*c^4 - 108*b^3*c^2*d^2*
x + 36*b^2*d^4*x^2 - 36*b^3*c^3*d + 72*b^2*c*d^3*x + 36*b^2*c^2*d^2 - 24*b*
d^4*x - 24*b*c*d^3 + 8*d^4)*e^(3*b*x + 3*a)/b^5 - 3/8*(b^4*d^4*x^4 + 4*b^4*
c*d^3*x^3 + 6*b^4*c^2*d^2*x^2 - 4*b^3*d^4*x^3 + 4*b^4*c^3*d*x - 12*b^3*c*d^
3*x^2 + b^4*c^4 - 12*b^3*c^2*d^2*x + 12*b^2*d^4*x^2 - 4*b^3*c^3*d + 24*b^2*
c*d^3*x + 12*b^2*c^2*d^2 - 24*b*d^4*x - 24*b*c*d^3 + 24*d^4)*e^(b*x + a)/b^
5 - 3/8*(b^4*d^4*x^4 + 4*b^4*c*d^3*x^3 + 6*b^4*c^2*d^2*x^2 + 4*b^3*d^4*x^3
+ 4*b^4*c^3*d*x + 12*b^3*c*d^3*x^2 + b^4*c^4 + 12*b^3*c^2*d^2*x + 12*b^2*d^
4*x^2 + 4*b^3*c^3*d + 24*b^2*c*d^3*x + 12*b^2*c^2*d^2 + 24*b*d^4*x + 24*b*c
*d^3 + 24*d^4)*e^(-b*x - a)/b^5 + 1/648*(27*b^4*d^4*x^4 + 108*b^4*c*d^3*x^3
 + 162*b^4*c^2*d^2*x^2 + 36*b^3*d^4*x^3 + 108*b^4*c^3*d*x + 108*b^3*c*d^3*x
^2 + 27*b^4*c^4 + 108*b^3*c^2*d^2*x + 36*b^2*d^4*x^2 + 36*b^3*c^3*d + 72*b^
2*c*d^3*x + 36*b^2*c^2*d^2 + 24*b*d^4*x + 24*b*c*d^3 + 8*d^4)*e^(-3*b*x - 3
*a)/b^5
```

maple [B] time = 0.14, size = 1139, normalized size = 5.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^4*sinh(b*x+a)^3,x)
```

```
[Out] 1/b*(1/b^4*d^4*(-2/3*(b*x+a)^4*cosh(b*x+a)+1/3*(b*x+a)^4*cosh(b*x+a)*sinh(b
*x+a)^2+8/3*(b*x+a)^3*sinh(b*x+a)-80/9*(b*x+a)^2*cosh(b*x+a)+160/9*(b*x+a)*
sinh(b*x+a)-1456/81*cosh(b*x+a)-4/9*(b*x+a)^3*sinh(b*x+a)^3+4/9*(b*x+a)^2*c
osh(b*x+a)*sinh(b*x+a)^2-8/27*(b*x+a)*sinh(b*x+a)^3+8/81*cosh(b*x+a)*sinh(b
*x+a)^2)-4/b^4*d^4*a*(-2/3*(b*x+a)^3*cosh(b*x+a)+1/3*(b*x+a)^3*cosh(b*x+a)*
sinh(b*x+a)^2+2*(b*x+a)^2*sinh(b*x+a)-40/9*(b*x+a)*cosh(b*x+a)+40/9*sinh(b*
x+a)-1/3*(b*x+a)^2*sinh(b*x+a)^3+2/9*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)^2-2/27
*sinh(b*x+a)^3)+6/b^4*d^4*a^2*(-2/3*(b*x+a)^2*cosh(b*x+a)+1/3*(b*x+a)^2*cos
h(b*x+a)*sinh(b*x+a)^2+4/3*(b*x+a)*sinh(b*x+a)-40/27*cosh(b*x+a)-2/9*(b*x+a
)*sinh(b*x+a)^3+2/27*cosh(b*x+a)*sinh(b*x+a)^2)-4/b^4*d^4*a^3*(-2/3*(b*x+a)
*cosh(b*x+a)+1/3*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)^2+2/3*sinh(b*x+a)-1/9*sinh
(b*x+a)^3)+1/b^4*d^4*a^4*(-2/3+1/3*sinh(b*x+a)^2)*cosh(b*x+a)+4/b^3*c*d^3*(
-2/3*(b*x+a)^3*cosh(b*x+a)+1/3*(b*x+a)^3*cosh(b*x+a)*sinh(b*x+a)^2+2*(b*x+a
)^2*sinh(b*x+a)-40/9*(b*x+a)*cosh(b*x+a)+40/9*sinh(b*x+a)-1/3*(b*x+a)^2*sin
h(b*x+a)^3+2/9*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)^2-2/27*sinh(b*x+a)^3)-12/b^3
*c*d^3*a*(-2/3*(b*x+a)^2*cosh(b*x+a)+1/3*(b*x+a)^2*cosh(b*x+a)*sinh(b*x+a)^
2+4/3*(b*x+a)*sinh(b*x+a)-40/27*cosh(b*x+a)-2/9*(b*x+a)*sinh(b*x+a)^3+2/27*
cosh(b*x+a)*sinh(b*x+a)^2)+12/b^3*c*d^3*a^2*(-2/3*(b*x+a)*cosh(b*x+a)+1/3*(
b*x+a)*cosh(b*x+a)*sinh(b*x+a)^2+2/3*sinh(b*x+a)-1/9*sinh(b*x+a)^3)-4/b^3*c
*d^3*a^3*(-2/3+1/3*sinh(b*x+a)^2)*cosh(b*x+a)+6/b^2*c^2*d^2*(-2/3*(b*x+a)^2
*cosh(b*x+a)+1/3*(b*x+a)^2*cosh(b*x+a)*sinh(b*x+a)^2+4/3*(b*x+a)*sinh(b*x+a
)-40/27*cosh(b*x+a)-2/9*(b*x+a)*sinh(b*x+a)^3+2/27*cosh(b*x+a)*sinh(b*x+a)^
2)-12/b^2*c^2*d^2*a*(-2/3*(b*x+a)*cosh(b*x+a)+1/3*(b*x+a)*cosh(b*x+a)*sinh(
b*x+a)^2+2/3*sinh(b*x+a)-1/9*sinh(b*x+a)^3)+6/b^2*c^2*d^2*a^2*(-2/3+1/3*sin
h(b*x+a)^2)*cosh(b*x+a)+4/b*c^3*d*(-2/3*(b*x+a)*cosh(b*x+a)+1/3*(b*x+a)*cos
h(b*x+a)*sinh(b*x+a)^2+2/3*sinh(b*x+a)-1/9*sinh(b*x+a)^3)-4/b*c^3*d*a*(-2/3
+1/3*sinh(b*x+a)^2)*cosh(b*x+a)+c^4*(-2/3+1/3*sinh(b*x+a)^2)*cosh(b*x+a))
```

maxima [B] time = 0.41, size = 639, normalized size = 2.84

$$\frac{1}{18}c^3d\left(\frac{\left(3\,bxe^{(3\,a)}-e^{(3\,a)}\right)e^{(3\,bx)}}{b^2}-\frac{27\,(bxe^a-e^a)e^{(bx)}}{b^2}-\frac{27\,(bx+1)e^{(-bx-a)}}{b^2}+\frac{(3\,bx+1)e^{(-3\,bx-3\,a)}}{b^2}\right)+\frac{1}{24}c^4\left(\frac{e^{(3\,bx+3}}{b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^4*sinh(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/18*c^3*d*((3*b*x*e^(3*a) - e^(3*a))*e^(3*b*x)/b^2 - 27*(b*x*e^a - e^a)*e^
(b*x)/b^2 - 27*(b*x + 1)*e^(-b*x - a)/b^2 + (3*b*x + 1)*e^(-3*b*x - 3*a)/b^
2) + 1/24*c^4*(e^(3*b*x + 3*a)/b - 9*e^(b*x + a)/b - 9*e^(-b*x - a)/b + e^(
-3*b*x - 3*a)/b) + 1/36*c^2*d^2*((9*b^2*x^2*e^(3*a) - 6*b*x*e^(3*a) + 2*e^(
3*a))*e^(3*b*x)/b^3 - 81*(b^2*x^2*e^a - 2*b*x*e^a + 2*e^a)*e^(b*x)/b^3 - 81
*(b^2*x^2 + 2*b*x + 2)*e^(-b*x - a)/b^3 + (9*b^2*x^2 + 6*b*x + 2)*e^(-3*b*x
 - 3*a)/b^3) + 1/54*c*d^3*((9*b^3*x^3*e^(3*a) - 9*b^2*x^2*e^(3*a) + 6*b*x*e
^(3*a) - 2*e^(3*a))*e^(3*b*x)/b^4 - 81*(b^3*x^3*e^a - 3*b^2*x^2*e^a + 6*b*x
*e^a - 6*e^a)*e^(b*x)/b^4 - 81*(b^3*x^3 + 3*b^2*x^2 + 6*b*x + 6)*e^(-b*x -
a)/b^4 + (9*b^3*x^3 + 9*b^2*x^2 + 6*b*x + 2)*e^(-3*b*x - 3*a)/b^4) + 1/648*
d^4*((27*b^4*x^4*e^(3*a) - 36*b^3*x^3*e^(3*a) + 36*b^2*x^2*e^(3*a) - 24*b*x
*e^(3*a) + 8*e^(3*a))*e^(3*b*x)/b^5 - 243*(b^4*x^4*e^a - 4*b^3*x^3*e^a + 12
*b^2*x^2*e^a - 24*b*x*e^a + 24*e^a)*e^(b*x)/b^5 - 243*(b^4*x^4 + 4*b^3*x^3
+ 12*b^2*x^2 + 24*b*x + 24)*e^(-b*x - a)/b^5 + (27*b^4*x^4 + 36*b^3*x^3 + 3
6*b^2*x^2 + 24*b*x + 8)*e^(-3*b*x - 3*a)/b^5)
```

mupad [B] time = 0.55, size = 532, normalized size = 2.36

$$\frac{\cosh(a+b\,x)\,\sinh(a+b\,x)^2\,\left(27\,b^4\,c^4+252\,b^2\,c^2\,d^2+488\,d^4\right)}{27\,b^5}-\frac{2\cosh(a+b\,x)^3\,\left(27\,b^4\,c^4+360\,b^2\,c^2\,d^2+728\,d^4\right)}{81\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^3*(c + d*x)^4,x)
```

```
[Out] (cosh(a + b*x)*sinh(a + b*x)^2*(488*d^4 + 27*b^4*c^4 + 252*b^2*c^2*d^2))/(2
7*b^5) - (2*cosh(a + b*x)^3*(728*d^4 + 27*b^4*c^4 + 360*b^2*c^2*d^2))/(81*b
^5) - (4*sinh(a + b*x)^3*(122*c*d^3 + 21*b^2*c^3*d))/(27*b^4) + (8*cosh(a +
 b*x)^2*sinh(a + b*x)*(20*c*d^3 + 3*b^2*c^3*d))/(9*b^4) - (2*d^4*x^4*cosh(a
 + b*x)^3)/(3*b) - (8*x*cosh(a + b*x)^3*(20*c*d^3 + 3*b^2*c^3*d))/(9*b^3) -
 (28*d^4*x^3*sinh(a + b*x)^3)/(9*b^2) - (4*x*sinh(a + b*x)^3*(122*d^4 + 63*
b^2*c^2*d^2))/(27*b^4) - (4*x^2*cosh(a + b*x)^3*(20*d^4 + 9*b^2*c^2*d^2))/(
9*b^3) + (2*x^2*cosh(a + b*x)*sinh(a + b*x)^2*(14*d^4 + 9*b^2*c^2*d^2))/(3*
b^3) - (8*c*d^3*x^3*cosh(a + b*x)^3)/(3*b) + (d^4*x^4*cosh(a + b*x)*sinh(a
+ b*x)^2)/b + (8*d^4*x^3*cosh(a + b*x)^2*sinh(a + b*x))/(3*b^2) - (28*c*d^3
*x^2*sinh(a + b*x)^3)/(3*b^2) + (8*x*cosh(a + b*x)^2*sinh(a + b*x)*(20*d^4
+ 9*b^2*c^2*d^2))/(9*b^4) + (4*x*cosh(a + b*x)*sinh(a + b*x)^2*(14*c*d^3 +
3*b^2*c^3*d))/(3*b^3) + (4*c*d^3*x^3*cosh(a + b*x)*sinh(a + b*x)^2)/b + (8*
c*d^3*x^2*cosh(a + b*x)^2*sinh(a + b*x))/b^2
```

sympy [A] time = 7.85, size = 772, normalized size = 3.43

$$\begin{cases} \frac{c^4\sinh^2(a+bx)\cosh(a+bx)}{b}-\frac{2c^4\cosh^3(a+bx)}{3b}+\frac{4c^3dx\sinh^2(a+bx)\cosh(a+bx)}{b}-\frac{8c^3dx\cosh^3(a+bx)}{3b}+\frac{6c^2d^2x^2\sinh^2(a+bx)\cosh(a+bx)}{b}- \\ \left(c^4x+2c^3dx^2+2c^2d^2x^3+cd^3x^4+\frac{d^4x^5}{5}\right)\sinh^3(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**4*sinh(b*x+a)**3,x)
```

```
[Out] Piecewise((c**4*sinh(a + b*x)**2*cosh(a + b*x)/b - 2*c**4*cosh(a + b*x)**3/
(3*b) + 4*c**3*d*x*sinh(a + b*x)**2*cosh(a + b*x)/b - 8*c**3*d*x*cosh(a + b
*x)**3/(3*b) + 6*c**2*d**2*x**2*sinh(a + b*x)**2*cosh(a + b*x)/b - 4*c**2*d
**2*x**2*cosh(a + b*x)**3/b + 4*c*d**3*x**3*sinh(a + b*x)**2*cosh(a + b*x)/
b - 8*c*d**3*x**3*cosh(a + b*x)**3/(3*b) + d**4*x**4*sinh(a + b*x)**2*cosh(
a + b*x)/b - 2*d**4*x**4*cosh(a + b*x)**3/(3*b) - 28*c**3*d*sinh(a + b*x)**
3/(9*b**2) + 8*c**3*d*sinh(a + b*x)*cosh(a + b*x)**2/(3*b**2) - 28*c**2*d**
2*x*sinh(a + b*x)**3/(3*b**2) + 8*c**2*d**2*x*sinh(a + b*x)*cosh(a + b*x)**
2/b**2 - 28*c*d**3*x**2*sinh(a + b*x)**3/(3*b**2) + 8*c*d**3*x**2*sinh(a +
b*x)*cosh(a + b*x)**2/b**2 - 28*d**4*x**3*sinh(a + b*x)**3/(9*b**2) + 8*d**
4*x**3*sinh(a + b*x)*cosh(a + b*x)**2/(3*b**2) + 28*c**2*d**2*sinh(a + b*x)
**2*cosh(a + b*x)/(3*b**3) - 80*c**2*d**2*cosh(a + b*x)**3/(9*b**3) + 56*c*
d**3*x*sinh(a + b*x)**2*cosh(a + b*x)/(3*b**3) - 160*c*d**3*x*cosh(a + b*x)
**3/(9*b**3) + 28*d**4*x**2*sinh(a + b*x)**2*cosh(a + b*x)/(3*b**3) - 80*d*
*4*x**2*cosh(a + b*x)**3/(9*b**3) - 488*c*d**3*sinh(a + b*x)**3/(27*b**4) +
 160*c*d**3*sinh(a + b*x)*cosh(a + b*x)**2/(9*b**4) - 488*d**4*x*sinh(a + b
*x)**3/(27*b**4) + 160*d**4*x*sinh(a + b*x)*cosh(a + b*x)**2/(9*b**4) + 488
*d**4*sinh(a + b*x)**2*cosh(a + b*x)/(27*b**5) - 1456*d**4*cosh(a + b*x)**3
/(81*b**5), Ne(b, 0)), ((c**4*x + 2*c**3*d*x**2 + 2*c**2*d**2*x**3 + c*d**3
*x**4 + d**4*x**5/5)*sinh(a)**3, True))
```

3.17 $\int (c+dx)^3 \sinh^3(a+bx)\,dx$

Optimal. Leaf size=175

$$-\frac{2d^3\sinh^3(a+bx)}{27b^4}+\frac{40d^3\sinh(a+bx)}{9b^4}-\frac{40d^2(c+dx)\cosh(a+bx)}{9b^3}+\frac{2d^2(c+dx)\sinh^2(a+bx)\cosh(a+bx)}{9b^3}-\frac{d(}{}$$

```
[Out] -40/9*d^2*(d*x+c)*cosh(b*x+a)/b^3-2/3*(d*x+c)^3*cosh(b*x+a)/b+40/9*d^3*sinh
(b*x+a)/b^4+2*d*(d*x+c)^2*sinh(b*x+a)/b^2+2/9*d^2*(d*x+c)*cosh(b*x+a)*sinh(
b*x+a)^2/b^3+1/3*(d*x+c)^3*cosh(b*x+a)*sinh(b*x+a)^2/b-2/27*d^3*sinh(b*x+a)
^3/b^4-1/3*d*(d*x+c)^2*sinh(b*x+a)^3/b^2
```

Rubi [A] time = 0.23, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3311, 3296, 2637, 3310}

$$-\frac{40d^2(c+dx)\cosh(a+bx)}{9b^3}+\frac{2d^2(c+dx)\sinh^2(a+bx)\cosh(a+bx)}{9b^3}-\frac{d(c+dx)^2\sinh^3(a+bx)}{3b^2}+\frac{2d(c+dx)^2\sin}{b^2}$$

Antiderivative was successfully verified.

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

```
[Out] (-40*d^2*(c + d*x)*Cosh[a + b*x])/(9*b^3) - (2*(c + d*x)^3*Cosh[a + b*x])/(
3*b) + (40*d^3*Sinh[a + b*x])/(9*b^4) + (2*d*(c + d*x)^2*Sinh[a + b*x])/b^2
 + (2*d^2*(c + d*x)*Cosh[a + b*x]*Sinh[a + b*x]^2)/(9*b^3) + ((c + d*x)^3*C
osh[a + b*x]*Sinh[a + b*x]^2)/(3*b) - (2*d^3*Sinh[a + b*x]^3)/(27*b^4) - (d
*(c + d*x)^2*Sinh[a + b*x]^3)/(3*b^2)
```

Rule 2637

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

Rule 3296

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

Rule 3310

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

```
]
```

Rule 3311

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

Rubi steps

$$\int (c+dx)^3\sinh^3(a+bx)\,dx = \frac{(c+dx)^3\cosh(a+bx)\sinh^2(a+bx)}{3b} - \frac{d(c+dx)^2\sinh^3(a+bx)}{3b^2} - \frac{2}{3}\int (c+dx)$$

$$= -\frac{2(c+dx)^3\cosh(a+bx)}{3b} + \frac{2d^2(c+dx)\cosh(a+bx)\sinh^2(a+bx)}{9b^3} + \frac{(c+dx)^3}{}$$

$$= -\frac{4d^2(c+dx)\cosh(a+bx)}{9b^3} - \frac{2(c+dx)^3\cosh(a+bx)}{3b} + \frac{2d(c+dx)^2\sinh(a+bx)}{b^2}$$

$$= -\frac{40d^2(c+dx)\cosh(a+bx)}{9b^3} - \frac{2(c+dx)^3\cosh(a+bx)}{3b} + \frac{4d^3\sinh(a+bx)}{9b^4} + \frac{2d}{}$$

$$= -\frac{40d^2(c+dx)\cosh(a+bx)}{9b^3} - \frac{2(c+dx)^3\cosh(a+bx)}{3b} + \frac{40d^3\sinh(a+bx)}{9b^4} + \frac{2}{}$$

Mathematica [A] time = 0.84, size = 127, normalized size = 0.73

$$\frac{-162b(c+dx)\cosh(a+bx)\left(b^2(c+dx)^2+6d^2\right)+6b(c+dx)\cosh(3(a+bx))\left(3b^2(c+dx)^2+2d^2\right)-4d\sinh(a}{216b^4}$$

Antiderivative was successfully verified.

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

```
[Out] (-162*b*(c + d*x)*(6*d^2 + b^2*(c + d*x)^2)*Cosh[a + b*x] + 6*b*(c + d*x)*(
2*d^2 + 3*b^2*(c + d*x)^2)*Cosh[3*(a + b*x)] - 4*d*(-242*d^2 - 117*b^2*(c +
 d*x)^2 + (2*d^2 + 9*b^2*(c + d*x)^2)*Cosh[2*(a + b*x)])*Sinh[a + b*x])/(21
6*b^4)
```

fricas [B] time = 0.41, size = 345, normalized size = 1.97

$$\frac{3\left(3\,b^3d^3x^3+9\,b^3cd^2x^2+3\,b^3c^3+2\,bcd^2+\left(9\,b^3c^2d+2\,bd^3\right)x\right)\cosh\left(bx+a\right)^3+9\left(3\,b^3d^3x^3+9\,b^3cd^2x^2+3\,b^3c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/108*(3*(3*b^3*d^3*x^3 + 9*b^3*c*d^2*x^2 + 3*b^3*c^3 + 2*b*c*d^2 + (9*b^3*
c^2*d + 2*b*d^3)*x)*cosh(b*x + a)^3 + 9*(3*b^3*d^3*x^3 + 9*b^3*c*d^2*x^2 +
3*b^3*c^3 + 2*b*c*d^2 + (9*b^3*c^2*d + 2*b*d^3)*x)*cosh(b*x + a)*sinh(b*x +
 a)^2 - (9*b^2*d^3*x^2 + 18*b^2*c*d^2*x + 9*b^2*c^2*d + 2*d^3)*sinh(b*x + a
)^3 - 81*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 + 6*b*c*d^2 + 3*(b^3*c^2*
d + 2*b*d^3)*x)*cosh(b*x + a) + 3*(81*b^2*d^3*x^2 + 162*b^2*c*d^2*x + 81*b^
2*c^2*d + 162*d^3 - (9*b^2*d^3*x^2 + 18*b^2*c*d^2*x + 9*b^2*c^2*d + 2*d^3)*
cosh(b*x + a)^2)*sinh(b*x + a))/b^4
```

giac [B] time = 0.20, size = 414, normalized size = 2.37

$$\frac{\left(9\,b^3d^3x^3+27\,b^3cd^2x^2+27\,b^3c^2dx-9\,b^2d^3x^2+9\,b^3c^3-18\,b^2cd^2x-9\,b^2c^2d+6\,bd^3x+6\,bcd^2-2\,d^3\right)e^{(3\,bx+3\,a)}}{216\,b^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/216*(9*b^3*d^3*x^3 + 27*b^3*c*d^2*x^2 + 27*b^3*c^2*d*x - 9*b^2*d^3*x^2 +
9*b^3*c^3 - 18*b^2*c*d^2*x - 9*b^2*c^2*d + 6*b*d^3*x + 6*b*c*d^2 - 2*d^3)*e
^(3*b*x + 3*a)/b^4 - 3/8*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x - 3
*b^2*d^3*x^2 + b^3*c^3 - 6*b^2*c*d^2*x - 3*b^2*c^2*d + 6*b*d^3*x + 6*b*c*d^
2 - 6*d^3)*e^(b*x + a)/b^4 - 3/8*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2
*d*x + 3*b^2*d^3*x^2 + b^3*c^3 + 6*b^2*c*d^2*x + 3*b^2*c^2*d + 6*b*d^3*x +
6*b*c*d^2 + 6*d^3)*e^(-b*x - a)/b^4 + 1/216*(9*b^3*d^3*x^3 + 27*b^3*c*d^2*x
^2 + 27*b^3*c^2*d*x + 9*b^2*d^3*x^2 + 9*b^3*c^3 + 18*b^2*c*d^2*x + 9*b^2*c^
2*d + 6*b*d^3*x + 6*b*c*d^2 + 2*d^3)*e^(-3*b*x - 3*a)/b^4
```

maple [B] time = 0.02, size = 634, normalized size = 3.62

$$\frac{d^3\left(-\frac{2(bx+a)^3\cosh(bx+a)}{3}+\frac{(bx+a)^3\cosh(bx+a)\left(\sinh^2(bx+a)\right)}{3}+2(bx+a)^2\sinh(bx+a)-\frac{40(bx+a)\cosh(bx+a)}{9}+\frac{40\sinh(bx+a)}{9}-\frac{(bx+a)^2\left(\sinh^3(bx+a)\right)}{3}+\frac{2(bx+a)\cosh(bx+a)\left(\right.}{9}\right.}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b*(1/b^3*d^3*(-2/3*(b*x+a)^3*cosh(b*x+a)+1/3*(b*x+a)^3*cosh(b*x+a)*sinh(b
*x+a)^2+2*(b*x+a)^2*sinh(b*x+a)-40/9*(b*x+a)*cosh(b*x+a)+40/9*sinh(b*x+a)-1
/3*(b*x+a)^2*sinh(b*x+a)^3+2/9*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)^2-2/27*sinh(
```

```
b*x+a)^3)-3/b^3*d^3*a*(-2/3*(b*x+a)^2*cosh(b*x+a)+1/3*(b*x+a)^2*cosh(b*x+a)
*sinh(b*x+a)^2+4/3*(b*x+a)*sinh(b*x+a)-40/27*cosh(b*x+a)-2/9*(b*x+a)*sinh(b
*x+a)^3+2/27*cosh(b*x+a)*sinh(b*x+a)^2)+3/b^3*d^3*a^2*(-2/3*(b*x+a)*cosh(b*
x+a)+1/3*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)^2+2/3*sinh(b*x+a)-1/9*sinh(b*x+a)^
3)-1/b^3*d^3*a^3*(-2/3+1/3*sinh(b*x+a)^2)*cosh(b*x+a)+3/b^2*c*d^2*(-2/3*(b*
x+a)^2*cosh(b*x+a)+1/3*(b*x+a)^2*cosh(b*x+a)*sinh(b*x+a)^2+4/3*(b*x+a)*sinh
(b*x+a)-40/27*cosh(b*x+a)-2/9*(b*x+a)*sinh(b*x+a)^3+2/27*cosh(b*x+a)*sinh(b
*x+a)^2)-6/b^2*c*d^2*a*(-2/3*(b*x+a)*cosh(b*x+a)+1/3*(b*x+a)*cosh(b*x+a)*si
nh(b*x+a)^2+2/3*sinh(b*x+a)-1/9*sinh(b*x+a)^3)+3/b^2*c*d^2*a^2*(-2/3+1/3*si
nh(b*x+a)^2)*cosh(b*x+a)+3/b*c^2*d*(-2/3*(b*x+a)*cosh(b*x+a)+1/3*(b*x+a)*co
sh(b*x+a)*sinh(b*x+a)^2+2/3*sinh(b*x+a)-1/9*sinh(b*x+a)^3)-3/b*c^2*d*a*(-2/
3+1/3*sinh(b*x+a)^2)*cosh(b*x+a)+c^3*(-2/3+1/3*sinh(b*x+a)^2)*cosh(b*x+a))
```

maxima [B] time = 0.50, size = 435, normalized size = 2.49

$$\frac{1}{24}c^2d\left(\frac{\left(3\,bxe^{(3\,a)}-e^{(3\,a)}\right)e^{(3\,bx)}}{b^2}-\frac{27\,(bxe^{a}-e^{a})e^{(bx)}}{b^2}-\frac{27\,(bx+1)e^{(-bx-a)}}{b^2}+\frac{(3\,bx+1)e^{(-3\,bx-3\,a)}}{b^2}\right)+\frac{1}{24}c^3\left(\frac{e^{(3\,bx+3}}{b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/24*c^2*d*((3*b*x*e^(3*a) - e^(3*a))*e^(3*b*x)/b^2 - 27*(b*x*e^a - e^a)*e^
(b*x)/b^2 - 27*(b*x + 1)*e^(-b*x - a)/b^2 + (3*b*x + 1)*e^(-3*b*x - 3*a)/b^
2) + 1/24*c^3*(e^(3*b*x + 3*a)/b - 9*e^(b*x + a)/b - 9*e^(-b*x - a)/b + e^(
-3*b*x - 3*a)/b) + 1/72*c*d^2*((9*b^2*x^2*e^(3*a) - 6*b*x*e^(3*a) + 2*e^(3*
a))*e^(3*b*x)/b^3 - 81*(b^2*x^2*e^a - 2*b*x*e^a + 2*e^a)*e^(b*x)/b^3 - 81*(
b^2*x^2 + 2*b*x + 2)*e^(-b*x - a)/b^3 + (9*b^2*x^2 + 6*b*x + 2)*e^(-3*b*x -
 3*a)/b^3) + 1/216*d^3*((9*b^3*x^3*e^(3*a) - 9*b^2*x^2*e^(3*a) + 6*b*x*e^(3
*a) - 2*e^(3*a))*e^(3*b*x)/b^4 - 81*(b^3*x^3*e^a - 3*b^2*x^2*e^a + 6*b*x*e^
a - 6*e^a)*e^(b*x)/b^4 - 81*(b^3*x^3 + 3*b^2*x^2 + 6*b*x + 6)*e^(-b*x - a)/
b^4 + (9*b^3*x^3 + 9*b^2*x^2 + 6*b*x + 2)*e^(-3*b*x - 3*a)/b^4)
```

mupad [B] time = 0.35, size = 364, normalized size = 2.08

$$\frac{\cosh\left(a+b\,x\right)\,\sinh\left(a+b\,x\right)^2\,\left(3\,b^2\,c^3+14\,c\,d^2\right)}{3\,b^3}-\frac{\sinh\left(a+b\,x\right)^3\,\left(63\,b^2\,c^2\,d+122\,d^3\right)}{27\,b^4}-\frac{2\cosh\left(a+b\,x\right)^3\,\left(3\,b^2\,c\right.}{9\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (cosh(a + b*x)*sinh(a + b*x)^2*(14*c*d^2 + 3*b^2*c^3))/(3*b^3) - (sinh(a +
b*x)^3*(122*d^3 + 63*b^2*c^2*d))/(27*b^4) - (2*cosh(a + b*x)^3*(20*c*d^2 +
3*b^2*c^3))/(9*b^3) + (2*cosh(a + b*x)^2*sinh(a + b*x)*(20*d^3 + 9*b^2*c^2*
d))/(9*b^4) - (2*x*cosh(a + b*x)^3*(20*d^3 + 9*b^2*c^2*d))/(9*b^3) - (2*d^3
```

```
*x^3*cosh(a + b*x)^3)/(3*b) - (7*d^3*x^2*sinh(a + b*x)^3)/(3*b^2) - (14*c*d
^2*x*sinh(a + b*x)^3)/(3*b^2) + (x*cosh(a + b*x)*sinh(a + b*x)^2*(14*d^3 +
9*b^2*c^2*d))/(3*b^3) - (2*c*d^2*x^2*cosh(a + b*x)^3)/b + (d^3*x^3*cosh(a +
 b*x)*sinh(a + b*x)^2)/b + (2*d^3*x^2*cosh(a + b*x)^2*sinh(a + b*x))/b^2 +
(3*c*d^2*x^2*cosh(a + b*x)*sinh(a + b*x)^2)/b + (4*c*d^2*x*cosh(a + b*x)^2*
sinh(a + b*x))/b^2
```

sympy [A] time = 4.22, size = 495, normalized size = 2.83

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((c**3*sinh(a + b*x)**2*cosh(a + b*x)/b - 2*c**3*cosh(a + b*x)**3/
(3*b) + 3*c**2*d*x*sinh(a + b*x)**2*cosh(a + b*x)/b - 2*c**2*d*x*cosh(a + b
*x)**3/b + 3*c*d**2*x**2*sinh(a + b*x)**2*cosh(a + b*x)/b - 2*c*d**2*x**2*c
osh(a + b*x)**3/b + d**3*x**3*sinh(a + b*x)**2*cosh(a + b*x)/b - 2*d**3*x**
3*cosh(a + b*x)**3/(3*b) - 7*c**2*d*sinh(a + b*x)**3/(3*b**2) + 2*c**2*d*si
nh(a + b*x)*cosh(a + b*x)**2/b**2 - 14*c*d**2*x*sinh(a + b*x)**3/(3*b**2) +
 4*c*d**2*x*sinh(a + b*x)*cosh(a + b*x)**2/b**2 - 7*d**3*x**2*sinh(a + b*x)
**3/(3*b**2) + 2*d**3*x**2*sinh(a + b*x)*cosh(a + b*x)**2/b**2 + 14*c*d**2*
sinh(a + b*x)**2*cosh(a + b*x)/(3*b**3) - 40*c*d**2*cosh(a + b*x)**3/(9*b**
3) + 14*d**3*x*sinh(a + b*x)**2*cosh(a + b*x)/(3*b**3) - 40*d**3*x*cosh(a +
 b*x)**3/(9*b**3) - 122*d**3*sinh(a + b*x)**3/(27*b**4) + 40*d**3*sinh(a +
b*x)*cosh(a + b*x)**2/(9*b**4), Ne(b, 0)), ((c**3*x + 3*c**2*d*x**2/2 + c*d
**2*x**3 + d**3*x**4/4)*sinh(a)**3, True))
```

3.18 $\int (c+dx)^2 \sinh^3(a+bx)\,dx$

Optimal. Leaf size=123

$$\frac{2d^2\cosh^3(a+bx)}{27b^3}-\frac{14d^2\cosh(a+bx)}{9b^3}-\frac{2d(c+dx)\sinh^3(a+bx)}{9b^2}+\frac{4d(c+dx)\sinh(a+bx)}{3b^2}-\frac{2(c+dx)^2\cosh(a-}{3b}$$

```
[Out] -14/9*d^2*cosh(b*x+a)/b^3-2/3*(d*x+c)^2*cosh(b*x+a)/b+2/27*d^2*cosh(b*x+a)^
3/b^3+4/3*d*(d*x+c)*sinh(b*x+a)/b^2+1/3*(d*x+c)^2*cosh(b*x+a)*sinh(b*x+a)^2
/b-2/9*d*(d*x+c)*sinh(b*x+a)^3/b^2
```

Rubi [A] time = 0.13, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3311, 3296, 2638, 2633}

$$-\frac{2d(c+dx)\sinh^3(a+bx)}{9b^2}+\frac{4d(c+dx)\sinh(a+bx)}{3b^2}+\frac{2d^2\cosh^3(a+bx)}{27b^3}-\frac{14d^2\cosh(a+bx)}{9b^3}-\frac{2(c+dx)^2\cosh(a}{3b}$$

Antiderivative was successfully verified.

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

```
[Out] (-14*d^2*Cosh[a + b*x])/(9*b^3) - (2*(c + d*x)^2*Cosh[a + b*x])/(3*b) + (2*
d^2*Cosh[a + b*x]^3)/(27*b^3) + (4*d*(c + d*x)*Sinh[a + b*x])/(3*b^2) + ((c
 + d*x)^2*Cosh[a + b*x]*Sinh[a + b*x]^2)/(3*b) - (2*d*(c + d*x)*Sinh[a + b*
x]^3)/(9*b^2)
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2638

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

Rule 3296

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

Rule 3311

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

Rubi steps

$$\begin{aligned}\int (c+dx)^2\sinh^3(a+bx)\,dx &= \frac{(c+dx)^2\cosh(a+bx)\sinh^2(a+bx)}{3b}-\frac{2d(c+dx)\sinh^3(a+bx)}{9b^2}-\frac{2}{3}\int (c+dx)^2\\ &= -\frac{2(c+dx)^2\cosh(a+bx)}{3b}+\frac{(c+dx)^2\cosh(a+bx)\sinh^2(a+bx)}{3b}-\frac{2d(c+dx)\sin}{9b}\\ &= -\frac{2d^2\cosh(a+bx)}{9b^3}-\frac{2(c+dx)^2\cosh(a+bx)}{3b}+\frac{2d^2\cosh^3(a+bx)}{27b^3}+\frac{4d(c+dx)s}{3}\\ &= -\frac{14d^2\cosh(a+bx)}{9b^3}-\frac{2(c+dx)^2\cosh(a+bx)}{3b}+\frac{2d^2\cosh^3(a+bx)}{27b^3}+\frac{4d(c+dx)}{}\end{aligned}$$

Mathematica [A] time = 0.33, size = 86, normalized size = 0.70

$$\frac{-81\cosh(a+bx)\left(b^2(c+dx)^2+2d^2\right)+\cosh(3(a+bx))\left(9b^2(c+dx)^2+2d^2\right)-6bd(c+dx)(\sinh(3(a+bx))-27}{108b^3}$$

Antiderivative was successfully verified.

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

```
[Out] (-81*(2*d^2 + b^2*(c + d*x)^2)*Cosh[a + b*x] + (2*d^2 + 9*b^2*(c + d*x)^2)*
Cosh[3*(a + b*x)] - 6*b*d*(c + d*x)*(-27*Sinh[a + b*x] + Sinh[3*(a + b*x)])
)/(108*b^3)
```

fricas [A] time = 0.40, size = 199, normalized size = 1.62

$$\frac{\left(9\,b^2d^2x^2+18\,b^2cdx+9\,b^2c^2+2\,d^2\right)\cosh\left(bx+a\right)^3+3\left(9\,b^2d^2x^2+18\,b^2cdx+9\,b^2c^2+2\,d^2\right)\cosh\left(bx+a\right)\sinh}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/108*((9*b^2*d^2*x^2 + 18*b^2*c*d*x + 9*b^2*c^2 + 2*d^2)*cosh(b*x + a)^3 +
 3*(9*b^2*d^2*x^2 + 18*b^2*c*d*x + 9*b^2*c^2 + 2*d^2)*cosh(b*x + a)*sinh(b*
```

```
x + a)^2 - 6*(b*d^2*x + b*c*d)*sinh(b*x + a)^3 - 81*(b^2*d^2*x^2 + 2*b^2*c*
d*x + b^2*c^2 + 2*d^2)*cosh(b*x + a) + 18*(9*b*d^2*x + 9*b*c*d - (b*d^2*x +
 b*c*d)*cosh(b*x + a)^2)*sinh(b*x + a))/b^3
```

giac [B] time = 0.18, size = 230, normalized size = 1.87

$$\frac{\left(9\,b^2d^2x^2+18\,b^2cdx+9\,b^2c^2-6\,bd^2x-6\,bcd+2\,d^2\right)e^{(3\,bx+3\,a)}}{216\,b^3}-\frac{3\left(b^2d^2x^2+2\,b^2cdx+b^2c^2-2\,bd^2x-2\,bcd+2\right.}{8\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/216*(9*b^2*d^2*x^2 + 18*b^2*c*d*x + 9*b^2*c^2 - 6*b*d^2*x - 6*b*c*d + 2*d
^2)*e^(3*b*x + 3*a)/b^3 - 3/8*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*b*d^
2*x - 2*b*c*d + 2*d^2)*e^(b*x + a)/b^3 - 3/8*(b^2*d^2*x^2 + 2*b^2*c*d*x + b
^2*c^2 + 2*b*d^2*x + 2*b*c*d + 2*d^2)*e^(-b*x - a)/b^3 + 1/216*(9*b^2*d^2*x
^2 + 18*b^2*c*d*x + 9*b^2*c^2 + 6*b*d^2*x + 6*b*c*d + 2*d^2)*e^(-3*b*x - 3*
a)/b^3
```

maple [B] time = 0.02, size = 302, normalized size = 2.46

$$\frac{\frac{d^2\left(-\frac{2(bx+a)^2\cosh(bx+a)}{3}+\frac{(bx+a)^2\cosh(bx+a)\left(\sinh^2(bx+a)\right)}{3}+\frac{4(bx+a)\sinh(bx+a)}{3}-\frac{40\cosh(bx+a)}{27}-\frac{2(bx+a)\left(\sinh^3(bx+a)\right)}{9}+\frac{2\cosh(bx+a)\left(\sinh^2(bx+a)\right)}{27}\right)}{b^2}-\frac{2d^2a\left(-\frac{2(b}{}\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b*(1/b^2*d^2*(-2/3*(b*x+a)^2*cosh(b*x+a)+1/3*(b*x+a)^2*cosh(b*x+a)*sinh(b
*x+a)^2+4/3*(b*x+a)*sinh(b*x+a)-40/27*cosh(b*x+a)-2/9*(b*x+a)*sinh(b*x+a)^3
+2/27*cosh(b*x+a)*sinh(b*x+a)^2)-2/b^2*d^2*a*(-2/3*(b*x+a)*cosh(b*x+a)+1/3*
(b*x+a)*cosh(b*x+a)*sinh(b*x+a)^2+2/3*sinh(b*x+a)-1/9*sinh(b*x+a)^3)+1/b^2*
d^2*a^2*(-2/3+1/3*sinh(b*x+a)^2)*cosh(b*x+a)+2/b*c*d*(-2/3*(b*x+a)*cosh(b*x
+a)+1/3*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)^2+2/3*sinh(b*x+a)-1/9*sinh(b*x+a)^3
)-2/b*c*d*a*(-2/3+1/3*sinh(b*x+a)^2)*cosh(b*x+a)+c^2*(-2/3+1/3*sinh(b*x+a)^
2)*cosh(b*x+a))
```

maxima [B] time = 0.43, size = 269, normalized size = 2.19

$$\frac{1}{36}\,cd\left(\frac{\left(3\,bxe^{(3\,a)}-e^{(3\,a)}\right)e^{(3\,bx)}}{b^2}-\frac{27\,(bxe^{a}-e^{a})e^{(bx)}}{b^2}-\frac{27\,(bx+1)e^{(-bx-a)}}{b^2}+\frac{(3\,bx+1)e^{(-3\,bx-3\,a)}}{b^2}\right)+\frac{1}{24}\,c^2\left(\frac{e^{(3\,bx+3\,a}}{b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/36*c*d*((3*b*x*e^(3*a) - e^(3*a))*e^(3*b*x)/b^2 - 27*(b*x*e^a - e^a)*e^(b
*x)/b^2 - 27*(b*x + 1)*e^(-b*x - a)/b^2 + (3*b*x + 1)*e^(-3*b*x - 3*a)/b^2)
 + 1/24*c^2*(e^(3*b*x + 3*a)/b - 9*e^(b*x + a)/b - 9*e^(-b*x - a)/b + e^(-3
*b*x - 3*a)/b) + 1/216*d^2*((9*b^2*x^2*e^(3*a) - 6*b*x*e^(3*a) + 2*e^(3*a))
*e^(3*b*x)/b^3 - 81*(b^2*x^2*e^a - 2*b*x*e^a + 2*e^a)*e^(b*x)/b^3 - 81*(b^2
*x^2 + 2*b*x + 2)*e^(-b*x - a)/b^3 + (9*b^2*x^2 + 6*b*x + 2)*e^(-3*b*x - 3*
a)/b^3)
```

mupad [B] time = 0.41, size = 184, normalized size = 1.50

$$-\frac{\frac{3\,d^2\cosh(a+b\,x)}{2}-\frac{d^2\cosh(3\,a+3\,b\,x)}{54}+\frac{3\,b^2\,c^2\cosh(a+b\,x)}{4}-\frac{b^2\,c^2\cosh(3\,a+3\,b\,x)}{12}+\frac{3\,b^2\,d^2\,x^2\cosh(a+b\,x)}{4}+\frac{b\,c\,d\sinh(3\,a+3\,b\,x)}{18}-\frac{3\,b\,d^2\,x \cdots}{}}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -((3*d^2*cosh(a + b*x))/2 - (d^2*cosh(3*a + 3*b*x))/54 + (3*b^2*c^2*cosh(a
+ b*x))/4 - (b^2*c^2*cosh(3*a + 3*b*x))/12 + (3*b^2*d^2*x^2*cosh(a + b*x))/
4 + (b*c*d*sinh(3*a + 3*b*x))/18 - (3*b*d^2*x*sinh(a + b*x))/2 - (b^2*d^2*x
^2*cosh(3*a + 3*b*x))/12 + (b*d^2*x*sinh(3*a + 3*b*x))/18 - (3*b*c*d*sinh(a
 + b*x))/2 - (b^2*c*d*x*cosh(3*a + 3*b*x))/6 + (3*b^2*c*d*x*cosh(a + b*x))/
2)/b^3
```

sympy [A] time = 2.23, size = 284, normalized size = 2.31

$$\begin{cases} \frac{c^2\sinh^2(a+bx)\cosh(a+bx)}{b}-\frac{2c^2\cosh^3(a+bx)}{3b}+\frac{2cdx\sinh^2(a+bx)\cosh(a+bx)}{b}-\frac{4cdx\cosh^3(a+bx)}{3b}+\frac{d^2x^2\sinh^2(a+bx)\cosh(a+bx)}{b}-\frac{2d^2 \cdots}{} \\ \left(c^2x+cdx^2+\frac{d^2x^3}{3}\right)\sinh^3(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*sinh(b*x+a)**3,x)
```

```
[Out] Piecewise((c**2*sinh(a + b*x)**2*cosh(a + b*x)/b - 2*c**2*cosh(a + b*x)**3/
(3*b) + 2*c*d*x*sinh(a + b*x)**2*cosh(a + b*x)/b - 4*c*d*x*cosh(a + b*x)**3
/(3*b) + d**2*x**2*sinh(a + b*x)**2*cosh(a + b*x)/b - 2*d**2*x**2*cosh(a +
b*x)**3/(3*b) - 14*c*d*sinh(a + b*x)**3/(9*b**2) + 4*c*d*sinh(a + b*x)*cosh
(a + b*x)**2/(3*b**2) - 14*d**2*x*sinh(a + b*x)**3/(9*b**2) + 4*d**2*x*sinh
(a + b*x)*cosh(a + b*x)**2/(3*b**2) + 14*d**2*sinh(a + b*x)**2*cosh(a + b*x
)/(9*b**3) - 40*d**2*cosh(a + b*x)**3/(27*b**3), Ne(b, 0)), ((c**2*x + c*d*
x**2 + d**2*x**3/3)*sinh(a)**3, True))
```

3.19 $\int (c+dx)\sinh^3(a+bx)\,dx$

Optimal. Leaf size=75

$$-\frac{d\sinh^3(a+bx)}{9b^2}+\frac{2d\sinh(a+bx)}{3b^2}-\frac{2(c+dx)\cosh(a+bx)}{3b}+\frac{(c+dx)\sinh^2(a+bx)\cosh(a+bx)}{3b}$$

```
[Out] -2/3*(d*x+c)*cosh(b*x+a)/b+2/3*d*sinh(b*x+a)/b^2+1/3*(d*x+c)*cosh(b*x+a)*si
nh(b*x+a)^2/b-1/9*d*sinh(b*x+a)^3/b^2
```

Rubi [A] time = 0.06, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3310, 3296, 2637}

$$-\frac{d\sinh^3(a+bx)}{9b^2}+\frac{2d\sinh(a+bx)}{3b^2}-\frac{2(c+dx)\cosh(a+bx)}{3b}+\frac{(c+dx)\sinh^2(a+bx)\cosh(a+bx)}{3b}$$

Antiderivative was successfully verified.

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

```
[Out] (-2*(c + d*x)*Cosh[a + b*x])/(3*b) + (2*d*Sinh[a + b*x])/(3*b^2) + ((c + d*
x)*Cosh[a + b*x]*Sinh[a + b*x]^2)/(3*b) - (d*Sinh[a + b*x]^3)/(9*b^2)
```

Rule 2637

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

Rule 3296

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

Rule 3310

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

Rubi steps

$$\int (c+dx)\sinh^3(a+bx)\,dx = \frac{(c+dx)\cosh(a+bx)\sinh^2(a+bx)}{3b} - \frac{d\sinh^3(a+bx)}{9b^2} - \frac{2}{3}\int (c+dx)\sinh(a+bx)$$
$$= -\frac{2(c+dx)\cosh(a+bx)}{3b} + \frac{(c+dx)\cosh(a+bx)\sinh^2(a+bx)}{3b} - \frac{d\sinh^3(a+bx)}{9b^2}$$
$$= -\frac{2(c+dx)\cosh(a+bx)}{3b} + \frac{2d\sinh(a+bx)}{3b^2} + \frac{(c+dx)\cosh(a+bx)\sinh^2(a+bx)}{3b}$$

Mathematica [**A**] time = 0.16, size = 59, normalized size = 0.79

$$\frac{-27b(c+dx)\cosh(a+bx) + 3b(c+dx)\cosh(3(a+bx)) + d(27\sinh(a+bx) - \sinh(3(a+bx)))}{36b^2}$$

Antiderivative was successfully verified.

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

```
[Out] (-27*b*(c + d*x)*Cosh[a + b*x] + 3*b*(c + d*x)*Cosh[3*(a + b*x)] + d*(27*Si
nh[a + b*x] - Sinh[3*(a + b*x)]))/(36*b^2)
```

fricas [**A**] time = 0.59, size = 97, normalized size = 1.29

$$\frac{3\,(bdx+bc)\cosh\left(bx+a\right)^3 + 9\,(bdx+bc)\cosh\left(bx+a\right)\sinh\left(bx+a\right)^2 - d\sinh\left(bx+a\right)^3 - 27\,(bdx+bc)\cosh\left(bx\right.}{36\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/36*(3*(b*d*x + b*c)*cosh(b*x + a)^3 + 9*(b*d*x + b*c)*cosh(b*x + a)*sinh(
b*x + a)^2 - d*sinh(b*x + a)^3 - 27*(b*d*x + b*c)*cosh(b*x + a) - 3*(d*cosh
(b*x + a)^2 - 9*d)*sinh(b*x + a))/b^2
```

giac [**A**] time = 0.20, size = 98, normalized size = 1.31

$$\frac{(3\,bdx+3\,bc-d)e^{(3\,bx+3\,a)}}{72\,b^2} - \frac{3\,(bdx+bc-d)e^{(bx+a)}}{8\,b^2} - \frac{3\,(bdx+bc+d)e^{(-bx-a)}}{8\,b^2} + \frac{(3\,bdx+3\,bc+d)e^{(-3\,bx-3\,a)}}{72\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/72*(3*b*d*x + 3*b*c - d)*e^(3*b*x + 3*a)/b^2 - 3/8*(b*d*x + b*c - d)*e^(b
*x + a)/b^2 - 3/8*(b*d*x + b*c + d)*e^(-b*x - a)/b^2 + 1/72*(3*b*d*x + 3*b*
c + d)*e^(-3*b*x - 3*a)/b^2
```

maple [A] time = 0.02, size = 109, normalized size = 1.45

$$\frac{\frac{d\left(-\frac{2(bx+a)\cosh(bx+a)}{3}+\frac{(bx+a)\cosh(bx+a)\left(\sinh^2(bx+a)\right)}{3}+\frac{2\sinh(bx+a)}{3}-\frac{\left(\sinh^3(bx+a)\right)}{9}\right)}{b}-\frac{da\left(-\frac{2}{3}+\frac{\left(\sinh^2(bx+a)\right)}{3}\right)\cosh(bx+a)}{b}+c\left(-\frac{2}{3}+\frac{\left(\sinh^2(bx+a)\right)}{3}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b*(1/b*d*(-2/3*(b*x+a)*cosh(b*x+a)+1/3*(b*x+a)*cosh(b*x+a)*sinh(b*x+a)^2+
2/3*sinh(b*x+a)-1/9*sinh(b*x+a)^3)-1/b*d*a*(-2/3+1/3*sinh(b*x+a)^2)*cosh(b*
x+a)+c*(-2/3+1/3*sinh(b*x+a)^2)*cosh(b*x+a))
```

maxima [B] time = 0.45, size = 141, normalized size = 1.88

$$\frac{1}{72}\,d\left(\frac{\left(3\,bxe^{(3\,a)}-e^{(3\,a)}\right)e^{(3\,bx)}}{b^2}-\frac{27\,(bxe^{a}-e^{a})e^{(bx)}}{b^2}-\frac{27\,(bx+1)e^{(-bx-a)}}{b^2}+\frac{(3\,bx+1)e^{(-3\,bx-3\,a)}}{b^2}\right)+\frac{1}{24}\,c\left(\frac{e^{(3\,bx+3\,a)}}{b}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/72*d*((3*b*x*e^(3*a) - e^(3*a))*e^(3*b*x)/b^2 - 27*(b*x*e^a - e^a)*e^(b*x
)/b^2 - 27*(b*x + 1)*e^(-b*x - a)/b^2 + (3*b*x + 1)*e^(-3*b*x - 3*a)/b^2) +
 1/24*c*(e^(3*b*x + 3*a)/b - 9*e^(b*x + a)/b - 9*e^(-b*x - a)/b + e^(-3*b*x
 - 3*a)/b)
```

mupad [B] time = 0.16, size = 79, normalized size = 1.05

$$\frac{7\,d\sinh\left(a+b\,x\right)}{9\,b^2}-\frac{c\cosh\left(a+b\,x\right)-\frac{c\cosh(a+b\,x)^3}{3}+d\,x\cosh\left(a+b\,x\right)-\frac{d\,x\cosh(a+b\,x)^3}{3}}{b}-\frac{d\cosh\left(a+b\,x\right)^2\sinh\left(a+\right.}{9\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (7*d*sinh(a + b*x))/(9*b^2) - (c*cosh(a + b*x) - (c*cosh(a + b*x)^3)/3 + d*
x*cosh(a + b*x) - (d*x*cosh(a + b*x)^3)/3)/b - (d*cosh(a + b*x)^2*sinh(a +
b*x))/(9*b^2)
```

sympy [A] time = 0.93, size = 126, normalized size = 1.68

$$\begin{cases}\frac{c\sinh^2(a+bx)\cosh(a+bx)}{b}-\frac{2c\cosh^3(a+bx)}{3b}+\frac{dx\sinh^2(a+bx)\cosh(a+bx)}{b}-\frac{2dx\cosh^3(a+bx)}{3b}-\frac{7d\sinh^3(a+bx)}{9b^2}+\frac{2d\sinh(a+bx)\cosh^2(}{3b^2}\\\left(cx+\frac{dx^2}{2}\right)\sinh^3(a)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((c*sinh(a + b*x)**2*cosh(a + b*x)/b - 2*c*cosh(a + b*x)**3/(3*b)
+ d*x*sinh(a + b*x)**2*cosh(a + b*x)/b - 2*d*x*cosh(a + b*x)**3/(3*b) - 7*d
*sinh(a + b*x)**3/(9*b**2) + 2*d*sinh(a + b*x)*cosh(a + b*x)**2/(3*b**2), N
e(b, 0)), ((c*x + d*x**2/2)*sinh(a)**3, True))
```

3.20 $\int \frac{\sinh^3(a+bx)}{c+dx}\,dx$

Optimal. Leaf size=121

$$\frac{\sinh\left(3a-\frac{3bc}{d}\right)\text{Chi}\left(\frac{3bc}{d}+3bx\right)}{4d}-\frac{3\sinh\left(a-\frac{bc}{d}\right)\text{Chi}\left(\frac{bc}{d}+bx\right)}{4d}-\frac{3\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\frac{bc}{d}+bx\right)}{4d}+\frac{\cosh\left(3a-\frac{3bc}{d}\right)}{4}$$

```
[Out] -3/4*cosh(a-b*c/d)*Shi(b*c/d+b*x)/d+1/4*cosh(3*a-3*b*c/d)*Shi(3*b*c/d+3*b*x
)/d+1/4*Chi(3*b*c/d+3*b*x)*sinh(3*a-3*b*c/d)/d-3/4*Chi(b*c/d+b*x)*sinh(a-b*
c/d)/d
```

Rubi [A] time = 0.28, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3312, 3303, 3298, 3301}

$$\frac{\sinh\left(3a-\frac{3bc}{d}\right)\text{Chi}\left(\frac{3bc}{d}+3bx\right)}{4d}-\frac{3\sinh\left(a-\frac{bc}{d}\right)\text{Chi}\left(\frac{bc}{d}+bx\right)}{4d}-\frac{3\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\frac{bc}{d}+bx\right)}{4d}+\frac{\cosh\left(3a-\frac{3bc}{d}\right)}{4}$$

Antiderivative was successfully verified.

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

```
[Out] (CoshIntegral[(3*b*c)/d + 3*b*x]*Sinh[3*a - (3*b*c)/d])/(4*d) - (3*CoshInte
gral[(b*c)/d + b*x]*Sinh[a - (b*c)/d])/(4*d) - (3*Cosh[a - (b*c)/d]*SinhInt
egral[(b*c)/d + b*x])/(4*d) + (Cosh[3*a - (3*b*c)/d]*SinhIntegral[(3*b*c)/d
 + 3*b*x])/(4*d)
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

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

```
NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}\int \frac{\sinh^3(a+bx)}{c+dx}\,dx &= i\int \left(\frac{3i\sinh(a+bx)}{4(c+dx)}-\frac{i\sinh(3a+3bx)}{4(c+dx)}\right)dx\\ &= \frac{1}{4}\int \frac{\sinh(3a+3bx)}{c+dx}\,dx-\frac{3}{4}\int \frac{\sinh(a+bx)}{c+dx}\,dx\\ &= \frac{1}{4}\cosh\left(3a-\frac{3bc}{d}\right)\int \frac{\sinh\left(\frac{3bc}{d}+3bx\right)}{c+dx}\,dx-\frac{1}{4}\left(3\cosh\left(a-\frac{bc}{d}\right)\right)\int \frac{\sinh\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx+\frac{1}{4}\\ &= \frac{\text{Chi}\left(\frac{3bc}{d}+3bx\right)\sinh\left(3a-\frac{3bc}{d}\right)}{4d}-\frac{3\text{Chi}\left(\frac{bc}{d}+bx\right)\sinh\left(a-\frac{bc}{d}\right)}{4d}-\frac{3\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\frac{bc}{d}\right.}{4d}\end{aligned}$$

Mathematica [A] time = 0.19, size = 102, normalized size = 0.84

$$\frac{\sinh\left(3a-\frac{3bc}{d}\right)\text{Chi}\left(\frac{3b(c+dx)}{d}\right)-3\sinh\left(a-\frac{bc}{d}\right)\text{Chi}\left(b\left(\frac{c}{d}+x\right)\right)-3\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(b\left(\frac{c}{d}+x\right)\right)+\cosh\left(3a-\frac{3bc}{d}\right.}{4d}$$

Antiderivative was successfully verified.

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

```
[Out] (CoshIntegral[(3*b*(c + d*x))/d]*Sinh[3*a - (3*b*c)/d] - 3*CoshIntegral[b*(
c/d + x)]*Sinh[a - (b*c)/d] - 3*Cosh[a - (b*c)/d]*SinhIntegral[b*(c/d + x)]
 + Cosh[3*a - (3*b*c)/d]*SinhIntegral[(3*b*(c + d*x))/d])/(4*d)
```

fricas [A] time = 0.77, size = 188, normalized size = 1.55

$$-\frac{3\left(\text{Ei}\left(\frac{bdx+bc}{d}\right)-\text{Ei}\left(-\frac{bdx+bc}{d}\right)\right)\cosh\left(-\frac{bc-ad}{d}\right)-\left(\text{Ei}\left(\frac{3\,(bdx+bc)}{d}\right)-\text{Ei}\left(-\frac{3\,(bdx+bc)}{d}\right)\right)\cosh\left(-\frac{3\,(bc-ad)}{d}\right)+3\left(\text{Ei}\left(\frac{bdx+bc}{d}\right.\right.}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8*(3*(Ei((b*d*x + b*c)/d) - Ei(-(b*d*x + b*c)/d))*cosh(-(b*c - a*d)/d) -
 (Ei(3*(b*d*x + b*c)/d) - Ei(-3*(b*d*x + b*c)/d))*cosh(-3*(b*c - a*d)/d) +
3*(Ei((b*d*x + b*c)/d) + Ei(-(b*d*x + b*c)/d))*sinh(-(b*c - a*d)/d) - (Ei(3
*(b*d*x + b*c)/d) + Ei(-3*(b*d*x + b*c)/d))*sinh(-3*(b*c - a*d)/d))/d
```

giac [A] time = 0.19, size = 113, normalized size = 0.93

$$\frac{\mathrm{Ei}\left(\frac{3\,(bdx+bc)}{d}\right)e^{\left(3\,a-\frac{3\,bc}{d}\right)} - 3\,\mathrm{Ei}\left(\frac{bdx+bc}{d}\right)e^{\left(a-\frac{bc}{d}\right)} + 3\,\mathrm{Ei}\left(-\frac{bdx+bc}{d}\right)e^{\left(-a+\frac{bc}{d}\right)} - \mathrm{Ei}\left(-\frac{3\,(bdx+bc)}{d}\right)e^{\left(-3\,a+\frac{3\,bc}{d}\right)}}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(Ei(3*(b*d*x + b*c)/d)*e^(3*a - 3*b*c/d) - 3*Ei((b*d*x + b*c)/d)*e^(a -
 b*c/d) + 3*Ei(-(b*d*x + b*c)/d)*e^(-a + b*c/d) - Ei(-3*(b*d*x + b*c)/d)*e^
(-3*a + 3*b*c/d))/d
```

maple [A] time = 0.15, size = 166, normalized size = 1.37

$$\frac{\mathrm{e}^{-\frac{3(da-cb)}{d}}\,\mathrm{Ei}\left(1, 3bx+3a-\frac{3(da-cb)}{d}\right)}{8d} - \frac{3\,\mathrm{e}^{-\frac{da-cb}{d}}\,\mathrm{Ei}\left(1, bx+a-\frac{da-cb}{d}\right)}{8d} + \frac{3\,\mathrm{e}^{\frac{da-cb}{d}}\,\mathrm{Ei}\left(1, -bx-a-\frac{-da+cb}{d}\right)}{8d} - \frac{\mathrm{e}^{\frac{3da-3cb}{d}}\,\mathrm{Ei}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8/d*exp(-3*(a*d-b*c)/d)*Ei(1,3*b*x+3*a-3*(a*d-b*c)/d)-3/8/d*exp(-(a*d-b*c
)/d)*Ei(1,b*x+a-(a*d-b*c)/d)+3/8/d*exp((a*d-b*c)/d)*Ei(1,-b*x-a-(-a*d+b*c)/
d)-1/8/d*exp(3*(a*d-b*c)/d)*Ei(1,-3*b*x-3*a-3*(-a*d+b*c)/d)
```

maxima [A] time = 0.46, size = 117, normalized size = 0.97

$$\frac{e^{\left(-3\,a+\frac{3\,bc}{d}\right)}E_1\left(\frac{3\,(dx+c)b}{d}\right)}{8\,d} - \frac{3\,e^{\left(-a+\frac{bc}{d}\right)}E_1\left(\frac{(dx+c)b}{d}\right)}{8\,d} + \frac{3\,e^{\left(a-\frac{bc}{d}\right)}E_1\left(-\frac{(dx+c)b}{d}\right)}{8\,d} - \frac{e^{\left(3\,a-\frac{3\,bc}{d}\right)}E_1\left(-\frac{3\,(dx+c)b}{d}\right)}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*e^(-3*a + 3*b*c/d)*exp_integral_e(1, 3*(d*x + c)*b/d)/d - 3/8*e^(-a + b
*c/d)*exp_integral_e(1, (d*x + c)*b/d)/d + 3/8*e^(a - b*c/d)*exp_integral_e
(1, -(d*x + c)*b/d)/d - 1/8*e^(3*a - 3*b*c/d)*exp_integral_e(1, -3*(d*x + c
)*b/d)/d
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.21 $\int \frac{\sinh^3(a+bx)}{(c+dx)^2} dx$

Optimal. Leaf size=145

$$-\frac{3b\cosh\left(a-\frac{bc}{d}\right)\text{Chi}\left(\frac{bc}{d}+bx\right)}{4d^2}+\frac{3b\cosh\left(3a-\frac{3bc}{d}\right)\text{Chi}\left(\frac{3bc}{d}+3bx\right)}{4d^2}-\frac{3b\sinh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\frac{bc}{d}+bx\right)}{4d^2}+\frac{3b\sinh\left(\right.}{}$$

```
[Out] 3/4*b*Chi(3*b*c/d+3*b*x)*cosh(3*a-3*b*c/d)/d^2-3/4*b*Chi(b*c/d+b*x)*cosh(a-
b*c/d)/d^2+3/4*b*Shi(3*b*c/d+3*b*x)*sinh(3*a-3*b*c/d)/d^2-3/4*b*Shi(b*c/d+b
*x)*sinh(a-b*c/d)/d^2-sinh(b*x+a)^3/d/(d*x+c)
```

Rubi [A] time = 0.26, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3313, 3303, 3298, 3301}

$$-\frac{3b\cosh\left(a-\frac{bc}{d}\right)\text{Chi}\left(\frac{bc}{d}+bx\right)}{4d^2}+\frac{3b\cosh\left(3a-\frac{3bc}{d}\right)\text{Chi}\left(\frac{3bc}{d}+3bx\right)}{4d^2}-\frac{3b\sinh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\frac{bc}{d}+bx\right)}{4d^2}+\frac{3b\sinh\left(\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (-3*b*Cosh[a - (b*c)/d]*CoshIntegral[(b*c)/d + b*x])/(4*d^2) + (3*b*Cosh[3*
a - (3*b*c)/d]*CoshIntegral[(3*b*c)/d + 3*b*x])/(4*d^2) - Sinh[a + b*x]^3/(
d*(c + d*x)) - (3*b*Sinh[a - (b*c)/d]*SinhIntegral[(b*c)/d + b*x])/(4*d^2)
+ (3*b*Sinh[3*a - (3*b*c)/d]*SinhIntegral[(3*b*c)/d + 3*b*x])/(4*d^2)
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

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

```
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rubi steps

$$\int \frac{\sinh^3(a+bx)}{(c+dx)^2}\,dx = -\frac{\sinh^3(a+bx)}{d(c+dx)} - \frac{(3b)\int \left(\frac{\cosh(a+bx)}{4(c+dx)} - \frac{\cosh(3a+3bx)}{4(c+dx)}\right)dx}{d}$$
$$= -\frac{\sinh^3(a+bx)}{d(c+dx)} - \frac{(3b)\int \frac{\cosh(a+bx)}{c+dx}\,dx}{4d} + \frac{(3b)\int \frac{\cosh(3a+3bx)}{c+dx}\,dx}{4d}$$
$$= -\frac{\sinh^3(a+bx)}{d(c+dx)} + \frac{\left(3b\cosh\left(3a-\frac{3bc}{d}\right)\right)\int \frac{\cosh\left(\frac{3bc}{d}+3bx\right)}{c+dx}\,dx}{4d} - \frac{\left(3b\cosh\left(a-\frac{bc}{d}\right)\right)\int \frac{\cosh\left(\frac{bc}{d}+b
x\right)}{c+dx}}{4d}$$
$$= -\frac{3b\cosh\left(a-\frac{bc}{d}\right)\mathrm{Chi}\left(\frac{bc}{d}+bx\right)}{4d^2} + \frac{3b\cosh\left(3a-\frac{3bc}{d}\right)\mathrm{Chi}\left(\frac{3bc}{d}+3bx\right)}{4d^2} - \frac{\sinh^3(a+bx)}{d(c+dx)} -$$

Mathematica [A] time = 0.97, size = 160, normalized size = 1.10

$$\frac{6b(c+dx)\left(-\cosh\left(a-\frac{bc}{d}\right)\mathrm{Chi}\left(b\left(\frac{c}{d}+x\right)\right)+\cosh\left(3a-\frac{3bc}{d}\right)\mathrm{Chi}\left(\frac{3b(c+dx)}{d}\right)-\sinh\left(a-\frac{bc}{d}\right)\mathrm{Shi}\left(b\left(\frac{c}{d}+x\right)\right)+\sin}{8}$$

Antiderivative was successfully verified.

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

```
[Out] (6*d*Cosh[b*x]*Sinh[a] - 2*d*Cosh[3*b*x]*Sinh[3*a] + 6*d*Cosh[a]*Sinh[b*x]
- 2*d*Cosh[3*a]*Sinh[3*b*x] + 6*b*(c + d*x)*(-(Cosh[a - (b*c)/d]*CoshIntegr
al[b*(c/d + x)]) + Cosh[3*a - (3*b*c)/d]*CoshIntegral[(3*b*(c + d*x))/d] -
Sinh[a - (b*c)/d]*SinhIntegral[b*(c/d + x)] + Sinh[3*a - (3*b*c)/d]*SinhInt
egral[(3*b*(c + d*x))/d]))/(8*d^2*(c + d*x))
```

fricas [B] time = 0.77, size = 301, normalized size = 2.08

$$-\frac{2\,d\sinh\left(bx+a\right)^3+3\left((bdx+bc)\mathrm{Ei}\left(\frac{bdx+bc}{d}\right)+(bdx+bc)\mathrm{Ei}\left(-\frac{bdx+bc}{d}\right)\right)\cosh\left(-\frac{bc-ad}{d}\right)-3\left((bdx+bc)\mathrm{Ei}\left(\frac{3\,(bdx+}{d}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8*(2*d*sinh(b*x + a)^3 + 3*((b*d*x + b*c)*Ei((b*d*x + b*c)/d) + (b*d*x +
 b*c)*Ei(-(b*d*x + b*c)/d))*cosh(-(b*c - a*d)/d) - 3*((b*d*x + b*c)*Ei(3*(b
*d*x + b*c)/d) + (b*d*x + b*c)*Ei(-3*(b*d*x + b*c)/d))*cosh(-3*(b*c - a*d)/
d) + 6*(d*cosh(b*x + a)^2 - d)*sinh(b*x + a) + 3*((b*d*x + b*c)*Ei((b*d*x +
 b*c)/d) - (b*d*x + b*c)*Ei(-(b*d*x + b*c)/d))*sinh(-(b*c - a*d)/d) - 3*((b
*d*x + b*c)*Ei(3*(b*d*x + b*c)/d) - (b*d*x + b*c)*Ei(-3*(b*d*x + b*c)/d))*s
inh(-3*(b*c - a*d)/d))/(d^3*x + c*d^2)
```

giac [B] time = 0.30, size = 1076, normalized size = 7.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
b - b*c/(d*x + c) + a*d/(d*x + c))/d) + b^2*d*e^(-3*(d*x + c)*(b - b*c/(d*x
 + c) + a*d/(d*x + c))/d))*d^2/(((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x +
c))*d^4 + b*c*d^4 - a*d^5)*b)
```

maple [A] time = 0.16, size = 271, normalized size = 1.87

$$\frac{b\,e^{-3bx-3a}}{8\,(bdx+cb)\,d}-\frac{3b\,e^{-\frac{3(da-cb)}{d}}\,\mathrm{Ei}\left(1,3bx+3a-\frac{3(da-cb)}{d}\right)}{8d^2}-\frac{3b\,e^{-bx-a}}{8d\,(bdx+cb)}+\frac{3b\,e^{-\frac{da-cb}{d}}\,\mathrm{Ei}\left(1,bx+a-\frac{da-cb}{d}\right)}{8d^2}+\frac{3b\,e^{bx+}}{8d^2\left(\frac{bc}{d}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*b*exp(-3*b*x-3*a)/(b*d*x+b*c)/d-3/8*b/d^2*exp(-3*(a*d-b*c)/d)*Ei(1,3*b*
x+3*a-3*(a*d-b*c)/d)-3/8*b*exp(-b*x-a)/d/(b*d*x+b*c)+3/8*b/d^2*exp(-(a*d-b*
c)/d)*Ei(1,b*x+a-(a*d-b*c)/d)+3/8*b/d^2*exp(b*x+a)/(b*c/d+b*x)+3/8*b/d^2*ex
p((a*d-b*c)/d)*Ei(1,-b*x-a-(-a*d+b*c)/d)-1/8*b/d^2*exp(3*b*x+3*a)/(b*c/d+b*
x)-3/8*b/d^2*exp(3*(a*d-b*c)/d)*Ei(1,-3*b*x-3*a-3*(-a*d+b*c)/d)
```

maxima [A] time = 0.58, size = 145, normalized size = 1.00

$$\frac{e^{\left(-3\,a+\frac{3\,bc}{d}\right)}E_2\left(\frac{3\,(dx+c)b}{d}\right)}{8\,(dx+c)d}-\frac{3\,e^{\left(-a+\frac{bc}{d}\right)}E_2\left(\frac{(dx+c)b}{d}\right)}{8\,(dx+c)d}+\frac{3\,e^{\left(a-\frac{bc}{d}\right)}E_2\left(-\frac{(dx+c)b}{d}\right)}{8\,(dx+c)d}-\frac{e^{\left(3\,a-\frac{3\,bc}{d}\right)}E_2\left(-\frac{3\,(dx+c)b}{d}\right)}{8\,(dx+c)d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*e^(-3*a + 3*b*c/d)*exp_integral_e(2, 3*(d*x + c)*b/d)/((d*x + c)*d) - 3
/8*e^(-a + b*c/d)*exp_integral_e(2, (d*x + c)*b/d)/((d*x + c)*d) + 3/8*e^(a
 - b*c/d)*exp_integral_e(2, -(d*x + c)*b/d)/((d*x + c)*d) - 1/8*e^(3*a - 3*
b*c/d)*exp_integral_e(2, -3*(d*x + c)*b/d)/((d*x + c)*d)
```

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

$$\int \frac{\sinh\left(a+b\,x\right)^3}{\left(c+d\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(a + b*x)^3/(c + d*x)^2, x)
```

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

$$\int \frac{\sinh^3(a+bx)}{(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**3/(d*x+c)**2,x)
```

```
[Out] Integral(sinh(a + b*x)**3/(c + d*x)**2, x)
```

3.22 $\int \frac{\sinh^3(a+bx)}{(c+dx)^3}\,dx$

Optimal. Leaf size=184

$$\frac{9b^2\sinh\left(3a-\frac{3bc}{d}\right)\text{Chi}\left(\frac{3bc}{d}+3bx\right)}{8d^3}-\frac{3b^2\sinh\left(a-\frac{bc}{d}\right)\text{Chi}\left(\frac{bc}{d}+bx\right)}{8d^3}-\frac{3b^2\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\frac{bc}{d}+bx\right)}{8d^3}+\frac{9b^2\cosh}{}$$

```
[Out] -3/8*b^2*cosh(a-b*c/d)*Shi(b*c/d+b*x)/d^3+9/8*b^2*cosh(3*a-3*b*c/d)*Shi(3*b
*c/d+3*b*x)/d^3+9/8*b^2*Chi(3*b*c/d+3*b*x)*sinh(3*a-3*b*c/d)/d^3-3/8*b^2*Ch
i(b*c/d+b*x)*sinh(a-b*c/d)/d^3-3/2*b*cosh(b*x+a)*sinh(b*x+a)^2/d^2/(d*x+c)-
1/2*sinh(b*x+a)^3/d/(d*x+c)^2
```

Rubi [A] time = 0.42, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3314, 3303, 3298, 3301, 3312}

$$\frac{9b^2\sinh\left(3a-\frac{3bc}{d}\right)\text{Chi}\left(\frac{3bc}{d}+3bx\right)}{8d^3}-\frac{3b^2\sinh\left(a-\frac{bc}{d}\right)\text{Chi}\left(\frac{bc}{d}+bx\right)}{8d^3}-\frac{3b^2\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(\frac{bc}{d}+bx\right)}{8d^3}+\frac{9b^2\cosh}{}$$

Antiderivative was successfully verified.

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

```
[Out] (9*b^2*CoshIntegral[(3*b*c)/d + 3*b*x]*Sinh[3*a - (3*b*c)/d])/(8*d^3) - (3*
b^2*CoshIntegral[(b*c)/d + b*x]*Sinh[a - (b*c)/d])/(8*d^3) - (3*b*Cosh[a +
b*x]*Sinh[a + b*x]^2)/(2*d^2*(c + d*x)) - Sinh[a + b*x]^3/(2*d*(c + d*x)^2)
 - (3*b^2*Cosh[a - (b*c)/d]*SinhIntegral[(b*c)/d + b*x])/(8*d^3) + (9*b^2*C
osh[3*a - (3*b*c)/d]*SinhIntegral[(3*b*c)/d + 3*b*x])/(8*d^3)
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

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

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

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

Rubi steps

$$\int \frac{\sinh^3(a+bx)}{(c+dx)^3}\,dx = -\frac{3b\cosh(a+bx)\sinh^2(a+bx)}{2d^2(c+dx)} - \frac{\sinh^3(a+bx)}{2d(c+dx)^2} + \frac{\left(3b^2\right)\int \frac{\sinh(a+bx)}{c+dx}\,dx}{d^2} + \frac{\left(9b^2\right)\int \frac{\sinh^3(\ldots}{c+\ldots}}{2d^2}$$

$$= -\frac{3b\cosh(a+bx)\sinh^2(a+bx)}{2d^2(c+dx)} - \frac{\sinh^3(a+bx)}{2d(c+dx)^2} + \frac{\left(9ib^2\right)\int \left(\frac{3i\sinh(a+bx)}{4(c+dx)} - \frac{i\sinh(3a+3bx)}{4(c+dx)}\right)\ldots}{2d^2}$$

$$= \frac{3b^2\text{Chi}\left(\frac{bc}{d}+bx\right)\sinh\left(a-\frac{bc}{d}\right)}{d^3} - \frac{3b\cosh(a+bx)\sinh^2(a+bx)}{2d^2(c+dx)} - \frac{\sinh^3(a+bx)}{2d(c+dx)^2} + \frac{3b^2\ldots}{\ldots}$$

$$= \frac{3b^2\text{Chi}\left(\frac{bc}{d}+bx\right)\sinh\left(a-\frac{bc}{d}\right)}{d^3} - \frac{3b\cosh(a+bx)\sinh^2(a+bx)}{2d^2(c+dx)} - \frac{\sinh^3(a+bx)}{2d(c+dx)^2} + \frac{3b^2\ldots}{\ldots}$$

$$= \frac{9b^2\text{Chi}\left(\frac{3bc}{d}+3bx\right)\sinh\left(3a-\frac{3bc}{d}\right)}{8d^3} - \frac{3b^2\text{Chi}\left(\frac{bc}{d}+bx\right)\sinh\left(a-\frac{bc}{d}\right)}{8d^3} - \frac{3b\cosh(a+bx)\ldots}{2d^2(c+\ldots}$$

Mathematica [A] time = 0.69, size = 220, normalized size = 1.20

$$\frac{6b^2(c+dx)^2\left(3\sinh\left(3a-\frac{3bc}{d}\right)\text{Chi}\left(\frac{3b(c+dx)}{d}\right)-\sinh\left(a-\frac{bc}{d}\right)\text{Chi}\left(b\left(\frac{c}{d}+x\right)\right)-\cosh\left(a-\frac{bc}{d}\right)\text{Shi}\left(b\left(\frac{c}{d}+x\right)\right)+3\ldots\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (6*d*Cosh[b*x]*(b*(c + d*x)*Cosh[a] + d*Sinh[a]) - 2*d*Cosh[3*b*x]*(3*b*(c
+ d*x)*Cosh[3*a] + d*Sinh[3*a]) + 6*d*(d*Cosh[a] + b*(c + d*x)*Sinh[a])*Sin
h[b*x] - 2*d*(d*Cosh[3*a] + 3*b*(c + d*x)*Sinh[3*a])*Sinh[3*b*x] + 6*b^2*(c
 + d*x)^2*(3*CoshIntegral[(3*b*(c + d*x))/d]*Sinh[3*a - (3*b*c)/d] - CoshIn
tegral[b*(c/d + x)]*Sinh[a - (b*c)/d] - Cosh[a - (b*c)/d]*SinhIntegral[b*(c
/d + x)] + 3*Cosh[3*a - (3*b*c)/d]*SinhIntegral[(3*b*(c + d*x))/d]))/(16*d^
3*(c + d*x)^2)
```

fricas [B] time = 0.72, size = 529, normalized size = 2.88

$$-\frac{2\,d^2\sinh\left(bx+a\right)^3+6\left(bd^2x+bcd\right)\cosh\left(bx+a\right)^3+18\left(bd^2x+bcd\right)\cosh\left(bx+a\right)\sinh\left(bx+a\right)^2-6\left(bd^2x+b\ldots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/16*(2*d^2*sinh(b*x + a)^3 + 6*(b*d^2*x + b*c*d)*cosh(b*x + a)^3 + 18*(b*
d^2*x + b*c*d)*cosh(b*x + a)*sinh(b*x + a)^2 - 6*(b*d^2*x + b*c*d)*cosh(b*x
 + a) + 3*((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*Ei((b*d*x + b*c)/d) - (b^2
*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*Ei(-(b*d*x + b*c)/d))*cosh(-(b*c - a*d)/d
) - 9*((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*Ei(3*(b*d*x + b*c)/d) - (b^2*d
^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*Ei(-3*(b*d*x + b*c)/d))*cosh(-3*(b*c - a*d)
/d) + 6*(d^2*cosh(b*x + a)^2 - d^2)*sinh(b*x + a) + 3*((b^2*d^2*x^2 + 2*b^2
*c*d*x + b^2*c^2)*Ei((b*d*x + b*c)/d) + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^
2)*Ei(-(b*d*x + b*c)/d))*sinh(-(b*c - a*d)/d) - 9*((b^2*d^2*x^2 + 2*b^2*c*d
*x + b^2*c^2)*Ei(3*(b*d*x + b*c)/d) + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)
*Ei(-3*(b*d*x + b*c)/d))*sinh(-3*(b*c - a*d)/d))/(d^5*x^2 + 2*c*d^4*x + c^2
*d^3)
```

giac [B] time = 0.48, size = 601, normalized size = 3.27

$$\frac{9\,b^2d^2x^2\text{Ei}\left(\frac{3\,(bdx+bc)}{d}\right)e^{\left(3\,a-\frac{3\,bc}{d}\right)}-3\,b^2d^2x^2\text{Ei}\left(\frac{bdx+bc}{d}\right)e^{\left(a-\frac{bc}{d}\right)}+3\,b^2d^2x^2\text{Ei}\left(-\frac{bdx+bc}{d}\right)e^{\left(-a+\frac{bc}{d}\right)}-9\,b^2d^2x^2\text{Ei}\left(-\frac{3\,(bdx+\ldots}{d}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/16*(9*b^2*d^2*x^2*Ei(3*(b*d*x + b*c)/d)*e^(3*a - 3*b*c/d) - 3*b^2*d^2*x^2
*Ei((b*d*x + b*c)/d)*e^(a - b*c/d) + 3*b^2*d^2*x^2*Ei(-(b*d*x + b*c)/d)*e^(
-a + b*c/d) - 9*b^2*d^2*x^2*Ei(-3*(b*d*x + b*c)/d)*e^(-3*a + 3*b*c/d) + 18*
b^2*c*d*x*Ei(3*(b*d*x + b*c)/d)*e^(3*a - 3*b*c/d) - 6*b^2*c*d*x*Ei((b*d*x +
 b*c)/d)*e^(a - b*c/d) + 6*b^2*c*d*x*Ei(-(b*d*x + b*c)/d)*e^(-a + b*c/d) -
18*b^2*c*d*x*Ei(-3*(b*d*x + b*c)/d)*e^(-3*a + 3*b*c/d) + 9*b^2*c^2*Ei(3*(b*
d*x + b*c)/d)*e^(3*a - 3*b*c/d) - 3*b^2*c^2*Ei((b*d*x + b*c)/d)*e^(a - b*c/
d) + 3*b^2*c^2*Ei(-(b*d*x + b*c)/d)*e^(-a + b*c/d) - 9*b^2*c^2*Ei(-3*(b*d*x
 + b*c)/d)*e^(-3*a + 3*b*c/d) - 3*b*d^2*x*e^(3*b*x + 3*a) + 3*b*d^2*x*e^(b*
x + a) + 3*b*d^2*x*e^(-b*x - a) - 3*b*d^2*x*e^(-3*b*x - 3*a) - 3*b*c*d*e^(3
*b*x + 3*a) + 3*b*c*d*e^(b*x + a) + 3*b*c*d*e^(-b*x - a) - 3*b*c*d*e^(-3*b*
x - 3*a) - d^2*e^(3*b*x + 3*a) + 3*d^2*e^(b*x + a) - 3*d^2*e^(-b*x - a) + d
^2*e^(-3*b*x - 3*a))/(d^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

maple [B] time = 0.18, size = 562, normalized size = 3.05

$$-\frac{3b^3\mathrm{e}^{-3bx-3a}x}{16d\left(b^2d^2x^2+2b^2cdx+c^2b^2\right)}-\frac{3b^3\mathrm{e}^{-3bx-3a}c}{16d^2\left(b^2d^2x^2+2b^2cdx+c^2b^2\right)}+\frac{b^2\mathrm{e}^{-3bx-3a}}{16d\left(b^2d^2x^2+2b^2cdx+c^2b^2\right)}+\frac{9b^2\mathrm{e}^{-\frac{3(da-cb)}{d}}\,\mathrm{Ei}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -3/16*b^3*exp(-3*b*x-3*a)/d/(b^2*d^2*x^2+2*b^2*c*d*x+b^2*c^2)*x-3/16*b^3*ex
p(-3*b*x-3*a)/d^2/(b^2*d^2*x^2+2*b^2*c*d*x+b^2*c^2)*c+1/16*b^2*exp(-3*b*x-3
*a)/d/(b^2*d^2*x^2+2*b^2*c*d*x+b^2*c^2)+9/16*b^2/d^3*exp(-3*(a*d-b*c)/d)*Ei
(1,3*b*x+3*a-3*(a*d-b*c)/d)+3/16*b^3*exp(-b*x-a)/d/(b^2*d^2*x^2+2*b^2*c*d*x
+b^2*c^2)*x+3/16*b^3*exp(-b*x-a)/d^2/(b^2*d^2*x^2+2*b^2*c*d*x+b^2*c^2)*c-3/
16*b^2*exp(-b*x-a)/d/(b^2*d^2*x^2+2*b^2*c*d*x+b^2*c^2)-3/16*b^2/d^3*exp(-(a
*d-b*c)/d)*Ei(1,b*x+a-(a*d-b*c)/d)+3/16*b^2/d^3*exp(b*x+a)/(b*c/d+b*x)^2+3/
16*b^2/d^3*exp(b*x+a)/(b*c/d+b*x)+3/16*b^2/d^3*exp((a*d-b*c)/d)*Ei(1,-b*x-a
-(-a*d+b*c)/d)-1/16*b^2/d^3*exp(3*b*x+3*a)/(b*c/d+b*x)^2-3/16*b^2/d^3*exp(3
*b*x+3*a)/(b*c/d+b*x)-9/16*b^2/d^3*exp(3*(a*d-b*c)/d)*Ei(1,-3*b*x-3*a-3*(-a
*d+b*c)/d)
```

maxima [A] time = 0.47, size = 145, normalized size = 0.79

$$\frac{e^{\left(-3\,a+\frac{3\,bc}{d}\right)}E_{3}\left(\frac{3\,(dx+c)b}{d}\right)}{8\,(dx+c)^{2}d}-\frac{3\,e^{\left(-a+\frac{bc}{d}\right)}E_{3}\left(\frac{(dx+c)b}{d}\right)}{8\,(dx+c)^{2}d}+\frac{3\,e^{\left(a-\frac{bc}{d}\right)}E_{3}\left(-\frac{(dx+c)b}{d}\right)}{8\,(dx+c)^{2}d}-\frac{e^{\left(3\,a-\frac{3\,bc}{d}\right)}E_{3}\left(-\frac{3\,(dx+c)b}{d}\right)}{8\,(dx+c)^{2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*e^(-3*a + 3*b*c/d)*exp_integral_e(3, 3*(d*x + c)*b/d)/((d*x + c)^2*d) -
 3/8*e^(-a + b*c/d)*exp_integral_e(3, (d*x + c)*b/d)/((d*x + c)^2*d) + 3/8*
e^(a - b*c/d)*exp_integral_e(3, -(d*x + c)*b/d)/((d*x + c)^2*d) - 1/8*e^(3*
a - 3*b*c/d)*exp_integral_e(3, -3*(d*x + c)*b/d)/((d*x + c)^2*d)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.23 $\int (c+dx)^3 \operatorname{csch}(a+bx)\,dx$

Optimal. Leaf size=149

$$-\frac{6d^3\text{Li}_4\left(-e^{a+bx}\right)}{b^4}+\frac{6d^3\text{Li}_4\left(e^{a+bx}\right)}{b^4}+\frac{6d^2(c+dx)\text{Li}_3\left(-e^{a+bx}\right)}{b^3}-\frac{6d^2(c+dx)\text{Li}_3\left(e^{a+bx}\right)}{b^3}-\frac{3d(c+dx)^2\text{Li}_2\left(-e^{a+bx}\right)}{b^2}+$$

```
[Out] -2*(d*x+c)^3*arctanh(exp(b*x+a))/b-3*d*(d*x+c)^2*polylog(2,-exp(b*x+a))/b^2
+3*d*(d*x+c)^2*polylog(2,exp(b*x+a))/b^2+6*d^2*(d*x+c)*polylog(3,-exp(b*x+a
))/b^3-6*d^2*(d*x+c)*polylog(3,exp(b*x+a))/b^3-6*d^3*polylog(4,-exp(b*x+a))
/b^4+6*d^3*polylog(4,exp(b*x+a))/b^4
```

Rubi [A] time = 0.14, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4182, 2531, 6609, 2282, 6589}

$$\frac{6d^2(c+dx)\text{PolyLog}\left(3,-e^{a+bx}\right)}{b^3}-\frac{6d^2(c+dx)\text{PolyLog}\left(3,e^{a+bx}\right)}{b^3}-\frac{3d(c+dx)^2\text{PolyLog}\left(2,-e^{a+bx}\right)}{b^2}+\frac{3d(c+dx)^2}{}$$

Antiderivative was successfully verified.

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

```
[Out] (-2*(c + d*x)^3*ArcTanh[E^(a + b*x)])/b - (3*d*(c + d*x)^2*PolyLog[2, -E^(a
 + b*x)])/b^2 + (3*d*(c + d*x)^2*PolyLog[2, E^(a + b*x)])/b^2 + (6*d^2*(c +
 d*x)*PolyLog[3, -E^(a + b*x)])/b^3 - (6*d^2*(c + d*x)*PolyLog[3, E^(a + b*
x)])/b^3 - (6*d^3*PolyLog[4, -E^(a + b*x)])/b^4 + (6*d^3*PolyLog[4, E^(a +
b*x)])/b^4
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (c+dx)^3 \text{csch}(a+bx)\,dx = -\frac{2(c+dx)^3\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{(3d)\int (c+dx)^2\log\left(1-e^{a+bx}\right)\,dx}{b} +$$

$$= -\frac{2(c+dx)^3\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{3d(c+dx)^2\text{Li}_2\left(-e^{a+bx}\right)}{b^2} + \frac{3d(c+dx)^2\text{Li}_2\left(e^{a+bx}\right)}{b^2} +$$

$$= -\frac{2(c+dx)^3\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{3d(c+dx)^2\text{Li}_2\left(-e^{a+bx}\right)}{b^2} + \frac{3d(c+dx)^2\text{Li}_2\left(e^{a+bx}\right)}{b^2} +$$

$$= -\frac{2(c+dx)^3\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{3d(c+dx)^2\text{Li}_2\left(-e^{a+bx}\right)}{b^2} + \frac{3d(c+dx)^2\text{Li}_2\left(e^{a+bx}\right)}{b^2} +$$

$$= -\frac{2(c+dx)^3\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{3d(c+dx)^2\text{Li}_2\left(-e^{a+bx}\right)}{b^2} + \frac{3d(c+dx)^2\text{Li}_2\left(e^{a+bx}\right)}{b^2} +$$

Mathematica [A] time = 2.65, size = 191, normalized size = 1.28

$$-2b^3(c+dx)^3\tanh^{-1}(\sinh(a+bx)+\cosh(a+bx)) - 3d\left(b^2(c+dx)^2\text{Li}_2(-\cosh(a+bx)-\sinh(a+bx)) - 2bd(c\right.$$

Warning: Unable to verify antiderivative.

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

```
[Out] (-2*b^3*(c + d*x)^3*ArcTanh[Cosh[a + b*x] + Sinh[a + b*x]] - 3*d*(b^2*(c +
d*x)^2*PolyLog[2, -Cosh[a + b*x] - Sinh[a + b*x]] - 2*b*d*(c + d*x)*PolyLog
[3, -Cosh[a + b*x] - Sinh[a + b*x]] + 2*d^2*PolyLog[4, -Cosh[a + b*x] - Sin
h[a + b*x]]) + 3*d*(b^2*(c + d*x)^2*PolyLog[2, Cosh[a + b*x] + Sinh[a + b*x
]] - 2*b*d*(c + d*x)*PolyLog[3, Cosh[a + b*x] + Sinh[a + b*x]] + 2*d^2*Poly
Log[4, Cosh[a + b*x] + Sinh[a + b*x]]))/b^4
```

fricas [C] time = 0.47, size = 396, normalized size = 2.66

$$\frac{6\,d^3\mathrm{polylog}\left(4,\cosh\left(bx+a\right)+\sinh\left(bx+a\right)\right)-6\,d^3\mathrm{polylog}\left(4,-\cosh\left(bx+a\right)-\sinh\left(bx+a\right)\right)+3\left(b^2d^3x^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (6*d^3*polylog(4, cosh(b*x + a) + sinh(b*x + a)) - 6*d^3*polylog(4, -cosh(b
*x + a) - sinh(b*x + a)) + 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d)*dilo
g(cosh(b*x + a) + sinh(b*x + a)) - 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2
*d)*dilog(-cosh(b*x + a) - sinh(b*x + a)) - (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2
+ 3*b^3*c^2*d*x + b^3*c^3)*log(cosh(b*x + a) + sinh(b*x + a) + 1) + (b^3*c^
3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*log(cosh(b*x + a) + sinh(b*x +
 a) - 1) + (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + 3*a*b^2*c^2*d -
 3*a^2*b*c*d^2 + a^3*d^3)*log(-cosh(b*x + a) - sinh(b*x + a) + 1) - 6*(b*d^
3*x + b*c*d^2)*polylog(3, cosh(b*x + a) + sinh(b*x + a)) + 6*(b*d^3*x + b*c
*d^2)*polylog(3, -cosh(b*x + a) - sinh(b*x + a)))/b^4
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^3*csch(b*x + a), x)
```

maple [B] time = 0.11, size = 541, normalized size = 3.63

$$\frac{3d^3\,\mathrm{polylog}\left(2,\mathrm{e}^{bx+a}\right)x^2}{b^2}-\frac{6d^3\,\mathrm{polylog}\left(3,\mathrm{e}^{bx+a}\right)x}{b^3}+\frac{2d^3a^3\,\mathrm{arctanh}\left(\mathrm{e}^{bx+a}\right)}{b^4}+\frac{6c\,d^2\,\mathrm{polylog}\left(3,-\mathrm{e}^{bx+a}\right)}{b^3}-\frac{6c\,d^2\,\mathrm{p}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -6*d^3*polylog(4,-exp(b*x+a))/b^4+6*d^3*polylog(4,exp(b*x+a))/b^4+3/b^2*d^3
*polylog(2,exp(b*x+a))*x^2-6/b^3*d^3*polylog(3,exp(b*x+a))*x+2/b^4*d^3*a^3*
arctanh(exp(b*x+a))+6/b^3*c*d^2*polylog(3,-exp(b*x+a))-6/b^3*c*d^2*polylog(
3,exp(b*x+a))-3/b^2*c^2*d*polylog(2,-exp(b*x+a))+3/b^2*c^2*d*polylog(2,exp(
b*x+a))-1/b*d^3*ln(1+exp(b*x+a))*x^3-1/b^4*d^3*ln(1+exp(b*x+a))*a^3-3/b^2*d
^3*polylog(2,-exp(b*x+a))*x^2+6/b^3*d^3*polylog(3,-exp(b*x+a))*x+1/b*d^3*ln
(1-exp(b*x+a))*x^3+1/b^4*d^3*ln(1-exp(b*x+a))*a^3-6/b^2*c*d^2*polylog(2,-ex
p(b*x+a))*x+3/b^3*c*d^2*a^2*ln(1+exp(b*x+a))-3/b^3*c*d^2*a^2*ln(1-exp(b*x+a
))+3/b*c*d^2*ln(1-exp(b*x+a))*x^2+6/b^2*c*d^2*polylog(2,exp(b*x+a))*x-3/b*c
^2*d*ln(1+exp(b*x+a))*x-3/b^2*c^2*d*ln(1+exp(b*x+a))*a+3/b*c^2*d*ln(1-exp(b
*x+a))*x+3/b^2*c^2*d*ln(1-exp(b*x+a))*a-3/b*c*d^2*ln(1+exp(b*x+a))*x^2+6/b^
2*c^2*d*a*arctanh(exp(b*x+a))-6/b^3*c*d^2*a^2*arctanh(exp(b*x+a))-2/b*c^3*a
rctanh(exp(b*x+a))
```

maxima [B] time = 0.64, size = 333, normalized size = 2.23

$$-c^3\left(\frac{\log\left(e^{(-bx-a)}+1\right)}{b}-\frac{\log\left(e^{(-bx-a)}-1\right)}{b}\right)-\frac{3\left(bx\log\left(e^{(bx+a)}+1\right)+\mathrm{Li}_2\left(-e^{(bx+a)}\right)\right)c^2d}{b^2}+\frac{3\left(bx\log\left(-e^{(bx+a)}+1\right)+\right.}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -c^3*(log(e^(-b*x - a) + 1)/b - log(e^(-b*x - a) - 1)/b) - 3*(b*x*log(e^(b*
x + a) + 1) + dilog(-e^(b*x + a)))*c^2*d/b^2 + 3*(b*x*log(-e^(b*x + a) + 1)
 + dilog(e^(b*x + a)))*c^2*d/b^2 - 3*(b^2*x^2*log(e^(b*x + a) + 1) + 2*b*x*
dilog(-e^(b*x + a)) - 2*polylog(3, -e^(b*x + a)))*c*d^2/b^3 + 3*(b^2*x^2*lo
g(-e^(b*x + a) + 1) + 2*b*x*dilog(e^(b*x + a)) - 2*polylog(3, e^(b*x + a)))
*c*d^2/b^3 - (b^3*x^3*log(e^(b*x + a) + 1) + 3*b^2*x^2*dilog(-e^(b*x + a))
- 6*b*x*polylog(3, -e^(b*x + a)) + 6*polylog(4, -e^(b*x + a)))*d^3/b^4 + (b
^3*x^3*log(-e^(b*x + a) + 1) + 3*b^2*x^2*dilog(e^(b*x + a)) - 6*b*x*polylog
(3, e^(b*x + a)) + 6*polylog(4, e^(b*x + a)))*d^3/b^4
```

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

$$\int \frac{(c+d\,x)^3}{\sinh(a+b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int (c+dx)^3 \operatorname{csch}(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.24 $\int (c+dx)^2 \operatorname{csch}(a+bx)\,dx$

Optimal. Leaf size=99

$$\frac{2d^2\text{Li}_3\left(-e^{a+bx}\right)}{b^3}-\frac{2d^2\text{Li}_3\left(e^{a+bx}\right)}{b^3}-\frac{2d(c+dx)\text{Li}_2\left(-e^{a+bx}\right)}{b^2}+\frac{2d(c+dx)\text{Li}_2\left(e^{a+bx}\right)}{b^2}-\frac{2(c+dx)^2\tanh^{-1}\left(e^{a+bx}\right)}{b}$$

```
[Out] -2*(d*x+c)^2*arctanh(exp(b*x+a))/b-2*d*(d*x+c)*polylog(2,-exp(b*x+a))/b^2+2
*d*(d*x+c)*polylog(2,exp(b*x+a))/b^2+2*d^2*polylog(3,-exp(b*x+a))/b^3-2*d^2
*polylog(3,exp(b*x+a))/b^3
```

Rubi [A] time = 0.09, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4182, 2531, 2282, 6589}

$$-\frac{2d(c+dx)\text{PolyLog}\left(2,-e^{a+bx}\right)}{b^2}+\frac{2d(c+dx)\text{PolyLog}\left(2,e^{a+bx}\right)}{b^2}+\frac{2d^2\text{PolyLog}\left(3,-e^{a+bx}\right)}{b^3}-\frac{2d^2\text{PolyLog}\left(3,e^{a+bx}\right)}{b^3}$$

Antiderivative was successfully verified.

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

```
[Out] (-2*(c + d*x)^2*ArcTanh[E^(a + b*x)])/b - (2*d*(c + d*x)*PolyLog[2, -E^(a +
 b*x)])/b^2 + (2*d*(c + d*x)*PolyLog[2, E^(a + b*x)])/b^2 + (2*d^2*PolyLog[
3, -E^(a + b*x)])/b^3 - (2*d^2*PolyLog[3, E^(a + b*x)])/b^3
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
```

```
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\begin{aligned}\int (c+dx)^2\text{csch}(a+bx)\,dx &= -\frac{2(c+dx)^2\tanh^{-1}\left(e^{a+bx}\right)}{b}-\frac{(2d)\int (c+dx)\log\left(1-e^{a+bx}\right)dx}{b}+\frac{(2d)\int (c+dx)1\cdots}{\cdots}\\ &= -\frac{2(c+dx)^2\tanh^{-1}\left(e^{a+bx}\right)}{b}-\frac{2d(c+dx)\text{Li}_2\left(-e^{a+bx}\right)}{b^2}+\frac{2d(c+dx)\text{Li}_2\left(e^{a+bx}\right)}{b^2}+\cdots\\ &= -\frac{2(c+dx)^2\tanh^{-1}\left(e^{a+bx}\right)}{b}-\frac{2d(c+dx)\text{Li}_2\left(-e^{a+bx}\right)}{b^2}+\frac{2d(c+dx)\text{Li}_2\left(e^{a+bx}\right)}{b^2}+\cdots\\ &= -\frac{2(c+dx)^2\tanh^{-1}\left(e^{a+bx}\right)}{b}-\frac{2d(c+dx)\text{Li}_2\left(-e^{a+bx}\right)}{b^2}+\frac{2d(c+dx)\text{Li}_2\left(e^{a+bx}\right)}{b^2}+\cdots\end{aligned}$$

Mathematica [A] time = 1.96, size = 118, normalized size = 1.19

$$\frac{-\frac{2d\left(b(c+dx)\text{Li}_2\left(-e^{a+bx}\right)-d\text{Li}_3\left(-e^{a+bx}\right)\right)}{b^2}+\frac{2d\left(b(c+dx)\text{Li}_2\left(e^{a+bx}\right)-d\text{Li}_3\left(e^{a+bx}\right)\right)}{b^2}+(c+dx)^2\log\left(1-e^{a+bx}\right)-(c+dx)^2\log\left(e^{a+bx}+\cdots\right.}{b}$$

Antiderivative was successfully verified.

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

```
[Out] ((c + d*x)^2*Log[1 - E^(a + b*x)] - (c + d*x)^2*Log[1 + E^(a + b*x)] - (2*d
*(b*(c + d*x)*PolyLog[2, -E^(a + b*x)] - d*PolyLog[3, -E^(a + b*x)]))/b^2 +
 (2*d*(b*(c + d*x)*PolyLog[2, E^(a + b*x)] - d*PolyLog[3, E^(a + b*x)]))/b^
2)/b
```

fricas [C] time = 0.49, size = 242, normalized size = 2.44

$$-\frac{2\,d^2\text{polylog}\left(3,\cosh\left(bx+a\right)+\sinh\left(bx+a\right)\right)-2\,d^2\text{polylog}\left(3,-\cosh\left(bx+a\right)-\sinh\left(bx+a\right)\right)-2\left(bd^2x+\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(2*d^2*polylog(3, cosh(b*x + a) + sinh(b*x + a)) - 2*d^2*polylog(3, -cosh(
b*x + a) - sinh(b*x + a)) - 2*(b*d^2*x + b*c*d)*dilog(cosh(b*x + a) + sinh(
b*x + a)) + 2*(b*d^2*x + b*c*d)*dilog(-cosh(b*x + a) - sinh(b*x + a)) + (b^
2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(cosh(b*x + a) + sinh(b*x + a) + 1) -
 (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*log(cosh(b*x + a) + sinh(b*x + a) - 1) - (
b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*log(-cosh(b*x + a) - sinh(
b*x + a) + 1))/b^3
```

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

$$\int (dx + c)^2 \operatorname{csch}(bx + a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^2*csch(b*x + a), x)
```

maple [B] time = 0.05, size = 306, normalized size = 3.09

$$-\frac{2d^2a^2 \operatorname{arctanh}\left(e^{bx+a}\right)}{b^3}-\frac{2c^2 \operatorname{arctanh}\left(e^{bx+a}\right)}{b}-\frac{d^2 \ln\left(1+e^{bx+a}\right)x^2}{b}+\frac{d^2 \ln\left(1+e^{bx+a}\right)a^2}{b^3}-\frac{2d^2 \operatorname{polylog}\left(2,-e^{bx+a}\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2/b^3*d^2*a^2*arctanh(exp(b*x+a))-2/b*c^2*arctanh(exp(b*x+a))-1/b*d^2*ln(1
+exp(b*x+a))*x^2+1/b^3*d^2*ln(1+exp(b*x+a))*a^2-2/b^2*d^2*polylog(2,-exp(b*
x+a))*x+1/b*d^2*ln(1-exp(b*x+a))*x^2-1/b^3*d^2*ln(1-exp(b*x+a))*a^2+2/b^2*d
^2*polylog(2,exp(b*x+a))*x-2/b^2*c*d*polylog(2,-exp(b*x+a))+2/b^2*c*d*polyl
og(2,exp(b*x+a))+2*d^2*polylog(3,-exp(b*x+a))/b^3-2*d^2*polylog(3,exp(b*x+a
))/b^3+4/b^2*c*d*a*arctanh(exp(b*x+a))-2/b*c*d*ln(1+exp(b*x+a))*x-2/b^2*c*d
*ln(1+exp(b*x+a))*a+2/b*c*d*ln(1-exp(b*x+a))*x+2/b^2*c*d*ln(1-exp(b*x+a))*a
```

maxima [B] time = 0.46, size = 195, normalized size = 1.97

$$-c^2\left(\frac{\log\left(e^{(-bx-a)}+1\right)}{b}-\frac{\log\left(e^{(-bx-a)}-1\right)}{b}\right)-\frac{2\left(bx\log\left(e^{(bx+a)}+1\right)+\operatorname{Li}_2\left(-e^{(bx+a)}\right)\right)cd}{b^2}+\frac{2\left(bx\log\left(-e^{(bx+a)}+1\right)+\right.}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -c^2*(log(e^(-b*x - a) + 1)/b - log(e^(-b*x - a) - 1)/b) - 2*(b*x*log(e^(b*
x + a) + 1) + dilog(-e^(b*x + a)))*c*d/b^2 + 2*(b*x*log(-e^(b*x + a) + 1) +
 dilog(e^(b*x + a)))*c*d/b^2 - (b^2*x^2*log(e^(b*x + a) + 1) + 2*b*x*dilog(
-e^(b*x + a)) - 2*polylog(3, -e^(b*x + a)))*d^2/b^3 + (b^2*x^2*log(-e^(b*x
+ a) + 1) + 2*b*x*dilog(e^(b*x + a)) - 2*polylog(3, e^(b*x + a)))*d^2/b^3
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int (c+dx)^2 \operatorname{csch}(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.25 $\int (c + dx)\mathrm{\mathbf{csch}}(a + bx)\,dx$

Optimal. Leaf size=50

$$-\frac{d\mathrm{Li}_2\left(-e^{a+bx}\right)}{b^2}+\frac{d\mathrm{Li}_2\left(e^{a+bx}\right)}{b^2}-\frac{2(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b}$$

```
[Out] -2*(d*x+c)*arctanh(exp(b*x+a))/b-d*polylog(2,-exp(b*x+a))/b^2+d*polylog(2,e
xp(b*x+a))/b^2
```

Rubi [A] time = 0.05, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4182, 2279, 2391}

$$-\frac{d\mathrm{PolyLog}\left(2,-e^{a+bx}\right)}{b^2}+\frac{d\mathrm{PolyLog}\left(2,e^{a+bx}\right)}{b^2}-\frac{2(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b}$$

Antiderivative was successfully verified.

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

```
[Out] (-2*(c + d*x)*ArcTanh[E^(a + b*x)])/b - (d*PolyLog[2, -E^(a + b*x)])/b^2 +
(d*PolyLog[2, E^(a + b*x)])/b^2
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rubi steps

$$\int (c+dx)\text{csch}(a+bx)\,dx = -\frac{2(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{d\int \log\left(1-e^{a+bx}\right)\,dx}{b} + \frac{d\int \log\left(1+e^{a+bx}\right)\,dx}{b}$$

$$= -\frac{2(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{d\,\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx, x, e^{a+bx}\right)}{b^2} + \frac{d\,\text{Subst}\left(\int \frac{\log(1+x)}{x}\right.}{b^2}$$

$$= -\frac{2(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{d\text{Li}_2\left(-e^{a+bx}\right)}{b^2} + \frac{d\text{Li}_2\left(e^{a+bx}\right)}{b^2}$$

Mathematica [C] time = 0.06, size = 174, normalized size = 3.48

$$\frac{d\left(-a\log\left(\tanh\left(\frac{1}{2}(a+bx)\right)\right) - i\left(i\left(\text{Li}_2\left(-e^{i(ia+ibx)}\right) - \text{Li}_2\left(e^{i(ia+ibx)}\right)\right) + (ia+ibx)\left(\log\left(1-e^{i(ia+ibx)}\right) - \log\left(1+e^{i}\right.\right.\right.}{b^2}$$

Antiderivative was successfully verified.

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

```
[Out] -((c*Log[Cosh[a/2 + (b*x)/2]])/b) + (c*Log[Sinh[a/2 + (b*x)/2]])/b + (d*(-(
a*Log[Tanh[(a + b*x)/2]]) - I*((I*a + I*b*x)*(Log[1 - E^(I*(I*a + I*b*x))]
- Log[1 + E^(I*(I*a + I*b*x))]) + I*(PolyLog[2, -E^(I*(I*a + I*b*x))] - Pol
yLog[2, E^(I*(I*a + I*b*x))]))))/b^2
```

fricas [B] time = 0.61, size = 119, normalized size = 2.38

$$\frac{d\text{Li}_2\left(\cosh\left(bx+a\right)+\sinh\left(bx+a\right)\right) - d\text{Li}_2\left(-\cosh\left(bx+a\right)-\sinh\left(bx+a\right)\right) - \left(bdx+bc\right)\log\left(\cosh\left(bx+a\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (d*dilog(cosh(b*x + a) + sinh(b*x + a)) - d*dilog(-cosh(b*x + a) - sinh(b*x
 + a)) - (b*d*x + b*c)*log(cosh(b*x + a) + sinh(b*x + a) + 1) + (b*c - a*d)
*log(cosh(b*x + a) + sinh(b*x + a) - 1) + (b*d*x + a*d)*log(-cosh(b*x + a)
- sinh(b*x + a) + 1))/b^2
```

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

$$\int \left(dx+c\right)\text{csch}\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)*csch(b*x + a), x)
```

maple [A] time = 0.01, size = 60, normalized size = 1.20

$$\frac{\frac{d\left(2\,\mathrm{dilog}\left(\mathrm{e}^{-bx-a}\right)-\frac{\mathrm{dilog}\left(\mathrm{e}^{-2bx-2a}\right)}{2}\right)}{b}+\frac{2da\,\mathrm{arctanh}\left(\mathrm{e}^{bx+a}\right)}{b}-2c\,\mathrm{arctanh}\left(\mathrm{e}^{bx+a}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/b*(1/b*d*(2*dilog(exp(-b*x-a))-1/2*dilog(exp(-2*b*x-2*a)))+2/b*d*a*arctan
h(exp(b*x+a))-2*c*arctanh(exp(b*x+a)))
```

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

$$-c\left(\frac{\log\left(e^{(-bx-a)}+1\right)}{b}-\frac{\log\left(e^{(-bx-a)}-1\right)}{b}\right)+2\,d\left(\int\frac{x}{2\left(e^{(bx+a)}+1\right)}\,dx+\int\frac{x}{2\left(e^{(bx+a)}-1\right)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -c*(log(e^(-b*x - a) + 1)/b - log(e^(-b*x - a) - 1)/b) + 2*d*(integrate(1/2
*x/(e^(b*x + a) + 1), x) + integrate(1/2*x/(e^(b*x + a) - 1), x))
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int\left(c+dx\right)\operatorname{csch}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.26 $\int \frac{\operatorname{csch}(a+bx)}{c+dx} \, dx$

Optimal. Leaf size=17

$$\operatorname{Int}\left(\frac{\operatorname{csch}(a+bx)}{c+dx},x\right)$$

```
[Out] Unintegrable(csch(b*x+a)/(d*x+c),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}(a+bx)}{c+dx} \, dx$$

Verification is Not applicable to the result.

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

Rubi steps

$$\int \frac{\operatorname{csch}(a+bx)}{c+dx} \, dx = \int \frac{\operatorname{csch}(a+bx)}{c+dx} \, dx$$

Mathematica [A] time = 10.71, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(a+bx)}{c+dx} \, dx$$

Verification is Not applicable to the result.

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

fricas [A] time = 0.56, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(bx+a)}{dx+c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(csch(b*x + a)/(d*x + c), x)
```

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

$$\int \frac{\operatorname{csch}(bx+a)}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

maple [A] time = 0.10, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(bx+a)}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(bx+a)}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{1}{\sinh(a+b\,x)\,(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{\operatorname{csch}(a+bx)}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.27 $\int \frac{\operatorname{csch}(a+bx)}{(c+dx)^2}\,dx$

Optimal. Leaf size=17

$$\operatorname{Int}\left(\frac{\operatorname{csch}(a+bx)}{(c+dx)^2},x\right)$$

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

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

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

Verification is Not applicable to the result.

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

Rubi steps

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

Mathematica [A] time = 10.52, size = 0, normalized size = 0.00

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

Verification is Not applicable to the result.

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

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(bx+a)}{d^2x^2+2\,cdx+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

maple [A] time = 0.08, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

maxima [A] time = 0.00, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{1}{\sinh(a+b\,x)\,(c+d\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(a + b*x)*(c + d*x)^2),x)
[Out] int(1/(sinh(a + b*x)*(c + d*x)^2), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.28 $\int (c+dx)^3 \text{csch}^2(a+bx)\,dx$

Optimal. Leaf size=103

$$-\frac{3d^3\text{Li}_3\left(e^{2(a+bx)}\right)}{2b^4}+\frac{3d^2(c+dx)\text{Li}_2\left(e^{2(a+bx)}\right)}{b^3}+\frac{3d(c+dx)^2\log\left(1-e^{2(a+bx)}\right)}{b^2}-\frac{(c+dx)^3\coth(a+bx)}{b}-\frac{(c+dx)^3}{b}$$

```
[Out] -(d*x+c)^3/b-(d*x+c)^3*coth(b*x+a)/b+3*d*(d*x+c)^2*ln(1-exp(2*b*x+2*a))/b^2
+3*d^2*(d*x+c)*polylog(2,exp(2*b*x+2*a))/b^3-3/2*d^3*polylog(3,exp(2*b*x+2*
a))/b^4
```

Rubi [A] time = 0.23, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4184, 3716, 2190, 2531, 2282, 6589}

$$\frac{3d^2(c+dx)\text{PolyLog}\left(2,e^{2(a+bx)}\right)}{b^3}-\frac{3d^3\text{PolyLog}\left(3,e^{2(a+bx)}\right)}{2b^4}+\frac{3d(c+dx)^2\log\left(1-e^{2(a+bx)}\right)}{b^2}-\frac{(c+dx)^3\coth(a+b}{b}$$

Antiderivative was successfully verified.

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

```
[Out] -((c + d*x)^3/b) - ((c + d*x)^3*Coth[a + b*x])/b + (3*d*(c + d*x)^2*Log[1 -
 E^(2*(a + b*x))])/b^2 + (3*d^2*(c + d*x)*PolyLog[2, E^(2*(a + b*x))])/b^3
- (3*d^3*PolyLog[3, E^(2*(a + b*x))])/(2*b^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int (c+dx)^3\operatorname{csch}^2(a+bx)\,dx = -\frac{(c+dx)^3\coth(a+bx)}{b}+\frac{(3d)\int (c+dx)^2\coth(a+bx)\,dx}{b}$$

$$= -\frac{(c+dx)^3}{b}-\frac{(c+dx)^3\coth(a+bx)}{b}-\frac{(6d)\int \frac{e^{2(a+bx)}(c+dx)^2}{1-e^{2(a+bx)}}\,dx}{b}$$

$$= -\frac{(c+dx)^3}{b}-\frac{(c+dx)^3\coth(a+bx)}{b}+\frac{3d(c+dx)^2\log\left(1-e^{2(a+bx)}\right)}{b^2}-\frac{\left(6d^2\right)\int (c-$$

$$= -\frac{(c+dx)^3}{b}-\frac{(c+dx)^3\coth(a+bx)}{b}+\frac{3d(c+dx)^2\log\left(1-e^{2(a+bx)}\right)}{b^2}+\frac{3d^2(c+dx$$

$$= -\frac{(c+dx)^3}{b}-\frac{(c+dx)^3\coth(a+bx)}{b}+\frac{3d(c+dx)^2\log\left(1-e^{2(a+bx)}\right)}{b^2}+\frac{3d^2(c+dx$$

$$= -\frac{(c+dx)^3}{b}-\frac{(c+dx)^3\coth(a+bx)}{b}+\frac{3d(c+dx)^2\log\left(1-e^{2(a+bx)}\right)}{b^2}+\frac{3d^2(c+dx$$

Mathematica [A] time = 1.97, size = 185, normalized size = 1.80

$$\frac{-\frac{2b^3(c+dx)^3}{e^{2a}-1}+b^3\operatorname{csch}(a)\sinh(bx)(c+dx)^3\operatorname{csch}(a+bx)+3b^2d(c+dx)^2\log\left(1-e^{-a-bx}\right)+3b^2d(c+dx)^2\log\left(e^{-a\cdots}\right.}{b^4}$$

Antiderivative was successfully verified.

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

```
[Out] ((-2*b^3*(c + d*x)^3)/(-1 + E^(2*a)) + 3*b^2*d*(c + d*x)^2*Log[1 - E^(-a -
b*x)] + 3*b^2*d*(c + d*x)^2*Log[1 + E^(-a - b*x)] - 6*d^2*(b*(c + d*x)*Poly
Log[2, -E^(-a - b*x)] + d*PolyLog[3, -E^(-a - b*x)]) - 6*d^2*(b*(c + d*x)*P
olyLog[2, E^(-a - b*x)] + d*PolyLog[3, E^(-a - b*x)]) + b^3*(c + d*x)^3*Csc
h[a]*Csch[a + b*x]*Sinh[b*x])/b^4
```

fricas [C] time = 0.61, size = 1159, normalized size = 11.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(2*b^3*c^3 - 6*a*b^2*c^2*d + 6*a^2*b*c*d^2 - 2*a^3*d^3 + 2*(b^3*d^3*x^3 +
3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + a^3*d^3)*
cosh(b*x + a)^2 + 4*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + 3*a*b^
2*c^2*d - 3*a^2*b*c*d^2 + a^3*d^3)*cosh(b*x + a)*sinh(b*x + a) + 2*(b^3*d^3
*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + a^
3*d^3)*sinh(b*x + a)^2 + 6*(b*d^3*x + b*c*d^2 - (b*d^3*x + b*c*d^2)*cosh(b*
x + a)^2 - 2*(b*d^3*x + b*c*d^2)*cosh(b*x + a)*sinh(b*x + a) - (b*d^3*x + b
*c*d^2)*sinh(b*x + a)^2)*dilog(cosh(b*x + a) + sinh(b*x + a)) + 6*(b*d^3*x
+ b*c*d^2 - (b*d^3*x + b*c*d^2)*cosh(b*x + a)^2 - 2*(b*d^3*x + b*c*d^2)*cos
h(b*x + a)*sinh(b*x + a) - (b*d^3*x + b*c*d^2)*sinh(b*x + a)^2)*dilog(-cosh
(b*x + a) - sinh(b*x + a)) + 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - (
b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d)*cosh(b*x + a)^2 - 2*(b^2*d^3*x^2 +
 2*b^2*c*d^2*x + b^2*c^2*d)*cosh(b*x + a)*sinh(b*x + a) - (b^2*d^3*x^2 + 2*
b^2*c*d^2*x + b^2*c^2*d)*sinh(b*x + a)^2)*log(cosh(b*x + a) + sinh(b*x + a)
 + 1) + 3*(b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3 - (b^2*c^2*d - 2*a*b*c*d^2 + a
^2*d^3)*cosh(b*x + a)^2 - 2*(b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*cosh(b*x +
a)*sinh(b*x + a) - (b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*sinh(b*x + a)^2)*log
(cosh(b*x + a) + sinh(b*x + a) - 1) + 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + 2*a*
b*c*d^2 - a^2*d^3 - (b^2*d^3*x^2 + 2*b^2*c*d^2*x + 2*a*b*c*d^2 - a^2*d^3)*c
osh(b*x + a)^2 - 2*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + 2*a*b*c*d^2 - a^2*d^3)*co
sh(b*x + a)*sinh(b*x + a) - (b^2*d^3*x^2 + 2*b^2*c*d^2*x + 2*a*b*c*d^2 - a^
2*d^3)*sinh(b*x + a)^2)*log(-cosh(b*x + a) - sinh(b*x + a) + 1) + 6*(d^3*co
sh(b*x + a)^2 + 2*d^3*cosh(b*x + a)*sinh(b*x + a) + d^3*sinh(b*x + a)^2 - d
```

```
^3)*polylog(3, cosh(b*x + a) + sinh(b*x + a)) + 6*(d^3*cosh(b*x + a)^2 + 2*
d^3*cosh(b*x + a)*sinh(b*x + a) + d^3*sinh(b*x + a)^2 - d^3)*polylog(3, -co
sh(b*x + a) - sinh(b*x + a)))/(b^4*cosh(b*x + a)^2 + 2*b^4*cosh(b*x + a)*si
nh(b*x + a) + b^4*sinh(b*x + a)^2 - b^4)
```

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

$$\int (dx+c)^3 \operatorname{csch}(bx+a)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^3*csch(b*x + a)^2, x)
```

maple [B] time = 0.18, size = 473, normalized size = 4.59

$$-\frac{3d^3\ln\left(1-e^{bx+a}\right)a^2}{b^4}-\frac{6dc^2\ln\left(e^{bx+a}\right)}{b^2}+\frac{3dc^2\ln\left(e^{bx+a}-1\right)}{b^2}+\frac{3dc^2\ln\left(1+e^{bx+a}\right)}{b^2}+\frac{6d^3\operatorname{polylog}\left(2,e^{bx+a}\right)x}{b^3}+\frac{6d^2c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -3/b^4*d^3*ln(1-exp(b*x+a))*a^2+6/b^3*d^3*polylog(2,exp(b*x+a))*x-6/b^2*d*c
^2*ln(exp(b*x+a))+3/b^2*d*c^2*ln(exp(b*x+a)-1)+3/b^2*d*c^2*ln(1+exp(b*x+a))
-6/b*d^2*c*x^2-6/b^3*d^2*c*a^2+6/b^3*d^3*a^2*x-6/b^4*d^3*a^2*ln(exp(b*x+a))
+3/b^4*d^3*a^2*ln(exp(b*x+a)-1)+6/b^3*d^2*c*polylog(2,-exp(b*x+a))+6/b^3*d^
2*c*polylog(2,exp(b*x+a))+3/b^2*d^3*ln(1+exp(b*x+a))*x^2+6/b^3*d^3*polylog(
2,-exp(b*x+a))*x+3/b^2*d^3*ln(1-exp(b*x+a))*x^2-2/b*(d^3*x^3+3*c*d^2*x^2+3*
c^2*d*x+c^3)/(exp(2*b*x+2*a)-1)+4/b^4*d^3*a^3-2/b*d^3*x^3-6/b^4*d^3*polylog
(3,-exp(b*x+a))-6/b^4*d^3*polylog(3,exp(b*x+a))-6/b^3*d^2*c*a*ln(exp(b*x+a)
-1)-12/b^2*d^2*c*a*x+6/b^2*d^2*c*ln(1+exp(b*x+a))*x+6/b^2*d^2*c*ln(1-exp(b*
x+a))*x+6/b^3*d^2*c*ln(1-exp(b*x+a))*a+12/b^3*d^2*c*a*ln(exp(b*x+a))
```

maxima [B] time = 0.80, size = 320, normalized size = 3.11

$$-3c^2d\left(\frac{2xe^{(2bx+2a)}}{be^{(2bx+2a)}-b}-\frac{\log\left(\left(e^{(bx+a)}+1\right)e^{(-a)}\right)}{b^2}-\frac{\log\left(\left(e^{(bx+a)}-1\right)e^{(-a)}\right)}{b^2}\right)+\frac{6\left(bx\log\left(e^{(bx+a)}+1\right)+\operatorname{Li}_2\left(-e^{(bx+a)}\right)\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -3*c^2*d*(2*x*e^(2*b*x + 2*a)/(b*e^(2*b*x + 2*a) - b) - log((e^(b*x + a) +
1)*e^(-a))/b^2 - log((e^(b*x + a) - 1)*e^(-a))/b^2) + 6*(b*x*log(e^(b*x + a
```

```
) + 1) + dilog(-e^(b*x + a)))*c*d^2/b^3 + 6*(b*x*log(-e^(b*x + a) + 1) + di
log(e^(b*x + a)))*c*d^2/b^3 + 2*c^3/(b*(e^(-2*b*x - 2*a) - 1)) - 2*(d^3*x^3
 + 3*c*d^2*x^2)/(b*e^(2*b*x + 2*a) - b) + 3*(b^2*x^2*log(e^(b*x + a) + 1) +
 2*b*x*dilog(-e^(b*x + a)) - 2*polylog(3, -e^(b*x + a)))*d^3/b^4 + 3*(b^2*x
^2*log(-e^(b*x + a) + 1) + 2*b*x*dilog(e^(b*x + a)) - 2*polylog(3, e^(b*x +
 a)))*d^3/b^4 - 2*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2)/b^4
```

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

$$\int \frac{(c + d\,x)^3}{\sinh\left(a + b\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((c + d*x)^3/sinh(a + b*x)^2, x)
```

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

$$\int (c + dx)^3 \operatorname{csch}^2(a + bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*csch(b*x+a)**2,x)
```

```
[Out] Integral((c + d*x)**3*csch(a + b*x)**2, x)
```

3.29 $\int (c+dx)^2 \operatorname{csch}^2(a+bx)\,dx$

Optimal. Leaf size=74

$$\frac{d^2\text{Li}_2\left(e^{2(a+bx)}\right)}{b^3}+\frac{2d(c+dx)\log\left(1-e^{2(a+bx)}\right)}{b^2}-\frac{(c+dx)^2\coth(a+bx)}{b}-\frac{(c+dx)^2}{b}$$

```
[Out] -(d*x+c)^2/b-(d*x+c)^2*coth(b*x+a)/b+2*d*(d*x+c)*ln(1-exp(2*b*x+2*a))/b^2+d
^2*polylog(2,exp(2*b*x+2*a))/b^3
```

Rubi [A] time = 0.15, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {4184, 3716, 2190, 2279, 2391}

$$\frac{d^2\text{PolyLog}\left(2,e^{2(a+bx)}\right)}{b^3}+\frac{2d(c+dx)\log\left(1-e^{2(a+bx)}\right)}{b^2}-\frac{(c+dx)^2\coth(a+bx)}{b}-\frac{(c+dx)^2}{b}$$

Antiderivative was successfully verified.

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

```
[Out] -((c + d*x)^2/b) - ((c + d*x)^2*Coth[a + b*x])/b + (2*d*(c + d*x)*Log[1 - E
^(2*(a + b*x))])/b^2 + (d^2*PolyLog[2, E^(2*(a + b*x))])/b^3
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (c+dx)^2\operatorname{csch}^2(a+bx)\,dx = -\frac{(c+dx)^2\coth(a+bx)}{b}+\frac{(2d)\int (c+dx)\coth(a+bx)\,dx}{b}$$
$$= -\frac{(c+dx)^2}{b}-\frac{(c+dx)^2\coth(a+bx)}{b}-\frac{(4d)\int \frac{e^{2(a+bx)}(c+dx)}{1-e^{2(a+bx)}}\,dx}{b}$$
$$= -\frac{(c+dx)^2}{b}-\frac{(c+dx)^2\coth(a+bx)}{b}+\frac{2d(c+dx)\log\left(1-e^{2(a+bx)}\right)}{b^2}-\frac{\left(2d^2\right)\int \text{lo}$$
$$= -\frac{(c+dx)^2}{b}-\frac{(c+dx)^2\coth(a+bx)}{b}+\frac{2d(c+dx)\log\left(1-e^{2(a+bx)}\right)}{b^2}-\frac{d^2\operatorname{Subst}\Big(}{}$$
$$= -\frac{(c+dx)^2}{b}-\frac{(c+dx)^2\coth(a+bx)}{b}+\frac{2d(c+dx)\log\left(1-e^{2(a+bx)}\right)}{b^2}+\frac{d^2\operatorname{Li}_2\left(e^{2(a}\right.}{b^3}$$

Mathematica [C] time = 4.80, size = 198, normalized size = 2.68

$$\frac{\operatorname{csch}(a)\Big(b^2\sinh(bx)(c+dx)^2\operatorname{csch}(a+bx)+d^2\Big(-b^2x^2\cosh(a)e^{-\tanh^{-1}(\tanh(a))}\sqrt{\operatorname{sech}^2(a)}-\sinh(a)\operatorname{Li}_2\Big(e^{-2\left(bx+\text{t}\right.}}{}$$

Warning: Unable to verify antiderivative.

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

```
[Out] (Csch[a]*(-2*b*c*d*(b*x*Cosh[a] - Log[Sinh[a + b*x]]*Sinh[a]) + d^2*(-((b^2
*x^2*Cosh[a]*Sqrt[Sech[a]^2])/E^ArcTanh[Tanh[a]]) + I*b*Pi*x*Sinh[a] - I*Pi
*Log[1 + E^(2*b*x)]*Sinh[a] + 2*b*x*Log[1 - E^(-2*(b*x + ArcTanh[Tanh[a]]))
]*Sinh[a] + I*Pi*Log[Cosh[b*x]]*Sinh[a] + 2*ArcTanh[Tanh[a]]*(b*x + Log[1 -
```

```
E^(-2*(b*x + ArcTanh[Tanh[a]]))] - Log[I*Sinh[b*x + ArcTanh[Tanh[a]]]])*Si
nh[a] - PolyLog[2, E^(-2*(b*x + ArcTanh[Tanh[a]]))]*Sinh[a]) + b^2*(c + d*x
)^2*Csch[a + b*x]*Sinh[b*x]))/b^3
```

fricas [B] time = 0.57, size = 623, normalized size = 8.42

$$-\frac{2\left(b^2c^2-2\,abcd+a^2d^2+\left(b^2d^2x^2+2\,b^2cdx+2\,abcd-a^2d^2\right)\cosh\left(bx+a\right)^2+2\left(b^2d^2x^2+2\,b^2cdx+2\,abcd-a^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2 + (b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d
- a^2*d^2)*cosh(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2
*d^2)*cosh(b*x + a)*sinh(b*x + a) + (b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d
- a^2*d^2)*sinh(b*x + a)^2 - (d^2*cosh(b*x + a)^2 + 2*d^2*cosh(b*x + a)*sin
h(b*x + a) + d^2*sinh(b*x + a)^2 - d^2)*dilog(cosh(b*x + a) + sinh(b*x + a)
) - (d^2*cosh(b*x + a)^2 + 2*d^2*cosh(b*x + a)*sinh(b*x + a) + d^2*sinh(b*x
 + a)^2 - d^2)*dilog(-cosh(b*x + a) - sinh(b*x + a)) + (b*d^2*x + b*c*d - (
b*d^2*x + b*c*d)*cosh(b*x + a)^2 - 2*(b*d^2*x + b*c*d)*cosh(b*x + a)*sinh(b
*x + a) - (b*d^2*x + b*c*d)*sinh(b*x + a)^2)*log(cosh(b*x + a) + sinh(b*x +
 a) + 1) + (b*c*d - a*d^2 - (b*c*d - a*d^2)*cosh(b*x + a)^2 - 2*(b*c*d - a*
d^2)*cosh(b*x + a)*sinh(b*x + a) - (b*c*d - a*d^2)*sinh(b*x + a)^2)*log(cos
h(b*x + a) + sinh(b*x + a) - 1) + (b*d^2*x + a*d^2 - (b*d^2*x + a*d^2)*cosh
(b*x + a)^2 - 2*(b*d^2*x + a*d^2)*cosh(b*x + a)*sinh(b*x + a) - (b*d^2*x +
a*d^2)*sinh(b*x + a)^2)*log(-cosh(b*x + a) - sinh(b*x + a) + 1))/(b^3*cosh(
b*x + a)^2 + 2*b^3*cosh(b*x + a)*sinh(b*x + a) + b^3*sinh(b*x + a)^2 - b^3)
```

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

$$\int (dx+c)^2 \operatorname{csch}(bx+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^2*csch(b*x + a)^2, x)
```

maple [B] time = 0.05, size = 240, normalized size = 3.24

$$-\frac{2\left(d^2x^2+2cdx+c^2\right)}{b\left(e^{2bx+2a}-1\right)}-\frac{4dc\ln\left(e^{bx+a}\right)}{b^2}+\frac{2dc\ln\left(e^{bx+a}-1\right)}{b^2}+\frac{2dc\ln\left(1+e^{bx+a}\right)}{b^2}-\frac{2d^2x^2}{b}-\frac{4d^2ax}{b^2}-\frac{2d^2a^2}{b^3}+\frac{2d^2\ln\left(1+\right.}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2/b*(d^2*x^2+2*c*d*x+c^2)/(exp(2*b*x+2*a)-1)-4/b^2*d*c*ln(exp(b*x+a))+2/b^
2*d*c*ln(exp(b*x+a)-1)+2/b^2*d*c*ln(1+exp(b*x+a))-2/b*d^2*x^2-4/b^2*d^2*a*x
-2/b^3*d^2*a^2+2/b^2*d^2*ln(1+exp(b*x+a))*x+2/b^3*d^2*polylog(2,-exp(b*x+a)
)+2/b^2*d^2*ln(1-exp(b*x+a))*x+2/b^3*d^2*ln(1-exp(b*x+a))*a+2/b^3*d^2*polyl
og(2,exp(b*x+a))+4/b^3*d^2*a*ln(exp(b*x+a))-2/b^3*d^2*a*ln(exp(b*x+a)-1)
```

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

$$-2\,d^2\left(\frac{x^2}{be^{(2\,bx+2\,a)}-b}+2\int\frac{x}{2\left(be^{(bx+a)}+b\right)}\,dx-2\int\frac{x}{2\left(be^{(bx+a)}-b\right)}\,dx\right)-2\,cd\left(\frac{2\,xe^{(2\,bx+2\,a)}}{be^{(2\,bx+2\,a)}-b}-\frac{\log\left(\left(e^{(bx+a)}+\right.\right.}{b^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2*d^2*(x^2/(b*e^(2*b*x + 2*a) - b) + 2*integrate(1/2*x/(b*e^(b*x + a) + b)
, x) - 2*integrate(1/2*x/(b*e^(b*x + a) - b), x)) - 2*c*d*(2*x*e^(2*b*x + 2
*a)/(b*e^(2*b*x + 2*a) - b) - log((e^(b*x + a) + 1)*e^(-a))/b^2 - log((e^(b
*x + a) - 1)*e^(-a))/b^2) + 2*c^2/(b*(e^(-2*b*x - 2*a) - 1))
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int(c+dx)^2\operatorname{csch}^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.30 $\int (c + dx)\text{csch}^2(a + bx)\,dx$

Optimal. Leaf size=29

$$\frac{d\log(\sinh(a+bx))}{b^2} - \frac{(c+dx)\coth(a+bx)}{b}$$

```
[Out] -(d*x+c)*coth(b*x+a)/b+d*ln(sinh(b*x+a))/b^2
```

Rubi [A] time = 0.03, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4184, 3475}

$$\frac{d\log(\sinh(a+bx))}{b^2} - \frac{(c+dx)\coth(a+bx)}{b}$$

Antiderivative was successfully verified.

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

```
[Out] -(((c + d*x)*Coth[a + b*x])/b) + (d*Log[Sinh[a + b*x]])/b^2
```

Rule 3475

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

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int (c+dx)\text{csch}^2(a+bx)\,dx &= -\frac{(c+dx)\coth(a+bx)}{b} + \frac{d\int \coth(a+bx)\,dx}{b}\\ &= -\frac{(c+dx)\coth(a+bx)}{b} + \frac{d\log(\sinh(a+bx))}{b^2}\end{aligned}$$

Mathematica [A] time = 0.08, size = 52, normalized size = 1.79

$$\frac{d\log(\sinh(a+bx))}{b^2} - \frac{c\coth(a+bx)}{b} - \frac{dx\coth(a)}{b} + \frac{dx\text{csch}(a)\sinh(bx)\text{csch}(a+bx)}{b}$$

Antiderivative was successfully verified.

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

```
[Out] -((d*x*Coth[a])/b) - (c*Coth[a + b*x])/b + (d*Log[Sinh[a + b*x]])/b^2 + (d*
x*Csch[a]*Csch[a + b*x]*Sinh[b*x])/b
```

fricas [B] time = 0.59, size = 166, normalized size = 5.72

$$-\frac{2\,bdx\cosh\left(bx+a\right)^{2}+4\,bdx\cosh\left(bx+a\right)\sinh\left(bx+a\right)+2\,bdx\sinh\left(bx+a\right)^{2}+2\,bc-\left(d\cosh\left(bx+a\right)^{2}+2\,\ldots\right.}{b^{2}\cosh\left(bx+a\right)^{2}+2\,b^{2}\cosh\left(bx+a\right)\sinh\left(bx+a\right)+\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(2*b*d*x*cosh(b*x + a)^2 + 4*b*d*x*cosh(b*x + a)*sinh(b*x + a) + 2*b*d*x*s
inh(b*x + a)^2 + 2*b*c - (d*cosh(b*x + a)^2 + 2*d*cosh(b*x + a)*sinh(b*x +
a) + d*sinh(b*x + a)^2 - d)*log(2*sinh(b*x + a)/(cosh(b*x + a) - sinh(b*x +
 a))))/(b^2*cosh(b*x + a)^2 + 2*b^2*cosh(b*x + a)*sinh(b*x + a) + b^2*sinh(
b*x + a)^2 - b^2)
```

giac [B] time = 0.19, size = 80, normalized size = 2.76

$$-\frac{2\,bdxe^{\left(2\,bx+2\,a\right)}-de^{\left(2\,bx+2\,a\right)}\log\left(e^{\left(2\,bx+2\,a\right)}-1\right)+2\,bc+d\log\left(e^{\left(2\,bx+2\,a\right)}-1\right)}{b^{2}e^{\left(2\,bx+2\,a\right)}-b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.04, size = 56, normalized size = 1.93

$$-\frac{2dx}{b}-\frac{2da}{b^{2}}-\frac{2\left(dx+c\right)}{b\left(\mathrm{e}^{2bx+2a}-1\right)}+\frac{d\ln\left(\mathrm{e}^{2bx+2a}-1\right)}{b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [B] time = 0.42, size = 91, normalized size = 3.14

$$-d\left(\frac{2\,xe^{(2\,bx+2\,a)}}{be^{(2\,bx+2\,a)}-b}-\frac{\log\left(\left(e^{(bx+a)}+1\right)e^{(-a)}\right)}{b^2}-\frac{\log\left(\left(e^{(bx+a)}-1\right)e^{(-a)}\right)}{b^2}\right)+\frac{2\,c}{b\left(e^{(-2\,bx-2\,a)}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.08, size = 49, normalized size = 1.69

$$\frac{d\,\ln\left(\mathrm{e}^{2\,a}\,\mathrm{e}^{2\,b\,x}-1\right)}{b^2}-\frac{2\,\left(c+d\,x\right)}{b\,\left(\mathrm{e}^{2\,a+2\,b\,x}-1\right)}-\frac{2\,d\,x}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int (c+dx)\,\mathrm{csch}^2\,(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.31 $\int \frac{\operatorname{csch}^2(a+bx)}{c+dx}\,dx$

Optimal. Leaf size=19

$$\text{Int}\left(\frac{\operatorname{csch}^2(a+bx)}{c+dx},x\right)$$

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

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

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

Verification is Not applicable to the result.

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

Rubi steps

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

Mathematica [A] time = 17.00, size = 0, normalized size = 0.00

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

Verification is Not applicable to the result.

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

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{csch}(bx+a)^2}{dx+c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\operatorname{csch}\left(bx + a\right)^2}{dx + c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.10, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(bx + a\right)^2}{dx + c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$4\,d\int \frac{1}{4\left(bd^2x^2 + 2\,bcdx + bc^2 + \left(bd^2x^2e^a + 2\,bcdxe^a + bc^2e^a\right)e^{(bx)}\right)}\,dx - 4\,d\int -\frac{1}{4\left(bd^2x^2 + 2\,bcdx + bc^2 - \left(bd^2x^2e^{\cdots}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 4*d*integrate(1/4/(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + (b*d^2*x^2*e^a + 2*b*c*d
*x*e^a + b*c^2*e^a)*e^(b*x)), x) - 4*d*integrate(-1/4/(b*d^2*x^2 + 2*b*c*d*
x + b*c^2 - (b*d^2*x^2*e^a + 2*b*c*d*x*e^a + b*c^2*e^a)*e^(b*x)), x) + 2/(b
*d*x + b*c - (b*d*x*e^(2*a) + b*c*e^(2*a))*e^(2*b*x))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{{\mathrm{sinh}\left(a+b\,x\right)}^2\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(a + b*x)^2*(c + d*x)),x)
```

```
[Out] int(1/(sinh(a + b*x)^2*(c + d*x)), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.32 $\int \frac{\operatorname{csch}^2(a+bx)}{(c+dx)^2} dx$

Optimal. Leaf size=19

$$\operatorname{Int}\left(\frac{\operatorname{csch}^2(a+bx)}{(c+dx)^2},x\right)$$

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

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^2(a+bx)}{(c+dx)^2} dx$$

Verification is Not applicable to the result.

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

```
[Out] Defer[Int][Csch[a + b*x]^2/(c + d*x)^2, x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^2(a+bx)}{(c+dx)^2} dx = \int \frac{\operatorname{csch}^2(a+bx)}{(c+dx)^2} dx$$

Mathematica [A] time = 17.62, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}^2(a+bx)}{(c+dx)^2} dx$$

Verification is Not applicable to the result.

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

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

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(bx+a)^2}{d^2x^2+2\,cdx+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.11, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$4\,d\int \frac{1}{2\left(bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3+\left(bd^3x^3e^a+3\,bcd^2x^2e^a+3\,bc^2dxe^a+bc^3e^a\right)e^{(bx)}\right)}\,dx-4\,d\int -\frac{}{2\left(bd^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 4*d*integrate(1/2/(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + (b*d^3
*x^3*e^a + 3*b*c*d^2*x^2*e^a + 3*b*c^2*d*x*e^a + b*c^3*e^a)*e^(b*x)), x) -
4*d*integrate(-1/2/(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 - (b*d^
3*x^3*e^a + 3*b*c*d^2*x^2*e^a + 3*b*c^2*d*x*e^a + b*c^3*e^a)*e^(b*x)), x) +
 2/(b*d^2*x^2 + 2*b*c*d*x + b*c^2 - (b*d^2*x^2*e^(2*a) + 2*b*c*d*x*e^(2*a)
+ b*c^2*e^(2*a))*e^(2*b*x))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{{\mathrm{sinh}\left(a+b\,x\right)}^2\,{\left(c+d\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(a + b*x)^2*(c + d*x)^2),x)
```

```
[Out] int(1/(sinh(a + b*x)^2*(c + d*x)^2), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.33 $\int (c+dx)^3 \operatorname{csch}^3(a+bx)\,dx$

Optimal. Leaf size=256

$$-\frac{3d^3\text{Li}_2\left(-e^{a+bx}\right)}{b^4}+\frac{3d^3\text{Li}_2\left(e^{a+bx}\right)}{b^4}+\frac{3d^3\text{Li}_4\left(-e^{a+bx}\right)}{b^4}-\frac{3d^3\text{Li}_4\left(e^{a+bx}\right)}{b^4}-\frac{3d^2(c+dx)\text{Li}_3\left(-e^{a+bx}\right)}{b^3}+\frac{3d^2(c+dx)\text{Li}_3\left(\right.}{b^3}$$

```
[Out] -6*d^2*(d*x+c)*arctanh(exp(b*x+a))/b^3+(d*x+c)^3*arctanh(exp(b*x+a))/b-3/2*
d*(d*x+c)^2*csch(b*x+a)/b^2-1/2*(d*x+c)^3*coth(b*x+a)*csch(b*x+a)/b-3*d^3*p
olylog(2,-exp(b*x+a))/b^4+3/2*d*(d*x+c)^2*polylog(2,-exp(b*x+a))/b^2+3*d^3*
polylog(2,exp(b*x+a))/b^4-3/2*d*(d*x+c)^2*polylog(2,exp(b*x+a))/b^2-3*d^2*(
d*x+c)*polylog(3,-exp(b*x+a))/b^3+3*d^2*(d*x+c)*polylog(3,exp(b*x+a))/b^3+3
*d^3*polylog(4,-exp(b*x+a))/b^4-3*d^3*polylog(4,exp(b*x+a))/b^4
```

Rubi [A] time = 0.27, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 8, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4186, 4182, 2279, 2391, 2531, 6609, 2282, 6589}

$$-\frac{3d^2(c+dx)\text{PolyLog}\left(3,-e^{a+bx}\right)}{b^3}+\frac{3d^2(c+dx)\text{PolyLog}\left(3,e^{a+bx}\right)}{b^3}+\frac{3d(c+dx)^2\text{PolyLog}\left(2,-e^{a+bx}\right)}{2b^2}-\frac{3d(c+dx}{}$$

Antiderivative was successfully verified.

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

```
[Out] (-6*d^2*(c + d*x)*ArcTanh[E^(a + b*x)])/b^3 + ((c + d*x)^3*ArcTanh[E^(a + b
*x)])/b - (3*d*(c + d*x)^2*Csch[a + b*x])/(2*b^2) - ((c + d*x)^3*Coth[a + b
*x]*Csch[a + b*x])/(2*b) - (3*d^3*PolyLog[2, -E^(a + b*x)])/b^4 + (3*d*(c +
 d*x)^2*PolyLog[2, -E^(a + b*x)])/(2*b^2) + (3*d^3*PolyLog[2, E^(a + b*x)])
/b^4 - (3*d*(c + d*x)^2*PolyLog[2, E^(a + b*x)])/(2*b^2) - (3*d^2*(c + d*x)
*PolyLog[3, -E^(a + b*x)])/b^3 + (3*d^2*(c + d*x)*PolyLog[3, E^(a + b*x)])/
b^3 + (3*d^3*PolyLog[4, -E^(a + b*x)])/b^4 - (3*d^3*PolyLog[4, E^(a + b*x)]
)/b^4
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
```

```
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

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

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4186

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

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
```

```
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (c+dx)^3 \operatorname{csch}^3(a+bx)\,dx = -\frac{3d(c+dx)^2\operatorname{csch}(a+bx)}{2b^2} - \frac{(c+dx)^3\coth(a+bx)\operatorname{csch}(a+bx)}{2b} - \frac{1}{2}\int (c+dx)^3$$

$$= -\frac{6d^2(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b^3} + \frac{(c+dx)^3\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{3d(c+dx)^2\operatorname{csch}(a+b}{2b^2}$$

$$= -\frac{6d^2(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b^3} + \frac{(c+dx)^3\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{3d(c+dx)^2\operatorname{csch}(a+b}{2b^2}$$

$$= -\frac{6d^2(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b^3} + \frac{(c+dx)^3\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{3d(c+dx)^2\operatorname{csch}(a+b}{2b^2}$$

$$= -\frac{6d^2(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b^3} + \frac{(c+dx)^3\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{3d(c+dx)^2\operatorname{csch}(a+b}{2b^2}$$

$$= -\frac{6d^2(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b^3} + \frac{(c+dx)^3\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{3d(c+dx)^2\operatorname{csch}(a+b}{2b^2}$$

Mathematica [A] time = 8.92, size = 440, normalized size = 1.72

$$-\frac{b^3c^3\log\left(1-e^{a+bx}\right) - b^3c^3\log\left(e^{a+bx}+1\right) + 3b^3c^2dx\log\left(1-e^{a+bx}\right) - 3b^3c^2dx\log\left(e^{a+bx}+1\right) + 3b^3cd^2x^2\log\left(\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] -1/2*(b^2*(c + d*x)^2*(3*d + b*(c + d*x)*Coth[a + b*x])*Csch[a + b*x] + b^3
*c^3*Log[1 - E^(a + b*x)] - 6*b*c*d^2*Log[1 - E^(a + b*x)] + 3*b^3*c^2*d*x*
Log[1 - E^(a + b*x)] - 6*b*d^3*x*Log[1 - E^(a + b*x)] + 3*b^3*c*d^2*x^2*Log
[1 - E^(a + b*x)] + b^3*d^3*x^3*Log[1 - E^(a + b*x)] - b^3*c^3*Log[1 + E^(a
 + b*x)] + 6*b*c*d^2*Log[1 + E^(a + b*x)] - 3*b^3*c^2*d*x*Log[1 + E^(a + b*
x)] + 6*b*d^3*x*Log[1 + E^(a + b*x)] - 3*b^3*c*d^2*x^2*Log[1 + E^(a + b*x)]
 - b^3*d^3*x^3*Log[1 + E^(a + b*x)] - 3*d*(-2*d^2 + b^2*(c + d*x)^2)*PolyLo
g[2, -E^(a + b*x)] + 3*d*(-2*d^2 + b^2*(c + d*x)^2)*PolyLog[2, E^(a + b*x)]
 + 6*b*c*d^2*PolyLog[3, -E^(a + b*x)] + 6*b*d^3*x*PolyLog[3, -E^(a + b*x)]
- 6*b*c*d^2*PolyLog[3, E^(a + b*x)] - 6*b*d^3*x*PolyLog[3, E^(a + b*x)] - 6
*d^3*PolyLog[4, -E^(a + b*x)] + 6*d^3*PolyLog[4, E^(a + b*x)])/b^4
```

fricas [C] time = 0.76, size = 4008, normalized size = 15.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] -1/2*(2*(b^3*d^3*x^3 + b^3*c^3 + 3*b^2*c^2*d + 3*(b^3*c*d^2 + b^2*d^3)*x^2 + 3*(b^3*c^2*d + 2*b^2*c*d^2)*x)*cosh(b*x + a)^3 + 6*(b^3*d^3*x^3 + b^3*c^3 + 3*b^2*c^2*d + 3*(b^3*c*d^2 + b^2*d^3)*x^2 + 3*(b^3*c^2*d + 2*b^2*c*d^2)*x)*cosh(b*x + a)*sinh(b*x + a)^2 + 2*(b^3*d^3*x^3 + b^3*c^3 + 3*b^2*c^2*d + 3*(b^3*c*d^2 + b^2*d^3)*x^2 + 3*(b^3*c^2*d + 2*b^2*c*d^2)*x)*sinh(b*x + a)^3 + 2*(b^3*d^3*x^3 + b^3*c^3 - 3*b^2*c^2*d + 3*(b^3*c*d^2 - b^2*d^3)*x^2 + 3*(b^3*c^2*d - 2*b^2*c*d^2)*x)*cosh(b*x + a) + 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d + (b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a)^4 + 4*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a)*sinh(b*x + a)^3 + (b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*sinh(b*x + a)^4 - 2*d^3 - 2*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a)^2 - 2*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3 - 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a)^2)*sinh(b*x + a)^2 + 4*((b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a)^3 - (b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a))*sinh(b*x + a))*dilog(cosh(b*x + a) + sinh(b*x + a)) - 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d + (b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a)^4 + 4*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a)*sinh(b*x + a)^3 + (b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*sinh(b*x + a)^4 - 2*d^3 - 2*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a)^2 - 2*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3 - 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a)^2)*sinh(b*x + a)^2 + 4*((b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a)^3 - (b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*cosh(b*x + a))*sinh(b*x + a))*dilog(-cosh(b*x + a) - sinh(b*x + a)) - (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 + (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 - 6*b*c*d^2 + 3*(b^3*c^2*d - 2*b*d^3)*x)*cosh(b*x + a)^4 + 4*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 - 6*b*c*d^2 + 3*(b^3*c^2*d - 2*b*d^3)*x)*cosh(b*x + a)*sinh(b*x + a)^3 + (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 - 6*b*c*d^2 + 3*(b^3*c^2*d - 2*b*d^3)*x)*sinh(b*x + a)^4 - 6*b*c*d^2 - 2*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 - 6*b*c*d^2 + 3*(b^3*c^2*d - 2*b*d^3)*x)*cosh(b*x + a)^2 - 2*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 - 6*b*c*d^2 - 3*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 - 6*b*c*d^2 + 3*(b^3*c^2*d - 2*b*d^3)*x)*cosh(b*x + a)^2 + 3*(b^3*c^2*d - 2*b*d^3)*x)*sinh(b*x + a)^2 + 3*(b^3*c^2*d - 2*b*d^3)*x + 4*((b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 - 6*b*c*d^2 + 3*(b^3*c^2*d - 2*b*d^3)*x)*cosh(b*x + a)^3 - (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 - 6*b*c*d^2 + 3*(b^3*c^2*d - 2*b*d^3)*x)*cosh(b*x + a))*sinh(b*x + a))*log(cosh(b

```
*x + a) + sinh(b*x + a) + 1) + (b^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2 - 2)*b*c*d
^2 + (b^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2 - 2)*b*c*d^2 - (a^3 - 6*a)*d^3)*cosh
(b*x + a)^4 + 4*(b^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2 - 2)*b*c*d^2 - (a^3 - 6*a
)*d^3)*cosh(b*x + a)*sinh(b*x + a)^3 + (b^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2 -
2)*b*c*d^2 - (a^3 - 6*a)*d^3)*sinh(b*x + a)^4 - (a^3 - 6*a)*d^3 - 2*(b^3*c^
3 - 3*a*b^2*c^2*d + 3*(a^2 - 2)*b*c*d^2 - (a^3 - 6*a)*d^3)*cosh(b*x + a)^2
- 2*(b^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2 - 2)*b*c*d^2 - (a^3 - 6*a)*d^3 - 3*(b
^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2 - 2)*b*c*d^2 - (a^3 - 6*a)*d^3)*cosh(b*x +
a)^2)*sinh(b*x + a)^2 + 4*((b^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2 - 2)*b*c*d^2 -
 (a^3 - 6*a)*d^3)*cosh(b*x + a)^3 - (b^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2 - 2)*
b*c*d^2 - (a^3 - 6*a)*d^3)*cosh(b*x + a))*sinh(b*x + a))*log(cosh(b*x + a)
+ sinh(b*x + a) - 1) + (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*a*b^2*c^2*d - 3*a
^2*b*c*d^2 + (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2
 + (a^3 - 6*a)*d^3 + 3*(b^3*c^2*d - 2*b*d^3)*x)*cosh(b*x + a)^4 + 4*(b^3*d^
3*x^3 + 3*b^3*c*d^2*x^2 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + (a^3 - 6*a)*d^3 +
 3*(b^3*c^2*d - 2*b*d^3)*x)*cosh(b*x + a)*sinh(b*x + a)^3 + (b^3*d^3*x^3 +
3*b^3*c*d^2*x^2 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + (a^3 - 6*a)*d^3 + 3*(b^3*
c^2*d - 2*b*d^3)*x)*sinh(b*x + a)^4 + (a^3 - 6*a)*d^3 - 2*(b^3*d^3*x^3 + 3*
b^3*c*d^2*x^2 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + (a^3 - 6*a)*d^3 + 3*(b^3*c^
2*d - 2*b*d^3)*x)*cosh(b*x + a)^2 - 2*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*a*
b^2*c^2*d - 3*a^2*b*c*d^2 + (a^3 - 6*a)*d^3 - 3*(b^3*d^3*x^3 + 3*b^3*c*d^2*
x^2 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + (a^3 - 6*a)*d^3 + 3*(b^3*c^2*d - 2*b*
d^3)*x)*cosh(b*x + a)^2 + 3*(b^3*c^2*d - 2*b*d^3)*x)*sinh(b*x + a)^2 + 3*(b
^3*c^2*d - 2*b*d^3)*x + 4*((b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*a*b^2*c^2*d -
 3*a^2*b*c*d^2 + (a^3 - 6*a)*d^3 + 3*(b^3*c^2*d - 2*b*d^3)*x)*cosh(b*x + a)
^3 - (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + (a^3
- 6*a)*d^3 + 3*(b^3*c^2*d - 2*b*d^3)*x)*cosh(b*x + a))*sinh(b*x + a))*log(-
cosh(b*x + a) - sinh(b*x + a) + 1) + 6*(d^3*cosh(b*x + a)^4 + 4*d^3*cosh(b*
x + a)*sinh(b*x + a)^3 + d^3*sinh(b*x + a)^4 - 2*d^3*cosh(b*x + a)^2 + d^3
+ 2*(3*d^3*cosh(b*x + a)^2 - d^3)*sinh(b*x + a)^2 + 4*(d^3*cosh(b*x + a)^3
- d^3*cosh(b*x + a))*sinh(b*x + a))*polylog(4, cosh(b*x + a) + sinh(b*x + a
)) - 6*(d^3*cosh(b*x + a)^4 + 4*d^3*cosh(b*x + a)*sinh(b*x + a)^3 + d^3*sin
h(b*x + a)^4 - 2*d^3*cosh(b*x + a)^2 + d^3 + 2*(3*d^3*cosh(b*x + a)^2 - d^3
)*sinh(b*x + a)^2 + 4*(d^3*cosh(b*x + a)^3 - d^3*cosh(b*x + a))*sinh(b*x +
a))*polylog(4, -cosh(b*x + a) - sinh(b*x + a)) - 6*(b*d^3*x + (b*d^3*x + b*
c*d^2)*cosh(b*x + a)^4 + 4*(b*d^3*x + b*c*d^2)*cosh(b*x + a)*sinh(b*x + a)^
3 + (b*d^3*x + b*c*d^2)*sinh(b*x + a)^4 + b*c*d^2 - 2*(b*d^3*x + b*c*d^2)*c
osh(b*x + a)^2 - 2*(b*d^3*x + b*c*d^2 - 3*(b*d^3*x + b*c*d^2)*cosh(b*x + a)
^2)*sinh(b*x + a)^2 + 4*((b*d^3*x + b*c*d^2)*cosh(b*x + a)^3 - (b*d^3*x + b
*c*d^2)*cosh(b*x + a))*sinh(b*x + a))*polylog(3, cosh(b*x + a) + sinh(b*x +
 a)) + 6*(b*d^3*x + (b*d^3*x + b*c*d^2)*cosh(b*x + a)^4 + 4*(b*d^3*x + b*c*
d^2)*cosh(b*x + a)*sinh(b*x + a)^3 + (b*d^3*x + b*c*d^2)*sinh(b*x + a)^4 +
b*c*d^2 - 2*(b*d^3*x + b*c*d^2)*cosh(b*x + a)^2 - 2*(b*d^3*x + b*c*d^2 - 3*
(b*d^3*x + b*c*d^2)*cosh(b*x + a)^2)*sinh(b*x + a)^2 + 4*((b*d^3*x + b*c*d^
2)*cosh(b*x + a)^3 - (b*d^3*x + b*c*d^2)*cosh(b*x + a))*sinh(b*x + a))*poly
```

```
log(3, -cosh(b*x + a) - sinh(b*x + a)) + 2*(b^3*d^3*x^3 + b^3*c^3 - 3*b^2*c
^2*d + 3*(b^3*c*d^2 - b^2*d^3)*x^2 + 3*(b^3*d^3*x^3 + b^3*c^3 + 3*b^2*c^2*d
 + 3*(b^3*c*d^2 + b^2*d^3)*x^2 + 3*(b^3*c^2*d + 2*b^2*c*d^2)*x)*cosh(b*x +
a)^2 + 3*(b^3*c^2*d - 2*b^2*c*d^2)*x)*sinh(b*x + a))/(b^4*cosh(b*x + a)^4 +
 4*b^4*cosh(b*x + a)*sinh(b*x + a)^3 + b^4*sinh(b*x + a)^4 - 2*b^4*cosh(b*x
 + a)^2 + b^4 + 2*(3*b^4*cosh(b*x + a)^2 - b^4)*sinh(b*x + a)^2 + 4*(b^4*co
sh(b*x + a)^3 - b^4*cosh(b*x + a))*sinh(b*x + a))
```

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

$$\int (dx+c)^3 \operatorname{csch}(bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^3*csch(b*x + a)^3, x)
```

maple [B] time = 0.18, size = 876, normalized size = 3.42

$$-\frac{3d^3 \operatorname{polylog}\left(2, e^{bx+a}\right) x^2}{2b^2}+\frac{3d^3 \operatorname{polylog}\left(3, e^{bx+a}\right) x}{b^3}-\frac{d^3 a^3 \operatorname{arctanh}\left(e^{bx+a}\right)}{b^4}-\frac{3c\,d^2 \operatorname{polylog}\left(3, -e^{bx+a}\right)}{b^3}+\frac{3c\,d^2 \operatorname{pol}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 3*d^3*polylog(4,-exp(b*x+a))/b^4-3*d^3*polylog(4,exp(b*x+a))/b^4-3*d^3*poly
log(2,-exp(b*x+a))/b^4+3*d^3*polylog(2,exp(b*x+a))/b^4-3/2/b^2*d^3*polylog(
2,exp(b*x+a))*x^2+3/b^3*d^3*polylog(3,exp(b*x+a))*x-1/b^4*d^3*a^3*arctanh(e
xp(b*x+a))-3/b^3*c*d^2*polylog(3,-exp(b*x+a))+3/b^3*c*d^2*polylog(3,exp(b*x
+a))+3/2/b^2*c^2*d*polylog(2,-exp(b*x+a))-3/2/b^2*c^2*d*polylog(2,exp(b*x+a
))+1/2/b*d^3*ln(1+exp(b*x+a))*x^3+1/2/b^4*d^3*ln(1+exp(b*x+a))*a^3+3/2/b^2*
d^3*polylog(2,-exp(b*x+a))*x^2-3/b^3*d^3*polylog(3,-exp(b*x+a))*x-1/2/b*d^3
*ln(1-exp(b*x+a))*x^3-1/2/b^4*d^3*ln(1-exp(b*x+a))*a^3-exp(b*x+a)*(b*d^3*x^
3*exp(2*b*x+2*a)+3*b*c*d^2*x^2*exp(2*b*x+2*a)+3*b*c^2*d*x*exp(2*b*x+2*a)+b*
d^3*x^3+3*d^3*x^2*exp(2*b*x+2*a)+b*c^3*exp(2*b*x+2*a)+3*b*c*d^2*x^2+6*c*d^2
*x*exp(2*b*x+2*a)+3*b*c^2*d*x+3*c^2*d*exp(2*b*x+2*a)-3*d^3*x^2+b*c^3-6*c*d^
2*x-3*c^2*d)/b^2/(exp(2*b*x+2*a)-1)^2+6/b^4*d^3*a*arctanh(exp(b*x+a))-6/b^3
*c*d^2*arctanh(exp(b*x+a))-3/b^3*d^3*ln(1+exp(b*x+a))*x-3/b^4*d^3*ln(1+exp(
b*x+a))*a+3/b^3*d^3*ln(1-exp(b*x+a))*x+3/b^4*d^3*ln(1-exp(b*x+a))*a+3/b^2*c
*d^2*polylog(2,-exp(b*x+a))*x-3/2/b^3*c*d^2*a^2*ln(1+exp(b*x+a))+3/2/b^3*c*
d^2*a^2*ln(1-exp(b*x+a))-3/2/b*c*d^2*ln(1-exp(b*x+a))*x^2-3/b^2*c*d^2*polyl
og(2,exp(b*x+a))*x+3/2/b*c^2*d*ln(1+exp(b*x+a))*x+3/2/b^2*c^2*d*ln(1+exp(b*
x+a))*a-3/2/b*c^2*d*ln(1-exp(b*x+a))*x-3/2/b^2*c^2*d*ln(1-exp(b*x+a))*a+3/2
```

```
/b*c*d^2*ln(1+exp(b*x+a))*x^2-3/b^2*c^2*d*a*arctanh(exp(b*x+a))+3/b^3*c*d^2
*a^2*arctanh(exp(b*x+a))+1/b*c^3*arctanh(exp(b*x+a))
```

maxima [B] time = 0.60, size = 605, normalized size = 2.36

$$\frac{1}{2}c^3\left(\frac{\log\left(e^{(-bx-a)}+1\right)}{b}-\frac{\log\left(e^{(-bx-a)}-1\right)}{b}+\frac{2\left(e^{(-bx-a)}+e^{(-3\,bx-3\,a)}\right)}{b\left(2\,e^{(-2\,bx-2\,a)}-e^{(-4\,bx-4\,a)}-1\right)}\right)+\frac{3\left(b^2x^2\log\left(e^{(bx+a)}+1\right)+2\,bx\mathrm{Li}\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*c^3*(log(e^(-b*x - a) + 1)/b - log(e^(-b*x - a) - 1)/b + 2*(e^(-b*x - a
) + e^(-3*b*x - 3*a))/(b*(2*e^(-2*b*x - 2*a) - e^(-4*b*x - 4*a) - 1))) + 3/
2*(b^2*x^2*log(e^(b*x + a) + 1) + 2*b*x*dilog(-e^(b*x + a)) - 2*polylog(3,
-e^(b*x + a)))*c*d^2/b^3 - 3/2*(b^2*x^2*log(-e^(b*x + a) + 1) + 2*b*x*dilog
(e^(b*x + a)) - 2*polylog(3, e^(b*x + a)))*c*d^2/b^3 - 3*c*d^2*log(e^(b*x +
 a) + 1)/b^3 + 3*c*d^2*log(e^(b*x + a) - 1)/b^3 - ((b*d^3*x^3*e^(3*a) + 3*c
^2*d*e^(3*a) + 3*(b*c*d^2 + d^3)*x^2*e^(3*a) + 3*(b*c^2*d + 2*c*d^2)*x*e^(3
*a))*e^(3*b*x) + (b*d^3*x^3*e^a - 3*c^2*d*e^a + 3*(b*c*d^2 - d^3)*x^2*e^a +
 3*(b*c^2*d - 2*c*d^2)*x*e^a)*e^(b*x))/(b^2*e^(4*b*x + 4*a) - 2*b^2*e^(2*b*
x + 2*a) + b^2) + 1/2*(b^3*x^3*log(e^(b*x + a) + 1) + 3*b^2*x^2*dilog(-e^(b
*x + a)) - 6*b*x*polylog(3, -e^(b*x + a)) + 6*polylog(4, -e^(b*x + a)))*d^3
/b^4 - 1/2*(b^3*x^3*log(-e^(b*x + a) + 1) + 3*b^2*x^2*dilog(e^(b*x + a)) -
6*b*x*polylog(3, e^(b*x + a)) + 6*polylog(4, e^(b*x + a)))*d^3/b^4 + 3/2*(b
^2*c^2*d - 2*d^3)*(b*x*log(e^(b*x + a) + 1) + dilog(-e^(b*x + a)))/b^4 - 3/
2*(b^2*c^2*d - 2*d^3)*(b*x*log(-e^(b*x + a) + 1) + dilog(e^(b*x + a)))/b^4
```

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

$$\int \frac{(c+d\,x)^3}{\sinh(a+b\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int (c+dx)^3\operatorname{csch}^3(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.34 $\int (c+dx)^2 \operatorname{csch}^3(a+bx)\,dx$

Optimal. Leaf size=154

$$-\frac{d^2\text{Li}_3\left(-e^{a+bx}\right)}{b^3}+\frac{d^2\text{Li}_3\left(e^{a+bx}\right)}{b^3}-\frac{d^2\tanh^{-1}(\cosh(a+bx))}{b^3}+\frac{d(c+dx)\text{Li}_2\left(-e^{a+bx}\right)}{b^2}-\frac{d(c+dx)\text{Li}_2\left(e^{a+bx}\right)}{b^2}-\frac{d(c+dx}{}$$

```
[Out] (d*x+c)^2*arctanh(exp(b*x+a))/b-d^2*arctanh(cosh(b*x+a))/b^3-d*(d*x+c)*csch
(b*x+a)/b^2-1/2*(d*x+c)^2*coth(b*x+a)*csch(b*x+a)/b+d*(d*x+c)*polylog(2,-ex
p(b*x+a))/b^2-d*(d*x+c)*polylog(2,exp(b*x+a))/b^2-d^2*polylog(3,-exp(b*x+a)
)/b^3+d^2*polylog(3,exp(b*x+a))/b^3
```

Rubi [A] time = 0.17, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4186, 3770, 4182, 2531, 2282, 6589}

$$\frac{d(c+dx)\text{PolyLog}\left(2,-e^{a+bx}\right)}{b^2}-\frac{d(c+dx)\text{PolyLog}\left(2,e^{a+bx}\right)}{b^2}-\frac{d^2\text{PolyLog}\left(3,-e^{a+bx}\right)}{b^3}+\frac{d^2\text{PolyLog}\left(3,e^{a+bx}\right)}{b^3}-\frac{d(c}{}$$

Antiderivative was successfully verified.

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

```
[Out] ((c + d*x)^2*ArcTanh[E^(a + b*x)])/b - (d^2*ArcTanh[Cosh[a + b*x]])/b^3 - (
d*(c + d*x)*Csch[a + b*x])/b^2 - ((c + d*x)^2*Coth[a + b*x]*Csch[a + b*x])/
(2*b) + (d*(c + d*x)*PolyLog[2, -E^(a + b*x)])/b^2 - (d*(c + d*x)*PolyLog[2
, E^(a + b*x)])/b^2 - (d^2*PolyLog[3, -E^(a + b*x)])/b^3 + (d^2*PolyLog[3,
E^(a + b*x)])/b^3
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3770

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

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4186

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

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int (c+dx)^2\text{csch}^3(a+bx)\,dx = -\frac{d(c+dx)\text{csch}(a+bx)}{b^2} - \frac{(c+dx)^2\coth(a+bx)\text{csch}(a+bx)}{2b} - \frac{1}{2}\int (c+dx)^2\text{csc}$$

$$= \frac{(c+dx)^2\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{d^2\tanh^{-1}(\cosh(a+bx))}{b^3} - \frac{d(c+dx)\text{csch}(a+bx)}{b^2} - (c$$

$$= \frac{(c+dx)^2\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{d^2\tanh^{-1}(\cosh(a+bx))}{b^3} - \frac{d(c+dx)\text{csch}(a+bx)}{b^2} - (c$$

$$= \frac{(c+dx)^2\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{d^2\tanh^{-1}(\cosh(a+bx))}{b^3} - \frac{d(c+dx)\text{csch}(a+bx)}{b^2} - (c$$

$$= \frac{(c+dx)^2\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{d^2\tanh^{-1}(\cosh(a+bx))}{b^3} - \frac{d(c+dx)\text{csch}(a+bx)}{b^2} - (c$$

Mathematica [B] time = 10.27, size = 420, normalized size = 2.73

$$\frac{\text{csch}\left(\frac{a}{2}\right)\text{csch}\left(\frac{a}{2}+\frac{bx}{2}\right)\left(cd\sinh\left(\frac{bx}{2}\right)+d^2x\sinh\left(\frac{bx}{2}\right)\right)}{2b^2} + \frac{\text{sech}\left(\frac{a}{2}\right)\text{sech}\left(\frac{a}{2}+\frac{bx}{2}\right)\left(cd\sinh\left(\frac{bx}{2}\right)+d^2x\sinh\left(\frac{bx}{2}\right)\right)}{2b^2} - d$$

Antiderivative was successfully verified.

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

```
[Out] -((d*(c + d*x)*Csch[a])/b^2) + ((-c^2 - 2*c*d*x - d^2*x^2)*Csch[a/2 + (b*x)
/2]^2)/(8*b) + (-(b^2*c^2*Log[1 - E^(a + b*x)]) + 2*d^2*Log[1 - E^(a + b*x)
] - 2*b^2*c*d*x*Log[1 - E^(a + b*x)] - b^2*d^2*x^2*Log[1 - E^(a + b*x)] + b
^2*c^2*Log[1 + E^(a + b*x)] - 2*d^2*Log[1 + E^(a + b*x)] + 2*b^2*c*d*x*Log[
1 + E^(a + b*x)] + b^2*d^2*x^2*Log[1 + E^(a + b*x)] + 2*b*d*(c + d*x)*PolyL
og[2, -E^(a + b*x)] - 2*b*d*(c + d*x)*PolyLog[2, E^(a + b*x)] - 2*d^2*PolyL
og[3, -E^(a + b*x)] + 2*d^2*PolyLog[3, E^(a + b*x)])/(2*b^3) + ((-c^2 - 2*c
*d*x - d^2*x^2)*Sech[a/2 + (b*x)/2]^2)/(8*b) + (Csch[a/2]*Csch[a/2 + (b*x)/
2]*(c*d*Sinh[(b*x)/2] + d^2*x*Sinh[(b*x)/2]))/(2*b^2) + (Sech[a/2]*Sech[a/2
 + (b*x)/2]*(c*d*Sinh[(b*x)/2] + d^2*x*Sinh[(b*x)/2]))/(2*b^2)
```

fricas [C] time = 0.55, size = 2218, normalized size = 14.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
*x + a)*sinh(b*x + a)^2 + 2*(b^2*d^2*x^2 + b^2*c^2 + 2*b*c*d + 2*(b^2*c*d +
 b*d^2)*x)*sinh(b*x + a)^3 + 2*(b^2*d^2*x^2 + b^2*c^2 - 2*b*c*d + 2*(b^2*c*
d - b*d^2)*x)*cosh(b*x + a) + 2*((b*d^2*x + b*c*d)*cosh(b*x + a)^4 + 4*(b*d
^2*x + b*c*d)*cosh(b*x + a)*sinh(b*x + a)^3 + (b*d^2*x + b*c*d)*sinh(b*x +
a)^4 + b*d^2*x + b*c*d - 2*(b*d^2*x + b*c*d)*cosh(b*x + a)^2 - 2*(b*d^2*x +
 b*c*d - 3*(b*d^2*x + b*c*d)*cosh(b*x + a)^2)*sinh(b*x + a)^2 + 4*((b*d^2*x
 + b*c*d)*cosh(b*x + a)^3 - (b*d^2*x + b*c*d)*cosh(b*x + a))*sinh(b*x + a))
*dilog(cosh(b*x + a) + sinh(b*x + a)) - 2*((b*d^2*x + b*c*d)*cosh(b*x + a)^
4 + 4*(b*d^2*x + b*c*d)*cosh(b*x + a)*sinh(b*x + a)^3 + (b*d^2*x + b*c*d)*s
inh(b*x + a)^4 + b*d^2*x + b*c*d - 2*(b*d^2*x + b*c*d)*cosh(b*x + a)^2 - 2*
(b*d^2*x + b*c*d - 3*(b*d^2*x + b*c*d)*cosh(b*x + a)^2)*sinh(b*x + a)^2 + 4
*((b*d^2*x + b*c*d)*cosh(b*x + a)^3 - (b*d^2*x + b*c*d)*cosh(b*x + a))*sinh
(b*x + a))*dilog(-cosh(b*x + a) - sinh(b*x + a)) - (b^2*d^2*x^2 + 2*b^2*c*d
*x + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*d^2)*cosh(b*x + a)^4 + 4*(b^2
*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*d^2)*cosh(b*x + a)*sinh(b*x + a)^3 + (
b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*d^2)*sinh(b*x + a)^4 + b^2*c^2 - 2*
(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*d^2)*cosh(b*x + a)^2 - 2*(b^2*d^2*
x^2 + 2*b^2*c*d*x + b^2*c^2 - 3*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*d^
2)*cosh(b*x + a)^2 - 2*d^2)*sinh(b*x + a)^2 - 2*d^2 + 4*((b^2*d^2*x^2 + 2*b
^2*c*d*x + b^2*c^2 - 2*d^2)*cosh(b*x + a)^3 - (b^2*d^2*x^2 + 2*b^2*c*d*x +
b^2*c^2 - 2*d^2)*cosh(b*x + a))*sinh(b*x + a))*log(cosh(b*x + a) + sinh(b*x
 + a) + 1) + ((b^2*c^2 - 2*a*b*c*d + (a^2 - 2)*d^2)*cosh(b*x + a)^4 + 4*(b^
2*c^2 - 2*a*b*c*d + (a^2 - 2)*d^2)*cosh(b*x + a)*sinh(b*x + a)^3 + (b^2*c^2
 - 2*a*b*c*d + (a^2 - 2)*d^2)*sinh(b*x + a)^4 + b^2*c^2 - 2*a*b*c*d + (a^2
- 2)*d^2 - 2*(b^2*c^2 - 2*a*b*c*d + (a^2 - 2)*d^2)*cosh(b*x + a)^2 - 2*(b^2
*c^2 - 2*a*b*c*d + (a^2 - 2)*d^2 - 3*(b^2*c^2 - 2*a*b*c*d + (a^2 - 2)*d^2)*
cosh(b*x + a)^2)*sinh(b*x + a)^2 + 4*((b^2*c^2 - 2*a*b*c*d + (a^2 - 2)*d^2)
*cosh(b*x + a)^3 - (b^2*c^2 - 2*a*b*c*d + (a^2 - 2)*d^2)*cosh(b*x + a))*sin
h(b*x + a))*log(cosh(b*x + a) + sinh(b*x + a) - 1) + (b^2*d^2*x^2 + 2*b^2*c
*d*x + (b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*cosh(b*x + a)^4 +
4*(b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*cosh(b*x + a)*sinh(b*x
+ a)^3 + (b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*sinh(b*x + a)^4
+ 2*a*b*c*d - a^2*d^2 - 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)
*cosh(b*x + a)^2 - 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2 - 3*(
b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*cosh(b*x + a)^2)*sinh(b*x
+ a)^2 + 4*((b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*cosh(b*x + a)
^3 - (b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*cosh(b*x + a))*sinh(
b*x + a))*log(-cosh(b*x + a) - sinh(b*x + a) + 1) - 2*(d^2*cosh(b*x + a)^4
+ 4*d^2*cosh(b*x + a)*sinh(b*x + a)^3 + d^2*sinh(b*x + a)^4 - 2*d^2*cosh(b*
x + a)^2 + 2*(3*d^2*cosh(b*x + a)^2 - d^2)*sinh(b*x + a)^2 + d^2 + 4*(d^2*c
osh(b*x + a)^3 - d^2*cosh(b*x + a))*sinh(b*x + a))*polylog(3, cosh(b*x + a)
 + sinh(b*x + a)) + 2*(d^2*cosh(b*x + a)^4 + 4*d^2*cosh(b*x + a)*sinh(b*x +
 a)^3 + d^2*sinh(b*x + a)^4 - 2*d^2*cosh(b*x + a)^2 + 2*(3*d^2*cosh(b*x + a
)^2 - d^2)*sinh(b*x + a)^2 + d^2 + 4*(d^2*cosh(b*x + a)^3 - d^2*cosh(b*x +
a))*sinh(b*x + a))*polylog(3, -cosh(b*x + a) - sinh(b*x + a)) + 2*(b^2*d^2*
```

```
x^2 + b^2*c^2 - 2*b*c*d + 3*(b^2*d^2*x^2 + b^2*c^2 + 2*b*c*d + 2*(b^2*c*d +
 b*d^2)*x)*cosh(b*x + a)^2 + 2*(b^2*c*d - b*d^2)*x)*sinh(b*x + a))/(b^3*cos
h(b*x + a)^4 + 4*b^3*cosh(b*x + a)*sinh(b*x + a)^3 + b^3*sinh(b*x + a)^4 -
2*b^3*cosh(b*x + a)^2 + b^3 + 2*(3*b^3*cosh(b*x + a)^2 - b^3)*sinh(b*x + a)
^2 + 4*(b^3*cosh(b*x + a)^3 - b^3*cosh(b*x + a))*sinh(b*x + a))
```

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

$$\int (dx+c)^2 \operatorname{csch}(bx+a)^3\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^2*csch(b*x + a)^3, x)
```

maple [B] time = 0.07, size = 444, normalized size = 2.88

$$-\frac{e^{bx+a}\left(b\,d^2x^2 e^{2bx+2a} + 2bcdx\, e^{2bx+2a} + b\,c^2 e^{2bx+2a} + b\,d^2x^2 + 2d^2x\, e^{2bx+2a} + 2bcdx + 2cd\, e^{2bx+2a} + b\,c^2 - 2d^2x -\right.}{b^2\left(e^{2bx+2a}-1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -exp(b*x+a)*(b*d^2*x^2*exp(2*b*x+2*a)+2*b*c*d*x*exp(2*b*x+2*a)+b*c^2*exp(2*
b*x+2*a)+b*d^2*x^2+2*d^2*x*exp(2*b*x+2*a)+2*b*c*d*x+2*c*d*exp(2*b*x+2*a)+b*
c^2-2*d^2*x-2*c*d)/b^2/(exp(2*b*x+2*a)-1)^2-d^2*polylog(3,-exp(b*x+a))/b^3+
d^2*polylog(3,exp(b*x+a))/b^3-2/b^3*d^2*arctanh(exp(b*x+a))+1/2/b*d^2*ln(1+
exp(b*x+a))*x^2+1/b^2*d^2*polylog(2,-exp(b*x+a))*x-1/2/b*d^2*ln(1-exp(b*x+a
))*x^2-1/b^2*d^2*polylog(2,exp(b*x+a))*x+1/b^2*c*d*polylog(2,-exp(b*x+a))-1
/b^2*c*d*polylog(2,exp(b*x+a))-2/b^2*c*d*a*arctanh(exp(b*x+a))+1/b*c*d*ln(1
+exp(b*x+a))*x+1/b^2*c*d*ln(1+exp(b*x+a))*a-1/b*c*d*ln(1-exp(b*x+a))*x-1/b^
2*c*d*ln(1-exp(b*x+a))*a+1/b^3*d^2*a^2*arctanh(exp(b*x+a))+1/b*c^2*arctanh(
exp(b*x+a))-1/2/b^3*d^2*ln(1+exp(b*x+a))*a^2+1/2/b^3*d^2*ln(1-exp(b*x+a))*a
^2
```

maxima [B] time = 1.04, size = 393, normalized size = 2.55

$$\frac{1}{2}c^2\left(\frac{\log\left(e^{(-bx-a)}+1\right)}{b} - \frac{\log\left(e^{(-bx-a)}-1\right)}{b} + \frac{2\left(e^{(-bx-a)}+e^{(-3\,bx-3\,a)}\right)}{b\left(2\,e^{(-2\,bx-2\,a)}-e^{(-4\,bx-4\,a)}-1\right)}\right) + \frac{\left(bx\log\left(e^{(bx+a)}+1\right)+\mathrm{Li}_2\left(-e^{(bx+a}\right.\right.}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*c^2*(log(e^(-b*x - a) + 1)/b - log(e^(-b*x - a) - 1)/b + 2*(e^(-b*x - a
) + e^(-3*b*x - 3*a))/(b*(2*e^(-2*b*x - 2*a) - e^(-4*b*x - 4*a) - 1))) + (b
*x*log(e^(b*x + a) + 1) + dilog(-e^(b*x + a)))*c*d/b^2 - (b*x*log(-e^(b*x +
 a) + 1) + dilog(e^(b*x + a)))*c*d/b^2 - ((b*d^2*x^2*e^(3*a) + 2*c*d*e^(3*a
) + 2*(b*c*d + d^2)*x*e^(3*a))*e^(3*b*x) + (b*d^2*x^2*e^a - 2*c*d*e^a + 2*(
b*c*d - d^2)*x*e^a)*e^(b*x))/(b^2*e^(4*b*x + 4*a) - 2*b^2*e^(2*b*x + 2*a) +
 b^2) + 1/2*(b^2*x^2*log(e^(b*x + a) + 1) + 2*b*x*dilog(-e^(b*x + a)) - 2*p
olylog(3, -e^(b*x + a)))*d^2/b^3 - 1/2*(b^2*x^2*log(-e^(b*x + a) + 1) + 2*b
*x*dilog(e^(b*x + a)) - 2*polylog(3, e^(b*x + a)))*d^2/b^3 - d^2*log(e^(b*x
 + a) + 1)/b^3 + d^2*log(e^(b*x + a) - 1)/b^3
```

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

$$\int \frac{(c + d\,x)^2}{\sinh\left(a + b\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((c + d*x)^2/sinh(a + b*x)^3, x)
```

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

$$\int (c + dx)^2 \operatorname{csch}^3(a + bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*csch(b*x+a)**3,x)
```

```
[Out] Integral((c + d*x)**2*csch(a + b*x)**3, x)
```

3.35 $\int (c+dx)\operatorname{csch}^3(a+bx)\,dx$

Optimal. Leaf size=92

$$\frac{d\text{Li}_2\left(-e^{a+bx}\right)}{2b^2}-\frac{d\text{Li}_2\left(e^{a+bx}\right)}{2b^2}-\frac{d\operatorname{csch}(a+bx)}{2b^2}+\frac{(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b}-\frac{(c+dx)\coth(a+bx)\operatorname{csch}(a+bx)}{2b}$$

```
[Out] (d*x+c)*arctanh(exp(b*x+a))/b-1/2*d*csch(b*x+a)/b^2-1/2*(d*x+c)*coth(b*x+a)
*csch(b*x+a)/b+1/2*d*polylog(2,-exp(b*x+a))/b^2-1/2*d*polylog(2,exp(b*x+a))
/b^2
```

Rubi [A] time = 0.08, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4185, 4182, 2279, 2391}

$$\frac{d\text{PolyLog}\left(2,-e^{a+bx}\right)}{2b^2}-\frac{d\text{PolyLog}\left(2,e^{a+bx}\right)}{2b^2}-\frac{d\operatorname{csch}(a+bx)}{2b^2}+\frac{(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b}-\frac{(c+dx)\coth(a+bx)\operatorname{csch}(a+bx)}{2b}$$

Antiderivative was successfully verified.

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

```
[Out] ((c + d*x)*ArcTanh[E^(a + b*x)])/b - (d*Csch[a + b*x])/(2*b^2) - ((c + d*x)
*Coth[a + b*x]*Csch[a + b*x])/(2*b) + (d*PolyLog[2, -E^(a + b*x)])/(2*b^2)
- (d*PolyLog[2, E^(a + b*x)])/(2*b^2)
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4185

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

Rubi steps

$$\int (c+dx)\text{csch}^3(a+bx)\,dx = -\frac{d\text{csch}(a+bx)}{2b^2} - \frac{(c+dx)\coth(a+bx)\text{csch}(a+bx)}{2b} - \frac{1}{2}\int (c+dx)\text{csch}(a+bx)$$

$$= \frac{(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{d\text{csch}(a+bx)}{2b^2} - \frac{(c+dx)\coth(a+bx)\text{csch}(a+bx)}{2b} + $$

$$= \frac{(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{d\text{csch}(a+bx)}{2b^2} - \frac{(c+dx)\coth(a+bx)\text{csch}(a+bx)}{2b} + $$

$$= \frac{(c+dx)\tanh^{-1}\left(e^{a+bx}\right)}{b} - \frac{d\text{csch}(a+bx)}{2b^2} - \frac{(c+dx)\coth(a+bx)\text{csch}(a+bx)}{2b} + $$

Mathematica [C] time = 2.31, size = 313, normalized size = 3.40

$$-\frac{d\left(-a\log\left(\tanh\left(\frac{1}{2}(a+bx)\right)\right) - i\left(i\left(\text{Li}_2\left(-e^{i(ia+ibx)}\right) - \text{Li}_2\left(e^{i(ia+ibx)}\right)\right) + (ia+ibx)\left(\log\left(1-e^{i(ia+ibx)}\right) - \log\left(1+\right.\right.\right.\right.}{2b^2}$$

Antiderivative was successfully verified.

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

```
[Out] -1/8*(d*x*Csch[a/2 + (b*x)/2]^2)/b - (c*Csch[(a + b*x)/2]^2)/(8*b) - (c*Log
[Tanh[(a + b*x)/2]])/(2*b) - (d*(-(a*Log[Tanh[(a + b*x)/2]]) - I*((I*a + I*
b*x)*(Log[1 - E^(I*(I*a + I*b*x))] - Log[1 + E^(I*(I*a + I*b*x))]) + I*(Pol
yLog[2, -E^(I*(I*a + I*b*x))] - PolyLog[2, E^(I*(I*a + I*b*x))]))))/(2*b^2)
 - (d*x*Sech[a/2 + (b*x)/2]^2)/(8*b) - (c*Sech[(a + b*x)/2]^2)/(8*b) + (d*C
sch[a/2]*Csch[a/2 + (b*x)/2]*Sinh[(b*x)/2])/(4*b^2) + (d*Sech[a/2]*Sech[a/2
 + (b*x)/2]*Sinh[(b*x)/2])/(4*b^2)
```

fricas [B] time = 0.44, size = 1026, normalized size = 11.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*(b*d*x + b*c + d)*cosh(b*x + a)^3 + 6*(b*d*x + b*c + d)*cosh(b*x +
a)*sinh(b*x + a)^2 + 2*(b*d*x + b*c + d)*sinh(b*x + a)^3 + 2*(b*d*x + b*c -
 d)*cosh(b*x + a) + (d*cosh(b*x + a)^4 + 4*d*cosh(b*x + a)*sinh(b*x + a)^3
+ d*sinh(b*x + a)^4 - 2*d*cosh(b*x + a)^2 + 2*(3*d*cosh(b*x + a)^2 - d)*sin
h(b*x + a)^2 + 4*(d*cosh(b*x + a)^3 - d*cosh(b*x + a))*sinh(b*x + a) + d)*d
ilog(cosh(b*x + a) + sinh(b*x + a)) - (d*cosh(b*x + a)^4 + 4*d*cosh(b*x + a
)*sinh(b*x + a)^3 + d*sinh(b*x + a)^4 - 2*d*cosh(b*x + a)^2 + 2*(3*d*cosh(b
*x + a)^2 - d)*sinh(b*x + a)^2 + 4*(d*cosh(b*x + a)^3 - d*cosh(b*x + a))*si
nh(b*x + a) + d)*dilog(-cosh(b*x + a) - sinh(b*x + a)) - ((b*d*x + b*c)*cos
h(b*x + a)^4 + 4*(b*d*x + b*c)*cosh(b*x + a)*sinh(b*x + a)^3 + (b*d*x + b*c
)*sinh(b*x + a)^4 + b*d*x - 2*(b*d*x + b*c)*cosh(b*x + a)^2 - 2*(b*d*x - 3*
(b*d*x + b*c)*cosh(b*x + a)^2 + b*c)*sinh(b*x + a)^2 + b*c + 4*((b*d*x + b*
c)*cosh(b*x + a)^3 - (b*d*x + b*c)*cosh(b*x + a))*sinh(b*x + a))*log(cosh(b
*x + a) + sinh(b*x + a) + 1) + ((b*c - a*d)*cosh(b*x + a)^4 + 4*(b*c - a*d)
*cosh(b*x + a)*sinh(b*x + a)^3 + (b*c - a*d)*sinh(b*x + a)^4 - 2*(b*c - a*d
)*cosh(b*x + a)^2 + 2*(3*(b*c - a*d)*cosh(b*x + a)^2 - b*c + a*d)*sinh(b*x
+ a)^2 + b*c - a*d + 4*((b*c - a*d)*cosh(b*x + a)^3 - (b*c - a*d)*cosh(b*x
+ a))*sinh(b*x + a))*log(cosh(b*x + a) + sinh(b*x + a) - 1) + ((b*d*x + a*d
)*cosh(b*x + a)^4 + 4*(b*d*x + a*d)*cosh(b*x + a)*sinh(b*x + a)^3 + (b*d*x
+ a*d)*sinh(b*x + a)^4 + b*d*x - 2*(b*d*x + a*d)*cosh(b*x + a)^2 - 2*(b*d*x
 - 3*(b*d*x + a*d)*cosh(b*x + a)^2 + a*d)*sinh(b*x + a)^2 + a*d + 4*((b*d*x
 + a*d)*cosh(b*x + a)^3 - (b*d*x + a*d)*cosh(b*x + a))*sinh(b*x + a))*log(-
cosh(b*x + a) - sinh(b*x + a) + 1) + 2*(b*d*x + 3*(b*d*x + b*c + d)*cosh(b*
x + a)^2 + b*c - d)*sinh(b*x + a))/(b^2*cosh(b*x + a)^4 + 4*b^2*cosh(b*x +
a)*sinh(b*x + a)^3 + b^2*sinh(b*x + a)^4 - 2*b^2*cosh(b*x + a)^2 + 2*(3*b^2
*cosh(b*x + a)^2 - b^2)*sinh(b*x + a)^2 + b^2 + 4*(b^2*cosh(b*x + a)^3 - b^
2*cosh(b*x + a))*sinh(b*x + a))
```

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

$$\int (dx + c)\operatorname{csch}(bx + a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)*csch(b*x + a)^3, x)
```

maple [B] time = 0.06, size = 197, normalized size = 2.14

$$-\frac{e^{bx+a}\left(bdx\,e^{2bx+2a} + bc\,e^{2bx+2a} + bdx + d\,e^{2bx+2a} + cb - d\right)}{b^2\left(e^{2bx+2a} - 1\right)^2} + \frac{c\,\operatorname{arctanh}\left(e^{bx+a}\right)}{b} + \frac{d\ln\left(1 + e^{bx+a}\right)x}{2b} + \frac{d\ln\left(1 + e^{bx+a}\right)}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -exp(b*x+a)*(b*d*x*exp(2*b*x+2*a)+b*c*exp(2*b*x+2*a)+b*d*x+d*exp(2*b*x+2*a)
+c*b-d)/b^2/(exp(2*b*x+2*a)-1)^2+1/b*c*arctanh(exp(b*x+a))+1/2/b*d*ln(1+exp
(b*x+a))*x+1/2/b^2*d*ln(1+exp(b*x+a))*a+1/2*d*polylog(2,-exp(b*x+a))/b^2-1/
2/b*d*ln(1-exp(b*x+a))*x-1/2/b^2*d*ln(1-exp(b*x+a))*a-1/2*d*polylog(2,exp(b
*x+a))/b^2-1/b^2*d*a*arctanh(exp(b*x+a))
```

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

$$-d\left(\frac{\left(bxe^{(3a)}+e^{(3a)}\right)e^{(3bx)}+\left(bxe^{a}-e^{a}\right)e^{(bx)}}{b^2e^{(4bx+4a)}-2b^2e^{(2bx+2a)}+b^2}+8\int\frac{x}{16\left(e^{(bx+a)}+1\right)}\,dx+8\int\frac{x}{16\left(e^{(bx+a)}-1\right)}\,dx\right)+\frac{1}{2}c\left(\frac{\log\left(e^{(-bx}\right.}{b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -d*(((b*x*e^(3*a) + e^(3*a))*e^(3*b*x) + (b*x*e^a - e^a)*e^(b*x))/(b^2*e^(4
*b*x + 4*a) - 2*b^2*e^(2*b*x + 2*a) + b^2) + 8*integrate(1/16*x/(e^(b*x + a
) + 1), x) + 8*integrate(1/16*x/(e^(b*x + a) - 1), x)) + 1/2*c*(log(e^(-b*x
 - a) + 1)/b - log(e^(-b*x - a) - 1)/b + 2*(e^(-b*x - a) + e^(-3*b*x - 3*a)
)/(b*(2*e^(-2*b*x - 2*a) - e^(-4*b*x - 4*a) - 1)))
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int\left(c+dx\right)\operatorname{csch}^{3}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.36 $\int \frac{\text{csch}^3(a+bx)}{c+dx} \, dx$

Optimal. Leaf size=19

$$\text{Int}\left(\frac{\text{csch}^3(a+bx)}{c+dx},x\right)$$

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

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{csch}^3(a+bx)}{c+dx} \, dx$$

Verification is Not applicable to the result.

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

```
[Out] Defer[Int][Csch[a + b*x]^3/(c + d*x), x]
```

Rubi steps

$$\int \frac{\text{csch}^3(a+bx)}{c+dx} \, dx = \int \frac{\text{csch}^3(a+bx)}{c+dx} \, dx$$

Mathematica [A] time = 68.90, size = 0, normalized size = 0.00

$$\int \frac{\text{csch}^3(a+bx)}{c+dx} \, dx$$

Verification is Not applicable to the result.

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

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

fricas [A] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{csch}\left(bx+a\right)^3}{dx+c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\operatorname{csch}(bx+a)^3}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.72, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(bx+a)^3}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(bdxe^{(3a)} + (bc-d)e^{(3a)}\right)e^{(3bx)} + \left(bdxe^{a} + (bc+d)e^{a}\right)e^{(bx)}}{b^2d^2x^2 + 2b^2cdx + b^2c^2 + \left(b^2d^2x^2e^{(4a)} + 2b^2cdxe^{(4a)} + b^2c^2e^{(4a)}\right)e^{(4bx)} - 2\left(b^2d^2x^2e^{(2a)} + 2b^2cdxe^{(2a)} + b^2c^2e^{(2a)}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -((b*d*x*e^(3*a) + (b*c - d)*e^(3*a))*e^(3*b*x) + (b*d*x*e^a + (b*c + d)*e^
a)*e^(b*x))/(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 + (b^2*d^2*x^2*e^(4*a) + 2
*b^2*c*d*x*e^(4*a) + b^2*c^2*e^(4*a))*e^(4*b*x) - 2*(b^2*d^2*x^2*e^(2*a) +
2*b^2*c*d*x*e^(2*a) + b^2*c^2*e^(2*a))*e^(2*b*x)) - 8*integrate(1/16*(b^2*d
^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*d^2)/(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*
b^2*c^2*d*x + b^2*c^3 + (b^2*d^3*x^3*e^a + 3*b^2*c*d^2*x^2*e^a + 3*b^2*c^2*
d*x*e^a + b^2*c^3*e^a)*e^(b*x)), x) - 8*integrate(-1/16*(b^2*d^2*x^2 + 2*b^
2*c*d*x + b^2*c^2 - 2*d^2)/(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x +
 b^2*c^3 - (b^2*d^3*x^3*e^a + 3*b^2*c*d^2*x^2*e^a + 3*b^2*c^2*d*x*e^a + b^2
*c^3*e^a)*e^(b*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{\sinh\left(a+b\,x\right)^3\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(a + b*x)^3*(c + d*x)),x)
```

```
[Out] int(1/(sinh(a + b*x)^3*(c + d*x)), x)
```

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

$$\int \frac{\operatorname{csch}^3(a+bx)}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.37 $\int \frac{\operatorname{csch}^3(a+bx)}{(c+dx)^2}\,dx$

Optimal. Leaf size=19

$$\operatorname{Int}\left(\frac{\operatorname{csch}^3(a+bx)}{(c+dx)^2},x\right)$$

```
[Out] Unintegrable(csch(b*x+a)^3/(d*x+c)^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^3(a+bx)}{(c+dx)^2}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Defer[Int][Csch[a + b*x]^3/(c + d*x)^2, x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^3(a+bx)}{(c+dx)^2}\,dx = \int \frac{\operatorname{csch}^3(a+bx)}{(c+dx)^2}\,dx$$

Mathematica [A] time = 74.37, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}^3(a+bx)}{(c+dx)^2}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[Csch[a + b*x]^3/(c + d*x)^2, x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(bx+a)^3}{d^2x^2+2\,cdx+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(csch(b*x + a)^3/(d^2*x^2 + 2*c*d*x + c^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

maple [A] time = 1.07, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(bx+a\right)^{3}}{\left(dx+c\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(csch(b*x+a)^3/(d*x+c)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(bdxe^{(3\,a)} + (bc-2\,d)e^{(3\,a)}\right)e^{(3\,bx)} + \left(bdxe^{a} + (bc+2\,d)e^{a}\right)e^{(}}{b^2d^3x^3 + 3\,b^2cd^2x^2 + 3\,b^2c^2dx + b^2c^3 + \left(b^2d^3x^3e^{(4\,a)} + 3\,b^2cd^2x^2e^{(4\,a)} + 3\,b^2c^2dxe^{(4\,a)} + b^2c^3e^{(4\,a)}\right)e^{(4\,bx)} - 2\left(b^2d^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{\sinh\left(a+b\,x\right)^3\,\left(c+d\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(a + b*x)^3*(c + d*x)^2),x)
[Out] int(1/(sinh(a + b*x)^3*(c + d*x)^2), x)
```

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

$$\int \frac{\operatorname{csch}^3(a+bx)}{(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(b*x+a)**3/(d*x+c)**2,x)
[Out] Integral(csch(a + b*x)**3/(c + d*x)**2, x)
```

3.38 $\int (c+dx)^{5/2} \sinh(a+bx)\, dx$

Optimal. Leaf size=171

$$-\frac{15\sqrt{\pi}\, d^{5/2} e^{\frac{bc}{d}-a} \operatorname{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{7/2}}-\frac{15\sqrt{\pi}\, d^{5/2} e^{a-\frac{bc}{d}} \operatorname{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{7/2}}+\frac{15d^2\sqrt{c+dx}\, \cosh(a+bx)}{4b^3}-\frac{5d(c+dx)^{3/2} \sinh(a+bx)}{2b^2}$$

```
[Out] (d*x+c)^(5/2)*cosh(b*x+a)/b-5/2*d*(d*x+c)^(3/2)*sinh(b*x+a)/b^2-15/16*d^(5/
2)*exp(-a+b*c/d)*erf(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/b^(7/2)-15/16*
d^(5/2)*exp(a-b*c/d)*erfi(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/b^(7/2)+1
5/4*d^2*cosh(b*x+a)*(d*x+c)^(1/2)/b^3
```

Rubi [A] time = 0.37, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3296, 3307, 2180, 2204, 2205}

$$-\frac{15\sqrt{\pi}\, d^{5/2} e^{\frac{bc}{d}-a} \operatorname{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{7/2}}-\frac{15\sqrt{\pi}\, d^{5/2} e^{a-\frac{bc}{d}} \operatorname{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{7/2}}+\frac{15d^2\sqrt{c+dx}\, \cosh(a+bx)}{4b^3}-\frac{5d(c+dx)^{3/2} \sinh(a+bx)}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^(5/2)*Sinh[a + b*x],x]
```

```
[Out] (15*d^2*Sqrt[c + d*x]*Cosh[a + b*x])/(4*b^3) + ((c + d*x)^(5/2)*Cosh[a + b*
x])/b - (15*d^(5/2)*E^(-a + (b*c)/d)*Sqrt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/S
qrt[d]])/(16*b^(7/2)) - (15*d^(5/2)*E^(a - (b*c)/d)*Sqrt[Pi]*Erfi[(Sqrt[b]*
Sqrt[c + d*x])/Sqrt[d]])/(16*b^(7/2)) - (5*d*(c + d*x)^(3/2)*Sinh[a + b*x])
/(2*b^2)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
```

```
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3296

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

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rubi steps

$$\int (c+dx)^{5/2}\sinh(a+bx)\,dx = \frac{(c+dx)^{5/2}\cosh(a+bx)}{b} - \frac{(5d)\int (c+dx)^{3/2}\cosh(a+bx)\,dx}{2b}$$

$$= \frac{(c+dx)^{5/2}\cosh(a+bx)}{b} - \frac{5d(c+dx)^{3/2}\sinh(a+bx)}{2b^2} + \frac{\left(15d^2\right)\int \sqrt{c+dx}\ \sinh}{4b^2}$$

$$= \frac{15d^2\sqrt{c+dx}\ \cosh(a+bx)}{4b^3} + \frac{(c+dx)^{5/2}\cosh(a+bx)}{b} - \frac{5d(c+dx)^{3/2}\sinh(a+}{2b^2}$$

$$= \frac{15d^2\sqrt{c+dx}\ \cosh(a+bx)}{4b^3} + \frac{(c+dx)^{5/2}\cosh(a+bx)}{b} - \frac{5d(c+dx)^{3/2}\sinh(a+}{2b^2}$$

$$= \frac{15d^2\sqrt{c+dx}\ \cosh(a+bx)}{4b^3} + \frac{(c+dx)^{5/2}\cosh(a+bx)}{b} - \frac{5d(c+dx)^{3/2}\sinh(a+}{2b^2}$$

$$= \frac{15d^2\sqrt{c+dx}\ \cosh(a+bx)}{4b^3} + \frac{(c+dx)^{5/2}\cosh(a+bx)}{b} - \frac{15d^{5/2}e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{}}{}\right.}{16b^{7/2}}$$

Mathematica [A] time = 0.06, size = 108, normalized size = 0.63

$$\frac{d^3e^{-a-\frac{bc}{d}}\left(e^{\frac{2bc}{d}}\sqrt{\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{7}{2},\frac{b(c+dx)}{d}\right)-e^{2a}\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{7}{2},-\frac{b(c+dx)}{d}\right)\right)}{2b^4\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^(5/2)*Sinh[a + b*x],x]
```

```
[Out] (d^3*E^(-a - (b*c)/d)*(-(E^(2*a)*Sqrt[-((b*(c + d*x))/d)]*Gamma[7/2, -((b*(
c + d*x))/d)]) + E^((2*b*c)/d)*Sqrt[(b*(c + d*x))/d]*Gamma[7/2, (b*(c + d*x
))/d]))/(2*b^4*Sqrt[c + d*x])
```

fricas [B] time = 0.49, size = 521, normalized size = 3.05

$$-\frac{15\sqrt{\pi}\left(d^3\cosh\left(bx+a\right)\cosh\left(-\frac{bc-ad}{d}\right)-d^3\cosh\left(bx+a\right)\sinh\left(-\frac{bc-ad}{d}\right)+\left(d^3\cosh\left(-\frac{bc-ad}{d}\right)-d^3\sinh\left(-\frac{bc-ad}{d}\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sinh(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/16*(15*sqrt(pi)*(d^3*cosh(b*x + a)*cosh(-(b*c - a*d)/d) - d^3*cosh(b*x +
 a)*sinh(-(b*c - a*d)/d) + (d^3*cosh(-(b*c - a*d)/d) - d^3*sinh(-(b*c - a*d
)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(d*x + c)*sqrt(b/d)) - 15*sqrt(pi)*(
d^3*cosh(b*x + a)*cosh(-(b*c - a*d)/d) + d^3*cosh(b*x + a)*sinh(-(b*c - a*d
)/d) + (d^3*cosh(-(b*c - a*d)/d) + d^3*sinh(-(b*c - a*d)/d))*sinh(b*x + a))
*sqrt(-b/d)*erf(sqrt(d*x + c)*sqrt(-b/d)) - 2*(4*b^3*d^2*x^2 + 4*b^3*c^2 +
10*b^2*c*d + 15*b*d^2 + (4*b^3*d^2*x^2 + 4*b^3*c^2 - 10*b^2*c*d + 15*b*d^2
+ 2*(4*b^3*c*d - 5*b^2*d^2)*x)*cosh(b*x + a)^2 + 2*(4*b^3*d^2*x^2 + 4*b^3*c
^2 - 10*b^2*c*d + 15*b*d^2 + 2*(4*b^3*c*d - 5*b^2*d^2)*x)*cosh(b*x + a)*sin
h(b*x + a) + (4*b^3*d^2*x^2 + 4*b^3*c^2 - 10*b^2*c*d + 15*b*d^2 + 2*(4*b^3*
c*d - 5*b^2*d^2)*x)*sinh(b*x + a)^2 + 2*(4*b^3*c*d + 5*b^2*d^2)*x)*sqrt(d*x
 + c))/(b^4*cosh(b*x + a) + b^4*sinh(b*x + a))
```

giac [A] time = 0.61, size = 232, normalized size = 1.36

$$\frac{\frac{15\sqrt{\pi}d^4\operatorname{erf}\left(-\frac{\sqrt{bd}\sqrt{dx+c}}{d}\right)e^{\left(\frac{bc-ad}{d}\right)}}{\sqrt{bd}\,b^3}+\frac{15\sqrt{\pi}d^4\operatorname{erf}\left(-\frac{\sqrt{-bd}\sqrt{dx+c}}{d}\right)e^{\left(-\frac{bc-ad}{d}\right)}}{\sqrt{-bd}\,b^3}+\frac{2\left(4\left(dx+c\right)^{\frac{5}{2}}b^2d-10\left(dx+c\right)^{\frac{3}{2}}bd^2+15\sqrt{dx+c}\,d^3\right)e^{\left(\frac{(dx+c)b-bc+ad}{d}\right)}}{b^3}+}{16\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sinh(b*x+a),x, algorithm="giac")
```

```
[Out] 1/16*(15*sqrt(pi)*d^4*erf(-sqrt(b*d)*sqrt(d*x + c)/d)*e^((b*c - a*d)/d)/(sq
rt(b*d)*b^3) + 15*sqrt(pi)*d^4*erf(-sqrt(-b*d)*sqrt(d*x + c)/d)*e^(-(b*c -
a*d)/d)/(sqrt(-b*d)*b^3) + 2*(4*(d*x + c)^(5/2)*b^2*d - 10*(d*x + c)^(3/2)*
b*d^2 + 15*sqrt(d*x + c)*d^3)*e^(((d*x + c)*b - b*c + a*d)/d)/b^3 + 2*(4*(d
*x + c)^(5/2)*b^2*d + 10*(d*x + c)^(3/2)*b*d^2 + 15*sqrt(d*x + c)*d^3)*e^(-
((d*x + c)*b - b*c + a*d)/d)/b^3)/d
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int (dx+c)^{\frac{5}{2}} \sinh (bx+a) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(5/2)*sinh(b*x+a),x)
```

```
[Out] int((d*x+c)^(5/2)*sinh(b*x+a),x)
```

maxima [B] time = 0.47, size = 308, normalized size = 1.80

$$\frac{32\,(dx+c)^{\frac{7}{2}}\sinh(bx+a) - \frac{\left(\frac{105\,\sqrt{\pi}\,d^4\,\operatorname{erf}\left(\sqrt{dx+c}\,\sqrt{-\frac{b}{d}}\right)e^{\left(a-\frac{bc}{d}\right)}}{b^4\sqrt{-\frac{b}{d}}} + \frac{105\,\sqrt{\pi}\,d^4\,\operatorname{erf}\left(\sqrt{dx+c}\,\sqrt{\frac{b}{d}}\right)e^{\left(-a+\frac{bc}{d}\right)}}{b^4\sqrt{\frac{b}{d}}} - \frac{2\left(8\,(dx+c)^{\frac{7}{2}}b^3de^{\left(\frac{bc}{d}\right)}+28\,(dx+c)^{\frac{5}{2}}b^2d^2e^{\left(\frac{bc}{d}\right)}+\cdots\right.}{\cdots}\right.}{\cdots}}{112\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sinh(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/112*(32*(d*x + c)^(7/2)*sinh(b*x + a) - (105*sqrt(pi)*d^4*erf(sqrt(d*x +
c)*sqrt(-b/d))*e^(a - b*c/d)/(b^4*sqrt(-b/d)) + 105*sqrt(pi)*d^4*erf(sqrt(d
*x + c)*sqrt(b/d))*e^(-a + b*c/d)/(b^4*sqrt(b/d)) - 2*(8*(d*x + c)^(7/2)*b^
3*d*e^(b*c/d) + 28*(d*x + c)^(5/2)*b^2*d^2*e^(b*c/d) + 70*(d*x + c)^(3/2)*b
*d^3*e^(b*c/d) + 105*sqrt(d*x + c)*d^4*e^(b*c/d))*e^(-a - (d*x + c)*b/d)/b^
4 + 2*(8*(d*x + c)^(7/2)*b^3*d*e^a - 28*(d*x + c)^(5/2)*b^2*d^2*e^a + 70*(d
*x + c)^(3/2)*b*d^3*e^a - 105*sqrt(d*x + c)*d^4*e^a)*e^((d*x + c)*b/d - b*c
/d)/b^4)*b/d)/d
```

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

$$\int \sinh\left(a+b\,x\right)\,{\left(c+d\,x\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)*(c + d*x)^(5/2),x)
```

```
[Out] int(sinh(a + b*x)*(c + d*x)^(5/2), x)
```

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

$$\int (c+dx)^{\frac{5}{2}} \sinh (a+bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(5/2)*sinh(b*x+a),x)
```

```
[Out] Integral((c + d*x)**(5/2)*sinh(a + b*x), x)
```

3.39 $\int (c+dx)^{3/2}\sinh(a+bx)\,dx$

Optimal. Leaf size=146

$$-\frac{3\sqrt{\pi}\,d^{3/2}e^{\frac{bc}{d}-a}\operatorname{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8b^{5/2}}+\frac{3\sqrt{\pi}\,d^{3/2}e^{a-\frac{bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8b^{5/2}}-\frac{3d\sqrt{c+dx}\,\sinh(a+bx)}{2b^2}+\frac{(c+dx)^{3/2}\cosh(a+bx)}{b}$$

```
[Out] (d*x+c)^(3/2)*cosh(b*x+a)/b-3/8*d^(3/2)*exp(-a+b*c/d)*erf(b^(1/2)*(d*x+c)^(
1/2)/d^(1/2))*Pi^(1/2)/b^(5/2)+3/8*d^(3/2)*exp(a-b*c/d)*erfi(b^(1/2)*(d*x+c
)^(1/2)/d^(1/2))*Pi^(1/2)/b^(5/2)-3/2*d*sinh(b*x+a)*(d*x+c)^(1/2)/b^2
```

Rubi [A] time = 0.25, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3296, 3308, 2180, 2204, 2205}

$$-\frac{3\sqrt{\pi}\,d^{3/2}e^{\frac{bc}{d}-a}\operatorname{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8b^{5/2}}+\frac{3\sqrt{\pi}\,d^{3/2}e^{a-\frac{bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8b^{5/2}}-\frac{3d\sqrt{c+dx}\,\sinh(a+bx)}{2b^2}+\frac{(c+dx)^{3/2}\cosh(a+b}{b}$$

Antiderivative was successfully verified.

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

```
[Out] ((c + d*x)^(3/2)*Cosh[a + b*x])/b - (3*d^(3/2)*E^(-a + (b*c)/d)*Sqrt[Pi]*Er
f[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(8*b^(5/2)) + (3*d^(3/2)*E^(a - (b*c)/d
)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(8*b^(5/2)) - (3*d*Sqrt[c
 + d*x]*Sinh[a + b*x])/(2*b^2)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3296

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

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\int (c+dx)^{3/2}\sinh(a+bx)\,dx = \frac{(c+dx)^{3/2}\cosh(a+bx)}{b} - \frac{(3d)\int \sqrt{c+dx}\,\cosh(a+bx)\,dx}{2b}$$

$$= \frac{(c+dx)^{3/2}\cosh(a+bx)}{b} - \frac{3d\sqrt{c+dx}\,\sinh(a+bx)}{2b^2} + \frac{\left(3d^2\right)\int \frac{\sinh(a+bx)}{\sqrt{c+dx}}\,dx}{4b^2}$$

$$= \frac{(c+dx)^{3/2}\cosh(a+bx)}{b} - \frac{3d\sqrt{c+dx}\,\sinh(a+bx)}{2b^2} + \frac{\left(3d^2\right)\int \frac{e^{-i(ia+ibx)}}{\sqrt{c+dx}}\,dx}{8b^2} - \frac{\left(3d^2\right. \cdots}{\cdots}$$

$$= \frac{(c+dx)^{3/2}\cosh(a+bx)}{b} - \frac{3d\sqrt{c+dx}\,\sinh(a+bx)}{2b^2} - \frac{(3d)\,\mathrm{Subst}\left(\int e^{i\left(ia-\frac{ibc}{d}\right)-\frac{bx^2}{d}} \cdots\right.}{4b^2}$$

$$= \frac{(c+dx)^{3/2}\cosh(a+bx)}{b} - \frac{3d^{3/2}e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{8b^{5/2}} + \frac{3d^{3/2}e^{a-\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erfi}\left(\frac{\sqrt{b} \cdots}{\cdots}\right.}{8b^{5/2}}$$

Mathematica [A] time = 0.09, size = 106, normalized size = 0.73

$$\frac{d\sqrt{c+dx}\,e^{-a-\frac{bc}{d}}\left(\frac{e^{\frac{2bc}{d}}\Gamma\left(\frac{5}{2},\frac{b(c+dx)}{d}\right)}{\sqrt{\frac{b(c+dx)}{d}}} - \frac{e^{2a}\Gamma\left(\frac{5}{2},-\frac{b(c+dx)}{d}\right)}{\sqrt{-\frac{b(c+dx)}{d}}}\right)}{2b^2}$$

Antiderivative was successfully verified.

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

```
[Out] (d*E^(-a - (b*c)/d)*Sqrt[c + d*x]*(-((E^(2*a)*Gamma[5/2, -((b*(c + d*x))/d)
])/Sqrt[-((b*(c + d*x))/d)]) + (E^((2*b*c)/d)*Gamma[5/2, (b*(c + d*x))/d])/
Sqrt[(b*(c + d*x))/d]))/(2*b^2)
```

fricas [B] time = 0.44, size = 385, normalized size = 2.64

$$-\frac{3\sqrt{\pi}\left(d^2\cosh\left(bx+a\right)\cosh\left(-\frac{bc-ad}{d}\right)-d^2\cosh\left(bx+a\right)\sinh\left(-\frac{bc-ad}{d}\right)+\left(d^2\cosh\left(-\frac{bc-ad}{d}\right)-d^2\sinh\left(-\frac{bc-ad}{d}\right)\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8*(3*sqrt(pi)*(d^2*cosh(b*x + a)*cosh(-(b*c - a*d)/d) - d^2*cosh(b*x + a
)*sinh(-(b*c - a*d)/d) + (d^2*cosh(-(b*c - a*d)/d) - d^2*sinh(-(b*c - a*d)/
d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(d*x + c)*sqrt(b/d)) + 3*sqrt(pi)*(d^2
*cosh(b*x + a)*cosh(-(b*c - a*d)/d) + d^2*cosh(b*x + a)*sinh(-(b*c - a*d)/d
) + (d^2*cosh(-(b*c - a*d)/d) + d^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sq
rt(-b/d)*erf(sqrt(d*x + c)*sqrt(-b/d)) - 2*(2*b^2*d*x + 2*b^2*c + (2*b^2*d*
x + 2*b^2*c - 3*b*d)*cosh(b*x + a)^2 + 2*(2*b^2*d*x + 2*b^2*c - 3*b*d)*cosh
(b*x + a)*sinh(b*x + a) + (2*b^2*d*x + 2*b^2*c - 3*b*d)*sinh(b*x + a)^2 + 3
*b*d)*sqrt(d*x + c))/(b^3*cosh(b*x + a) + b^3*sinh(b*x + a))
```

giac [A] time = 1.11, size = 202, normalized size = 1.38

$$\frac{\frac{3\sqrt{\pi}d^3\operatorname{erf}\left(-\frac{\sqrt{bd}\sqrt{dx+c}}{d}\right)e^{\left(\frac{bc-ad}{d}\right)}}{\sqrt{bd}\,b^2}-\frac{3\sqrt{\pi}d^3\operatorname{erf}\left(-\frac{\sqrt{-bd}\sqrt{dx+c}}{d}\right)e^{\left(-\frac{bc-ad}{d}\right)}}{\sqrt{-bd}\,b^2}+\frac{2\left(2\left(dx+c\right)^{\frac{3}{2}}bd-3\sqrt{dx+c}\,d^2\right)e^{\left(\frac{(dx+c)b-bc+ad}{d}\right)}}{b^2}+\frac{2\left(2\left(dx+c\right)^{\frac{3}{2}}bd+3\right.}{}}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(3*sqrt(pi)*d^3*erf(-sqrt(b*d)*sqrt(d*x + c)/d)*e^((b*c - a*d)/d)/(sqrt
(b*d)*b^2) - 3*sqrt(pi)*d^3*erf(-sqrt(-b*d)*sqrt(d*x + c)/d)*e^(-(b*c - a*d
)/d)/(sqrt(-b*d)*b^2) + 2*(2*(d*x + c)^(3/2)*b*d - 3*sqrt(d*x + c)*d^2)*e^(
((d*x + c)*b - b*c + a*d)/d)/b^2 + 2*(2*(d*x + c)^(3/2)*b*d + 3*sqrt(d*x +
c)*d^2)*e^(-((d*x + c)*b - b*c + a*d)/d)/b^2)/d
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int \left(dx+c\right)^{\frac{3}{2}}\sinh\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((d*x+c)^(3/2)*sinh(b*x+a),x)
```

maxima [B] time = 0.35, size = 268, normalized size = 1.84

$$\frac{16\,(dx+c)^{\frac{5}{2}}\sinh\left(bx+a\right)+\frac{\left(\frac{15\,\sqrt{\pi}\,d^{3}\,\mathrm{erf}\left(\sqrt{dx+c}\,\sqrt{-\frac{b}{d}}\right)e^{\left(a-\frac{bc}{d}\right)}}{b^{3}\sqrt{-\frac{b}{d}}}-\frac{15\,\sqrt{\pi}\,d^{3}\,\mathrm{erf}\left(\sqrt{dx+c}\,\sqrt{\frac{b}{d}}\right)e^{\left(-a+\frac{bc}{d}\right)}}{b^{3}\sqrt{\frac{b}{d}}}+\frac{2\left(4\,(dx+c)^{\frac{5}{2}}b^{2}de^{\left(\frac{bc}{d}\right)}+10\,(dx+c)^{\frac{3}{2}}bd^{2}e^{\left(\frac{bc}{d}\right)}+15\,\sqrt{d}\cdots\right.}{b^{3}}\right.}{d}}{40\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/40*(16*(d*x + c)^(5/2)*sinh(b*x + a) + (15*sqrt(pi)*d^3*erf(sqrt(d*x + c)
*sqrt(-b/d))*e^(a - b*c/d)/(b^3*sqrt(-b/d)) - 15*sqrt(pi)*d^3*erf(sqrt(d*x
+ c)*sqrt(b/d))*e^(-a + b*c/d)/(b^3*sqrt(b/d)) + 2*(4*(d*x + c)^(5/2)*b^2*d
*e^(b*c/d) + 10*(d*x + c)^(3/2)*b*d^2*e^(b*c/d) + 15*sqrt(d*x + c)*d^3*e^(b
*c/d))*e^(-a - (d*x + c)*b/d)/b^3 - 2*(4*(d*x + c)^(5/2)*b^2*d*e^a - 10*(d*
x + c)^(3/2)*b*d^2*e^a + 15*sqrt(d*x + c)*d^3*e^a)*e^((d*x + c)*b/d - b*c/d
)/b^3)*b/d)/d
```

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

$$\int \sinh\left(a+b\,x\right)\,{\left(c+d\,x\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(a + b*x)*(c + d*x)^(3/2), x)
```

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

$$\int (c+dx)^{\frac{3}{2}}\sinh\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(3/2)*sinh(b*x+a),x)
```

```
[Out] Integral((c + d*x)**(3/2)*sinh(a + b*x), x)
```

3.40 $\int \sqrt{c+dx}\,\sinh(a+bx)\,dx$

Optimal. Leaf size=123

$$-\frac{\sqrt{\pi}\,\sqrt{d}\,e^{\frac{bc}{d}-a}\text{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{3/2}}-\frac{\sqrt{\pi}\,\sqrt{d}\,e^{a-\frac{bc}{d}}\text{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{3/2}}+\frac{\sqrt{c+dx}\,\cosh(a+bx)}{b}$$

```
[Out] -1/4*exp(-a+b*c/d)*erf(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*d^(1/2)*Pi^(1/2)/b^(3
/2)-1/4*exp(a-b*c/d)*erfi(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*d^(1/2)*Pi^(1/2)/b
^(3/2)+cosh(b*x+a)*(d*x+c)^(1/2)/b
```

Rubi [A] time = 0.19, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3296, 3307, 2180, 2204, 2205}

$$-\frac{\sqrt{\pi}\,\sqrt{d}\,e^{\frac{bc}{d}-a}\text{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{3/2}}-\frac{\sqrt{\pi}\,\sqrt{d}\,e^{a-\frac{bc}{d}}\text{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{3/2}}+\frac{\sqrt{c+dx}\,\cosh(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c + d*x]*Sinh[a + b*x],x]
```

```
[Out] (Sqrt[c + d*x]*Cosh[a + b*x])/b - (Sqrt[d]*E^(-a + (b*c)/d)*Sqrt[Pi]*Erf[(S
qrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(4*b^(3/2)) - (Sqrt[d]*E^(a - (b*c)/d)*Sqrt
[Pi]*Erfi[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(4*b^(3/2))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3296

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

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rubi steps

$$\begin{aligned}\int \sqrt{c+dx}\sinh(a+bx)\,dx &= \frac{\sqrt{c+dx}\cosh(a+bx)}{b}-\frac{d\int\frac{\cosh(a+bx)}{\sqrt{c+dx}}\,dx}{2b}\\ &= \frac{\sqrt{c+dx}\cosh(a+bx)}{b}-\frac{d\int\frac{e^{-i(ia+ibx)}}{\sqrt{c+dx}}\,dx}{4b}-\frac{d\int\frac{e^{i(ia+ibx)}}{\sqrt{c+dx}}\,dx}{4b}\\ &= \frac{\sqrt{c+dx}\cosh(a+bx)}{b}-\frac{\mathrm{Subst}\left(\int e^{i\left(ia-\frac{ibc}{d}\right)-\frac{bx^2}{d}}\,dx,x,\sqrt{c+dx}\right)}{2b}-\frac{\mathrm{Subst}\left(\int e^{-i\left(ia-\frac{ib}{d}\right.}\right.}{}\\ &= \frac{\sqrt{c+dx}\cosh(a+bx)}{b}-\frac{\sqrt{d}\,e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{3/2}}-\frac{\sqrt{d}\,e^{a-\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right.}{4b^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 104, normalized size = 0.85

$$\frac{\sqrt{c+dx}\,e^{-a-\frac{bc}{d}}\left(\frac{e^{2a}\Gamma\left(\frac{3}{2},-\frac{b(c+dx)}{d}\right)}{\sqrt{-\frac{b(c+dx)}{d}}}+\frac{e^{\frac{2bc}{d}}\Gamma\left(\frac{3}{2},\frac{b(c+dx)}{d}\right)}{\sqrt{\frac{b(c+dx)}{d}}}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c + d*x]*Sinh[a + b*x],x]
```

```
[Out] (E^(-a - (b*c)/d)*Sqrt[c + d*x]*((E^(2*a)*Gamma[3/2, -((b*(c + d*x))/d)])/S
qrt[-((b*(c + d*x))/d)] + (E^((2*b*c)/d)*Gamma[3/2, (b*(c + d*x))/d])/Sqrt[
(b*(c + d*x))/d]))/(2*b)
```

fricas [B] time = 0.44, size = 301, normalized size = 2.45

$$-\frac{\sqrt{\pi}\left(d\cosh\left(bx+a\right)\cosh\left(-\frac{bc-ad}{d}\right)-d\cosh\left(bx+a\right)\sinh\left(-\frac{bc-ad}{d}\right)+\left(d\cosh\left(-\frac{bc-ad}{d}\right)-d\sinh\left(-\frac{bc-ad}{d}\right)\right)\sinh}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)*(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/4*(sqrt(pi)*(d*cosh(b*x + a)*cosh(-(b*c - a*d)/d) - d*cosh(b*x + a)*sinh
(-(b*c - a*d)/d) + (d*cosh(-(b*c - a*d)/d) - d*sinh(-(b*c - a*d)/d))*sinh(b
*x + a))*sqrt(b/d)*erf(sqrt(d*x + c)*sqrt(b/d)) - sqrt(pi)*(d*cosh(b*x + a)
*cosh(-(b*c - a*d)/d) + d*cosh(b*x + a)*sinh(-(b*c - a*d)/d) + (d*cosh(-(b*
c - a*d)/d) + d*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(d*
x + c)*sqrt(-b/d)) - 2*(b*cosh(b*x + a)^2 + 2*b*cosh(b*x + a)*sinh(b*x + a)
 + b*sinh(b*x + a)^2 + b)*sqrt(d*x + c))/(b^2*cosh(b*x + a) + b^2*sinh(b*x
+ a))
```

giac [A] time = 0.41, size = 168, normalized size = 1.37

$$\frac{\frac{\sqrt{\pi}d^{2}\operatorname{erf}\left(-\frac{\sqrt{bd}\sqrt{dx+c}}{d}\right)e^{\left(\frac{bc-ad}{d}\right)}}{\sqrt{bd}b}+\frac{\sqrt{\pi}d^{2}\operatorname{erf}\left(-\frac{\sqrt{-bd}\sqrt{dx+c}}{d}\right)e^{\left(-\frac{bc-ad}{d}\right)}}{\sqrt{-bd}b}+\frac{2\sqrt{dx+c}de^{\left(\frac{(dx+c)b-bc+ad}{d}\right)}}{b}+\frac{2\sqrt{dx+c}de^{\left(-\frac{(dx+c)b-bc+ad}{d}\right)}}{b}}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)*(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(sqrt(pi)*d^2*erf(-sqrt(b*d)*sqrt(d*x + c)/d)*e^((b*c - a*d)/d)/(sqrt(b
*d)*b) + sqrt(pi)*d^2*erf(-sqrt(-b*d)*sqrt(d*x + c)/d)*e^(-(b*c - a*d)/d)/(
sqrt(-b*d)*b) + 2*sqrt(d*x + c)*d*e^(((d*x + c)*b - b*c + a*d)/d)/b + 2*sqr
t(d*x + c)*d*e^(-((d*x + c)*b - b*c + a*d)/d)/b)/d
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \sinh\left(bx+a\right)\sqrt{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)*(d*x+c)^(1/2),x)
```

```
[Out] int(sinh(b*x+a)*(d*x+c)^(1/2),x)
```

maxima [B] time = 0.32, size = 230, normalized size = 1.87

$$\frac{8\,(dx+c)^{\frac{3}{2}}\sinh\left(bx+a\right) - \frac{\left(\frac{3\,\sqrt{\pi}d^2\operatorname{erf}\left(\sqrt{dx+c}\,\sqrt{-\frac{b}{d}}\right)e^{\left(a-\frac{bc}{d}\right)}}{b^2\sqrt{-\frac{b}{d}}} + \frac{3\,\sqrt{\pi}d^2\operatorname{erf}\left(\sqrt{dx+c}\,\sqrt{\frac{b}{d}}\right)e^{\left(-a+\frac{bc}{d}\right)}}{b^2\sqrt{\frac{b}{d}}} - \frac{2\left(2\,(dx+c)^{\frac{3}{2}}bde^{\left(\frac{bc}{d}\right)}+3\,\sqrt{dx+c}\,d^2e^{\left(\frac{bc}{d}\right)}\right)e^{\left(-a-\frac{(dx+c)b}{d}\right)}}{b^2}}{d}}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)*(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/12*(8*(d*x + c)^(3/2)*sinh(b*x + a) - (3*sqrt(pi)*d^2*erf(sqrt(d*x + c)*s
qrt(-b/d))*e^(a - b*c/d)/(b^2*sqrt(-b/d)) + 3*sqrt(pi)*d^2*erf(sqrt(d*x + c
)*sqrt(b/d))*e^(-a + b*c/d)/(b^2*sqrt(b/d)) - 2*(2*(d*x + c)^(3/2)*b*d*e^(b
*c/d) + 3*sqrt(d*x + c)*d^2*e^(b*c/d))*e^(-a - (d*x + c)*b/d)/b^2 + 2*(2*(d
*x + c)^(3/2)*b*d*e^a - 3*sqrt(d*x + c)*d^2*e^a)*e^((d*x + c)*b/d - b*c/d)/
b^2)*b/d)/d
```

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

$$\int \sinh\left(a+b\,x\right)\,\sqrt{c+d\,x}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)*(c + d*x)^(1/2),x)
```

```
[Out] int(sinh(a + b*x)*(c + d*x)^(1/2), x)
```

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

$$\int \sqrt{c+dx}\,\sinh\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)*(d*x+c)**(1/2),x)
```

```
[Out] Integral(sqrt(c + d*x)*sinh(a + b*x), x)
```

3.41 $\int \frac{\sinh(a+bx)}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=104

$$\frac{\sqrt{\pi}\,e^{a-\frac{bc}{d}}\,\text{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\,\sqrt{d}}-\frac{\sqrt{\pi}\,e^{\frac{bc}{d}-a}\,\text{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\,\sqrt{d}}$$

```
[Out] -1/2*exp(-a+b*c/d)*erf(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/b^(1/2)/d^(1
/2)+1/2*exp(a-b*c/d)*erfi(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/b^(1/2)/d
^(1/2)
```

Rubi [**A**] time = 0.13, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3308, 2180, 2204, 2205}

$$\frac{\sqrt{\pi}\,e^{a-\frac{bc}{d}}\,\text{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\,\sqrt{d}}-\frac{\sqrt{\pi}\,e^{\frac{bc}{d}-a}\,\text{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\,\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[a + b*x]/Sqrt[c + d*x],x]
```

```
[Out] -(E^(-a + (b*c)/d)*Sqrt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(2*Sqrt[b
]*Sqrt[d]) + (E^(a - (b*c)/d)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]
])/(2*Sqrt[b]*Sqrt[d])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sinh(a+bx)}{\sqrt{c+dx}}\,dx &= \frac{1}{2}\int \frac{e^{-i(ia+ibx)}}{\sqrt{c+dx}}\,dx - \frac{1}{2}\int \frac{e^{i(ia+ibx)}}{\sqrt{c+dx}}\,dx\\
&= -\frac{\operatorname{Subst}\left(\int e^{i\left(ia-\frac{ibc}{d}\right)-\frac{bx^2}{d}}\,dx, x, \sqrt{c+dx}\right)}{d} + \frac{\operatorname{Subst}\left(\int e^{-i\left(ia-\frac{ibc}{d}\right)+\frac{bx^2}{d}}\,dx, x, \sqrt{c+dx}\right)}{d}\\
&= -\frac{e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\operatorname{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}} + \frac{e^{a-\frac{bc}{d}}\sqrt{\pi}\,\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 104, normalized size = 1.00

$$\frac{e^{-a-\frac{bc}{d}}\left(e^{2a}\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},-\frac{b(c+dx)}{d}\right)+e^{\frac{2bc}{d}}\sqrt{\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},\frac{b(c+dx)}{d}\right)\right)}{2b\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[a + b*x]/Sqrt[c + d*x],x]
```

```
[Out] (E^(-a - (b*c)/d)*(E^(2*a)*Sqrt[-((b*(c + d*x))/d)]*Gamma[1/2, -((b*(c + d*
x))/d)] + E^((2*b*c)/d)*Sqrt[(b*(c + d*x))/d]*Gamma[1/2, (b*(c + d*x))/d]))
/(2*b*Sqrt[c + d*x])
```

fricas [A] time = 0.47, size = 122, normalized size = 1.17

$$-\frac{\sqrt{\pi}\sqrt{\frac{b}{d}}\left(\cosh\left(-\frac{bc-ad}{d}\right)-\sinh\left(-\frac{bc-ad}{d}\right)\right)\operatorname{erf}\left(\sqrt{dx+c}\sqrt{\frac{b}{d}}\right)+\sqrt{\pi}\sqrt{-\frac{b}{d}}\left(\cosh\left(-\frac{bc-ad}{d}\right)+\sinh\left(-\frac{bc-ad}{d}\right)\right)\operatorname{erf}\left(\sqrt{d\right.}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(pi)*sqrt(b/d)*(cosh(-(b*c - a*d)/d) - sinh(-(b*c - a*d)/d))*erf(
sqrt(d*x + c)*sqrt(b/d)) + sqrt(pi)*sqrt(-b/d)*(cosh(-(b*c - a*d)/d) + sinh
(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(-b/d)))/b
```

giac [A] time = 0.32, size = 90, normalized size = 0.87

$$\frac{\left(\frac{\sqrt{\pi}\, d \operatorname{erf}\left(-\frac{\sqrt{bd}\,\sqrt{dx+c}}{d}\right)e^{\left(\frac{bc}{d}\right)}}{\sqrt{bd}} - \frac{\sqrt{\pi}\, d \operatorname{erf}\left(-\frac{\sqrt{-bd}\,\sqrt{dx+c}}{d}\right)e^{\left(-\frac{bc-2\,ad}{d}\right)}}{\sqrt{-bd}}\right)e^{(-a)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*(sqrt(pi)*d*erf(-sqrt(b*d)*sqrt(d*x + c)/d)*e^(b*c/d)/sqrt(b*d) - sqrt(
pi)*d*erf(-sqrt(-b*d)*sqrt(d*x + c)/d)*e^(-(b*c - 2*a*d)/d)/sqrt(-b*d))*e^(
-a)/d
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)/(d*x+c)^(1/2),x)
```

```
[Out] int(sinh(b*x+a)/(d*x+c)^(1/2),x)
```

maxima [B] time = 0.44, size = 181, normalized size = 1.74

$$\frac{4\sqrt{dx+c}\,\sinh\left(bx+a\right) + \frac{\frac{\sqrt{\pi}\, d \operatorname{erf}\left(\sqrt{dx+c}\,\sqrt{-\frac{b}{d}}\right)e^{\left(a-\frac{bc}{d}\right)}}{b\sqrt{-\frac{b}{d}}} - \frac{\sqrt{\pi}\, d \operatorname{erf}\left(\sqrt{dx+c}\,\sqrt{\frac{b}{d}}\right)e^{\left(-a+\frac{bc}{d}\right)}}{b\sqrt{\frac{b}{d}}} - \frac{2\,\sqrt{dx+c}\, d e^{\left(a+\frac{(dx+c)b}{d}-\frac{bc}{d}\right)}}{b} + \frac{2\,\sqrt{dx+c}\, d e^{\left(-a-\frac{(dx+c)b}{d}+\frac{bc}{d}\right)}}{b}}{d}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*(4*sqrt(d*x + c)*sinh(b*x + a) + (sqrt(pi)*d*erf(sqrt(d*x + c)*sqrt(-b/
d))*e^(a - b*c/d)/(b*sqrt(-b/d)) - sqrt(pi)*d*erf(sqrt(d*x + c)*sqrt(b/d))*
e^(-a + b*c/d)/(b*sqrt(b/d)) - 2*sqrt(d*x + c)*d*e^(a + (d*x + c)*b/d - b*c
/d)/b + 2*sqrt(d*x + c)*d*e^(-a - (d*x + c)*b/d + b*c/d)/b)*b/d)/d
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)/(c + d*x)^(1/2),x)
```

```
[Out] int(sinh(a + b*x)/(c + d*x)^(1/2), x)
```

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

$$\int \frac{\sinh(a + bx)}{\sqrt{c + dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)**(1/2),x)
```

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

3.42 $\int \frac{\sinh(a+bx)}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=118

$$\frac{\sqrt{\pi}\sqrt{b}\,e^{\frac{bc}{d}-a}\operatorname{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}+\frac{\sqrt{\pi}\sqrt{b}\,e^{a-\frac{bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sinh(a+bx)}{d\sqrt{c+dx}}$$

```
[Out] exp(-a+b*c/d)*erf(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*b^(1/2)*Pi^(1/2)/d^(3/2)+e
xp(a-b*c/d)*erfi(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*b^(1/2)*Pi^(1/2)/d^(3/2)-2*
sinh(b*x+a)/d/(d*x+c)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3297, 3307, 2180, 2204, 2205}

$$\frac{\sqrt{\pi}\sqrt{b}\,e^{\frac{bc}{d}-a}\operatorname{Erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}+\frac{\sqrt{\pi}\sqrt{b}\,e^{a-\frac{bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sinh(a+bx)}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

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

```
[Out] (Sqrt[b]*E^(-a + (b*c)/d)*Sqrt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/d^
(3/2) + (Sqrt[b]*E^(a - (b*c)/d)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[c + d*x])/Sqrt
[d]])/d^(3/2) - (2*Sinh[a + b*x])/(d*Sqrt[c + d*x])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3297

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

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rubi steps

$$\int \frac{\sinh(a+bx)}{(c+dx)^{3/2}}\,dx = -\frac{2\sinh(a+bx)}{d\sqrt{c+dx}} + \frac{(2b)\int \frac{\cosh(a+bx)}{\sqrt{c+dx}}\,dx}{d}$$
$$= -\frac{2\sinh(a+bx)}{d\sqrt{c+dx}} + \frac{b\int \frac{e^{-i(ia+ibx)}}{\sqrt{c+dx}}\,dx}{d} + \frac{b\int \frac{e^{i(ia+ibx)}}{\sqrt{c+dx}}\,dx}{d}$$
$$= -\frac{2\sinh(a+bx)}{d\sqrt{c+dx}} + \frac{(2b)\,\mathrm{Subst}\left(\int e^{i\left(ia-\frac{ibc}{d}\right)-\frac{bx^2}{d}}\,dx, x, \sqrt{c+dx}\right)}{d^2} + \frac{(2b)\,\mathrm{Subst}\left(\int e^{-i\left(ia-\frac{ibc}{d}\right)+\frac{bx^2}{d}}\right.}{d^2}$$
$$= \frac{\sqrt{b}\,e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}} + \frac{\sqrt{b}\,e^{a-\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}} - \frac{2\sinh(a+bx)}{d\sqrt{c+dx}}$$

Mathematica [A] time = 0.14, size = 120, normalized size = 1.02

$$\frac{e^{-a-\frac{bc}{d}}\left(-2e^{a+\frac{bc}{d}}\sinh(a+bx) + e^{2a}\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},-\frac{b(c+dx)}{d}\right) - e^{\frac{2bc}{d}}\sqrt{\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},\frac{b(c+dx)}{d}\right)\right)}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

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

```
[Out] (E^(-a - (b*c)/d)*(E^(2*a)*Sqrt[-((b*(c + d*x))/d)]*Gamma[1/2, -((b*(c + d*
x))/d)] - E^((2*b*c)/d)*Sqrt[(b*(c + d*x))/d]*Gamma[1/2, (b*(c + d*x))/d] -
 2*E^(a + (b*c)/d)*Sinh[a + b*x]))/(d*Sqrt[c + d*x])
```

fricas [B] time = 0.46, size = 339, normalized size = 2.87

$$\frac{\sqrt{\pi}\left((dx+c)\cosh\left(bx+a\right)\cosh\left(-\frac{bc-ad}{d}\right)-(dx+c)\cosh\left(bx+a\right)\sinh\left(-\frac{bc-ad}{d}\right)+\left((dx+c)\cosh\left(-\frac{bc-ad}{d}\right)-(dx\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (sqrt(pi)*((d*x + c)*cosh(b*x + a)*cosh(-(b*c - a*d)/d) - (d*x + c)*cosh(b*
x + a)*sinh(-(b*c - a*d)/d) + ((d*x + c)*cosh(-(b*c - a*d)/d) - (d*x + c)*s
inh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(d*x + c)*sqrt(b/d))
- sqrt(pi)*((d*x + c)*cosh(b*x + a)*cosh(-(b*c - a*d)/d) + (d*x + c)*cosh(b
*x + a)*sinh(-(b*c - a*d)/d) + ((d*x + c)*cosh(-(b*c - a*d)/d) + (d*x + c)*
sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(d*x + c)*sqrt(-b/d
)) - sqrt(d*x + c)*(cosh(b*x + a)^2 + 2*cosh(b*x + a)*sinh(b*x + a) + sinh(
b*x + a)^2 - 1))/((d^2*x + c*d)*cosh(b*x + a) + (d^2*x + c*d)*sinh(b*x + a)
)
```

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

$$\int \frac{\sinh\left(bx+a\right)}{(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(sinh(b*x + a)/(d*x + c)^(3/2), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{\sinh\left(bx+a\right)}{(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(b*x+a)/(d*x+c)^(3/2),x)
```

maxima [A] time = 0.62, size = 103, normalized size = 0.87

$$\frac{\frac{\left(\frac{\sqrt{\pi}\operatorname{erf}\left(\sqrt{dx+c}\sqrt{-\frac{b}{d}}\right)e^{\left(a-\frac{bc}{d}\right)}}{\sqrt{-\frac{b}{d}}}+\frac{\sqrt{\pi}\operatorname{erf}\left(\sqrt{dx+c}\sqrt{\frac{b}{d}}\right)e^{\left(-a+\frac{bc}{d}\right)}}{\sqrt{\frac{b}{d}}}\right)b}{d}-\frac{2\sinh(bx+a)}{\sqrt{dx+c}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((sqrt(pi)*erf(sqrt(d*x + c)*sqrt(-b/d))*e^(a - b*c/d)/sqrt(-b/d) + sqrt(pi
)*erf(sqrt(d*x + c)*sqrt(b/d))*e^(-a + b*c/d)/sqrt(b/d))*b/d - 2*sinh(b*x +
 a)/sqrt(d*x + c))/d
```

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

$$\int \frac{\sinh(a+b\,x)}{(c+d\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(a + b*x)/(c + d*x)^(3/2), x)
```

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

$$\int \frac{\sinh(a+bx)}{(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)**(3/2),x)
```

```
[Out] Integral(sinh(a + b*x)/(c + d*x)**(3/2), x)
```

3.43 $\int \frac{\sinh(a+bx)}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=149

$$-\frac{2\sqrt{\pi}\,b^{3/2}e^{\frac{bc}{d}-a}\operatorname{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}+\frac{2\sqrt{\pi}\,b^{3/2}e^{a-\frac{bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{4b\cosh(a+bx)}{3d^2\sqrt{c+dx}}-\frac{2\sinh(a+bx)}{3d(c+dx)^{3/2}}$$

```
[Out] -2/3*sinh(b*x+a)/d/(d*x+c)^(3/2)-2/3*b^(3/2)*exp(-a+b*c/d)*erf(b^(1/2)*(d*x
+c)^(1/2)/d^(1/2))*Pi^(1/2)/d^(5/2)+2/3*b^(3/2)*exp(a-b*c/d)*erfi(b^(1/2)*(
d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/d^(5/2)-4/3*b*cosh(b*x+a)/d^2/(d*x+c)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3297, 3308, 2180, 2204, 2205}

$$-\frac{2\sqrt{\pi}\,b^{3/2}e^{\frac{bc}{d}-a}\operatorname{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}+\frac{2\sqrt{\pi}\,b^{3/2}e^{a-\frac{bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{4b\cosh(a+bx)}{3d^2\sqrt{c+dx}}-\frac{2\sinh(a+bx)}{3d(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[a + b*x]/(c + d*x)^(5/2),x]
```

```
[Out] (-4*b*Cosh[a + b*x])/(3*d^2*Sqrt[c + d*x]) - (2*b^(3/2)*E^(-a + (b*c)/d)*Sq
rt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(3*d^(5/2)) + (2*b^(3/2)*E^(a
- (b*c)/d)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(3*d^(5/2)) - (2
*Sinh[a + b*x])/(3*d*(c + d*x)^(3/2))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
```

```
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3297

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

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\int \frac{\sinh(a+bx)}{(c+dx)^{5/2}}\,dx = -\frac{2\sinh(a+bx)}{3d(c+dx)^{3/2}} + \frac{(2b)\int \frac{\cosh(a+bx)}{(c+dx)^{3/2}}\,dx}{3d}$$

$$= -\frac{4b\cosh(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sinh(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(4b^2\right)\int \frac{\sinh(a+bx)}{\sqrt{c+dx}}\,dx}{3d^2}$$

$$= -\frac{4b\cosh(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sinh(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(2b^2\right)\int \frac{e^{-i(ia+ibx)}}{\sqrt{c+dx}}\,dx}{3d^2} - \frac{\left(2b^2\right)\int \frac{e^{i(ia+ibx)}}{\sqrt{c+dx}}\,dx}{3d^2}$$

$$= -\frac{4b\cosh(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sinh(a+bx)}{3d(c+dx)^{3/2}} - \frac{\left(4b^2\right)\operatorname{Subst}\left(\int e^{i\left(ia-\frac{ibc}{d}\right)-\frac{bx^2}{d}}\,dx, x, \sqrt{c+dx}\right)}{3d^3} + \frac{\left(4b^2\right)\text{S}\cdots}{\cdots}$$

$$= -\frac{4b\cosh(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2b^{3/2}e^{-a+\frac{bc}{d}}\sqrt{\pi}\operatorname{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}} + \frac{2b^{3/2}e^{a-\frac{bc}{d}}\sqrt{\pi}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}} - \frac{2\sinh\cdots}{3d(c\cdots}$$

Mathematica [A] time = 0.72, size = 161, normalized size = 1.08

$$\frac{2b\left(\frac{e^{a}\left(e^{-\frac{bc}{d}}\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},-\frac{b(c+dx)}{d}\right)-e^{bx}\right)}{d\sqrt{c+dx}} + \frac{e^{-a-bx}\left(e^{b\left(\frac{c}{d}+x\right)}\sqrt{\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},\frac{b(c+dx)}{d}\right)-1\right)}{d\sqrt{c+dx}}\right)}{3d} - \frac{2\sinh(a+bx)}{3d(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[a + b*x]/(c + d*x)^(5/2),x]
```

```
[Out] (2*b*((E^a*(-E^(b*x) + (Sqrt[-((b*(c + d*x))/d)]*Gamma[1/2, -((b*(c + d*x))
/d)])/E^((b*c)/d)))/(d*Sqrt[c + d*x]) + (E^(-a - b*x)*(-1 + E^(b*(c/d + x))
*Sqrt[(b*(c + d*x))/d]*Gamma[1/2, (b*(c + d*x))/d]))/(d*Sqrt[c + d*x])))/(3
*d) - (2*Sinh[a + b*x])/(3*d*(c + d*x)^(3/2))
```

fricas [B] time = 0.57, size = 532, normalized size = 3.57

$$-\frac{2\sqrt{\pi}\left(\left(bd^2x^2+2\,bcdx+bc^2\right)\cosh\left(bx+a\right)\cosh\left(-\frac{bc-ad}{d}\right)-\left(bd^2x^2+2\,bcdx+bc^2\right)\cosh\left(bx+a\right)\sinh\left(-\frac{bc-ad}{d}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/3*(2*sqrt(pi)*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*cosh(-(b*c
- a*d)/d) - (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*sinh(-(b*c - a*d)
/d) + ((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(-(b*c - a*d)/d) - (b*d^2*x^2 +
2*b*c*d*x + b*c^2)*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(
d*x + c)*sqrt(b/d)) + 2*sqrt(pi)*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x
+ a)*cosh(-(b*c - a*d)/d) + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*s
inh(-(b*c - a*d)/d) + ((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(-(b*c - a*d)/d)
 + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqr
t(-b/d)*erf(sqrt(d*x + c)*sqrt(-b/d)) + (2*b*d*x + (2*b*d*x + 2*b*c + d)*co
sh(b*x + a)^2 + 2*(2*b*d*x + 2*b*c + d)*cosh(b*x + a)*sinh(b*x + a) + (2*b*
d*x + 2*b*c + d)*sinh(b*x + a)^2 + 2*b*c - d)*sqrt(d*x + c))/((d^4*x^2 + 2*
c*d^3*x + c^2*d^2)*cosh(b*x + a) + (d^4*x^2 + 2*c*d^3*x + c^2*d^2)*sinh(b*x
 + a))
```

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

$$\int \frac{\sinh\left(bx+a\right)}{\left(dx+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sinh(b*x + a)/(d*x + c)^(5/2), x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{\sinh\left(bx+a\right)}{\left(dx+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)/(d*x+c)^(5/2),x)
```

```
[Out] int(sinh(b*x+a)/(d*x+c)^(5/2),x)
```

maxima [A] time = 0.84, size = 114, normalized size = 0.77

$$-\frac{\frac{\left(\frac{\sqrt{\frac{(dx+c)b}{d}}e^{\left(-a+\frac{bc}{d}\right)}\Gamma\left(-\frac{1}{2},\frac{(dx+c)b}{d}\right)}{\sqrt{dx+c}}+\frac{\sqrt{-\frac{(dx+c)b}{d}}e^{\left(a-\frac{bc}{d}\right)}\Gamma\left(-\frac{1}{2},-\frac{(dx+c)b}{d}\right)}{\sqrt{dx+c}}\right)b}{d}+\frac{2\sinh(bx+a)}{(dx+c)^{\frac{3}{2}}}}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*((sqrt((d*x + c)*b/d)*e^(-a + b*c/d)*gamma(-1/2, (d*x + c)*b/d)/sqrt(d
*x + c) + sqrt(-(d*x + c)*b/d)*e^(a - b*c/d)*gamma(-1/2, -(d*x + c)*b/d)/sq
rt(d*x + c))*b/d + 2*sinh(b*x + a)/(d*x + c)^(3/2))/d
```

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

$$\int \frac{\sinh\left(a+b\,x\right)}{{\left(c+d\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)/(c + d*x)^(5/2),x)
```

```
[Out] int(sinh(a + b*x)/(c + d*x)^(5/2), x)
```

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

$$\int \frac{\sinh\left(a+bx\right)}{\left(c+dx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)**(5/2),x)
```

```
[Out] Integral(sinh(a + b*x)/(c + d*x)**(5/2), x)
```

3.44 $\int \frac{\sinh(a+bx)}{(c+dx)^{7/2}}\,dx$

Optimal. Leaf size=174

$$\frac{4\sqrt{\pi}\,b^{5/2}e^{\frac{bc}{d}-a}\operatorname{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}+\frac{4\sqrt{\pi}\,b^{5/2}e^{a-\frac{bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}-\frac{8b^2\sinh(a+bx)}{15d^3\sqrt{c+dx}}-\frac{4b\cosh(a+bx)}{15d^2(c+dx)^{3/2}}-\frac{2\sinh(a+bx)}{5d(c+dx)^{5/2}}$$

```
[Out] -4/15*b*cosh(b*x+a)/d^2/(d*x+c)^(3/2)-2/5*sinh(b*x+a)/d/(d*x+c)^(5/2)+4/15*
b^(5/2)*exp(-a+b*c/d)*erf(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/d^(7/2)+4
/15*b^(5/2)*exp(a-b*c/d)*erfi(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/d^(7/
2)-8/15*b^2*sinh(b*x+a)/d^3/(d*x+c)^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3297, 3307, 2180, 2204, 2205}

$$\frac{4\sqrt{\pi}\,b^{5/2}e^{\frac{bc}{d}-a}\operatorname{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}+\frac{4\sqrt{\pi}\,b^{5/2}e^{a-\frac{bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}-\frac{8b^2\sinh(a+bx)}{15d^3\sqrt{c+dx}}-\frac{4b\cosh(a+bx)}{15d^2(c+dx)^{3/2}}-\frac{2\sinh(a+bx)}{5d(c+dx)^{5/2}}$$

Antiderivative was successfully verified.

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

```
[Out] (-4*b*Cosh[a + b*x])/(15*d^2*(c + d*x)^(3/2)) + (4*b^(5/2)*E^(-a + (b*c)/d)
*Sqrt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(15*d^(7/2)) + (4*b^(5/2)*E
^(a - (b*c)/d)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(15*d^(7/2))
 - (2*Sinh[a + b*x])/(5*d*(c + d*x)^(5/2)) - (8*b^2*Sinh[a + b*x])/(15*d^3*
Sqrt[c + d*x])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3297

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

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rubi steps

$$\int \frac{\sinh(a+bx)}{(c+dx)^{7/2}}\,dx = -\frac{2\sinh(a+bx)}{5d(c+dx)^{5/2}} + \frac{(2b)\int \frac{\cosh(a+bx)}{(c+dx)^{5/2}}\,dx}{5d}$$

$$= -\frac{4b\cosh(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sinh(a+bx)}{5d(c+dx)^{5/2}} + \frac{\left(4b^2\right)\int \frac{\sinh(a+bx)}{(c+dx)^{3/2}}\,dx}{15d^2}$$

$$= -\frac{4b\cosh(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sinh(a+bx)}{5d(c+dx)^{5/2}} - \frac{8b^2\sinh(a+bx)}{15d^3\sqrt{c+dx}} + \frac{\left(8b^3\right)\int \frac{\cosh(a+bx)}{\sqrt{c+dx}}\,dx}{15d^3}$$

$$= -\frac{4b\cosh(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sinh(a+bx)}{5d(c+dx)^{5/2}} - \frac{8b^2\sinh(a+bx)}{15d^3\sqrt{c+dx}} + \frac{\left(4b^3\right)\int \frac{e^{-i(ia+ibx)}}{\sqrt{c+dx}}\,dx}{15d^3} + \frac{\left(4b^3\right)\int \frac{e^{i(ia}}{\sqrt{c}}}{15d^3}$$

$$= -\frac{4b\cosh(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sinh(a+bx)}{5d(c+dx)^{5/2}} - \frac{8b^2\sinh(a+bx)}{15d^3\sqrt{c+dx}} + \frac{\left(8b^3\right)\text{Subst}\left(\int e^{i\left(ia-\frac{ibc}{d}\right)-\frac{bx^2}{d}}\,dx, x,\right.}{15d^4}$$

$$= -\frac{4b\cosh(a+bx)}{15d^2(c+dx)^{3/2}} + \frac{4b^{5/2}e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\text{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}} + \frac{4b^{5/2}e^{a-\frac{bc}{d}}\sqrt{\pi}\,\text{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}} - \frac{2\sinh}{5d(c}$$

Mathematica [A] time = 0.54, size = 168, normalized size = 0.97

$$\frac{2\left(-b(c+dx)\left(e^{a-\frac{bc}{d}}\left(e^{b\left(\frac{c}{d}+x\right)}(2b(c+dx)+d)+2d\left(-\frac{b(c+dx)}{d}\right)^{3/2}\Gamma\left(\frac{1}{2},-\frac{b(c+dx)}{d}\right)\right)+e^{-a-bx}\left(-2b(c+dx)+2de^{b\left(\frac{c}{d}+x\right.}\right.\right.}{15d^3(c+dx)^{5/2}}$$

Antiderivative was successfully verified.

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

```
[Out] (2*(-(b*(c + d*x)*(E^(a - (b*c)/d)*(E^(b*(c/d + x))*(d + 2*b*(c + d*x)) + 2
*d*(-((b*(c + d*x))/d))^(3/2)*Gamma[1/2, -((b*(c + d*x))/d)]) + E^(-a - b*x
)*(d - 2*b*(c + d*x) + 2*d*E^(b*(c/d + x))*((b*(c + d*x))/d)^(3/2)*Gamma[1/
2, (b*(c + d*x))/d]))) - 3*d^2*Sinh[a + b*x]))/(15*d^3*(c + d*x)^(5/2))
```

fricas [B] time = 0.51, size = 855, normalized size = 4.91

$$4\sqrt{\pi}\left(\left(b^2d^3x^3+3\,b^2cd^2x^2+3\,b^2c^2dx+b^2c^3\right)\cosh\left(bx+a\right)\cosh\left(-\frac{bc-ad}{d}\right)-\left(b^2d^3x^3+3\,b^2cd^2x^2+3\,b^2c^2dx+b\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)^(7/2),x, algorithm="fricas")
```

```
[Out] 1/15*(4*sqrt(pi)*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)
*cosh(b*x + a)*cosh(-(b*c - a*d)/d) - (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^
2*c^2*d*x + b^2*c^3)*cosh(b*x + a)*sinh(-(b*c - a*d)/d) + ((b^2*d^3*x^3 + 3
*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(-(b*c - a*d)/d) - (b^2*d^3*x
^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sinh(-(b*c - a*d)/d))*sinh(
b*x + a))*sqrt(b/d)*erf(sqrt(d*x + c)*sqrt(b/d)) - 4*sqrt(pi)*((b^2*d^3*x^3
 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)*cosh(-(b*c - a*
d)/d) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x
+ a)*sinh(-(b*c - a*d)/d) + ((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x
 + b^2*c^3)*cosh(-(b*c - a*d)/d) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c
^2*d*x + b^2*c^3)*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(
d*x + c)*sqrt(-b/d)) + (4*b^2*d^2*x^2 + 4*b^2*c^2 - 2*b*c*d - (4*b^2*d^2*x^
2 + 4*b^2*c^2 + 2*b*c*d + 3*d^2 + 2*(4*b^2*c*d + b*d^2)*x)*cosh(b*x + a)^2
- 2*(4*b^2*d^2*x^2 + 4*b^2*c^2 + 2*b*c*d + 3*d^2 + 2*(4*b^2*c*d + b*d^2)*x)
*cosh(b*x + a)*sinh(b*x + a) - (4*b^2*d^2*x^2 + 4*b^2*c^2 + 2*b*c*d + 3*d^2
 + 2*(4*b^2*c*d + b*d^2)*x)*sinh(b*x + a)^2 + 3*d^2 + 2*(4*b^2*c*d - b*d^2)
*x)*sqrt(d*x + c))/((d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4*x + c^3*d^3)*cosh(b*
x + a) + (d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4*x + c^3*d^3)*sinh(b*x + a))
```

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

$$\int\frac{\sinh\left(bx+a\right)}{\left(dx+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sinh(b*x + a)/(d*x + c)^(7/2), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{\sinh(bx+a)}{(dx+c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)/(d*x+c)^(7/2),x)
```

```
[Out] int(sinh(b*x+a)/(d*x+c)^(7/2),x)
```

maxima [A] time = 0.78, size = 114, normalized size = 0.66

$$-\frac{\frac{\left(\frac{\left(\frac{(dx+c)b}{d}\right)^{\frac{3}{2}} e^{\left(-a+\frac{bc}{d}\right)} \Gamma\left(-\frac{3}{2}, \frac{(dx+c)b}{d}\right)}{(dx+c)^{\frac{3}{2}}}+\frac{\left(-\frac{(dx+c)b}{d}\right)^{\frac{3}{2}} e^{\left(a-\frac{bc}{d}\right)} \Gamma\left(-\frac{3}{2}, -\frac{(dx+c)b}{d}\right)}{(dx+c)^{\frac{3}{2}}}\right)b}{d}+\frac{2\sinh(bx+a)}{(dx+c)^{\frac{5}{2}}}}{5d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)^(7/2),x, algorithm="maxima")
```

```
[Out] -1/5*((((d*x + c)*b/d)^(3/2)*e^(-a + b*c/d)*gamma(-3/2, (d*x + c)*b/d)/(d*x
 + c)^(3/2) + (-(d*x + c)*b/d)^(3/2)*e^(a - b*c/d)*gamma(-3/2, -(d*x + c)*b
/d)/(d*x + c)^(3/2))*b/d + 2*sinh(b*x + a)/(d*x + c)^(5/2))/d
```

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

$$\int \frac{\sinh(a+b\,x)}{{(c+d\,x)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)/(c + d*x)^(7/2),x)
```

```
[Out] int(sinh(a + b*x)/(c + d*x)^(7/2), x)
```

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

$$\int \frac{\sinh(a+bx)}{(c+dx)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)/(d*x+c)**(7/2),x)
```

```
[Out] Integral(sinh(a + b*x)/(c + d*x)**(7/2), x)
```

3.45 $\int (c+dx)^{5/2}\sinh^2(a+bx)\,dx$

Optimal. Leaf size=239

$$\frac{15\sqrt{\frac{\pi}{2}}\,d^{5/2}e^{\frac{2bc}{d}-2a}\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{256b^{7/2}}-\frac{15\sqrt{\frac{\pi}{2}}\,d^{5/2}e^{2a-\frac{2bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{256b^{7/2}}+\frac{15d^2\sqrt{c+dx}\,\sinh(2a+2bx)}{64b^3}-\frac{5d(c+dx}{}$$

```
[Out] -5/16*d*(d*x+c)^(3/2)/b^2-1/7*(d*x+c)^(7/2)/d+1/2*(d*x+c)^(5/2)*cosh(b*x+a)
*sinh(b*x+a)/b-5/8*d*(d*x+c)^(3/2)*sinh(b*x+a)^2/b^2+15/512*d^(5/2)*exp(-2*
a+2*b*c/d)*erf(2^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/b^(7
/2)-15/512*d^(5/2)*exp(2*a-2*b*c/d)*erfi(2^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1
/2))*2^(1/2)*Pi^(1/2)/b^(7/2)+15/64*d^2*sinh(2*b*x+2*a)*(d*x+c)^(1/2)/b^3
```

Rubi [A] time = 0.45, antiderivative size = 239, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {3311, 32, 3312, 3296, 3308, 2180, 2204, 2205}

$$\frac{15\sqrt{\frac{\pi}{2}}\,d^{5/2}e^{\frac{2bc}{d}-2a}\operatorname{Erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{256b^{7/2}}-\frac{15\sqrt{\frac{\pi}{2}}\,d^{5/2}e^{2a-\frac{2bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{256b^{7/2}}+\frac{15d^2\sqrt{c+dx}\,\sinh(2a+2bx)}{64b^3}-\frac{5d(c+d}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^(5/2)*Sinh[a + b*x]^2,x]
```

```
[Out] (-5*d*(c + d*x)^(3/2))/(16*b^2) - (c + d*x)^(7/2)/(7*d) + (15*d^(5/2)*E^(-2
*a + (2*b*c)/d)*Sqrt[Pi/2]*Erf[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(2
56*b^(7/2)) - (15*d^(5/2)*E^(2*a - (2*b*c)/d)*Sqrt[Pi/2]*Erfi[(Sqrt[2]*Sqrt
[b]*Sqrt[c + d*x])/Sqrt[d]])/(256*b^(7/2)) + ((c + d*x)^(5/2)*Cosh[a + b*x]
*Sinh[a + b*x])/(2*b) - (5*d*(c + d*x)^(3/2)*Sinh[a + b*x]^2)/(8*b^2) + (15
*d^2*Sqrt[c + d*x]*Sinh[2*a + 2*b*x])/(64*b^3)
```

Rule 32

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3296

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

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3311

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

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int (c+dx)^{5/2}\sinh^2(a+bx)\,dx = \frac{(c+dx)^{5/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{5d(c+dx)^{3/2}\sinh^2(a+bx)}{8b^2} - \frac{1}{2}\int (c+$$

$$= -\frac{(c+dx)^{7/2}}{7d} + \frac{(c+dx)^{5/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{5d(c+dx)^{3/2}\sinh^2(a+}{8b^2}$$

$$= -\frac{5d(c+dx)^{3/2}}{16b^2} - \frac{(c+dx)^{7/2}}{7d} + \frac{(c+dx)^{5/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{5d(c+d}{}$$

$$= -\frac{5d(c+dx)^{3/2}}{16b^2} - \frac{(c+dx)^{7/2}}{7d} + \frac{(c+dx)^{5/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{5d(c+d}{}$$

$$= -\frac{5d(c+dx)^{3/2}}{16b^2} - \frac{(c+dx)^{7/2}}{7d} + \frac{(c+dx)^{5/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{5d(c+d}{}$$

$$= -\frac{5d(c+dx)^{3/2}}{16b^2} - \frac{(c+dx)^{7/2}}{7d} + \frac{(c+dx)^{5/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{5d(c+d}{}$$

$$= -\frac{5d(c+dx)^{3/2}}{16b^2} - \frac{(c+dx)^{7/2}}{7d} + \frac{15d^{5/2}e^{-2a+\frac{2bc}{d}}\sqrt{\frac{\pi}{2}}\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{256b^{7/2}} - \frac{15d^{5/2}e^{2a-}}{}$$

Mathematica [A] time = 6.29, size = 190, normalized size = 0.79

$$\frac{\sqrt{c+dx}\left(-b(c+dx)\left(7\sqrt{2}\,d^3\Gamma\left(\frac{7}{2},\frac{2b(c+dx)}{d}\right)\left(\cosh\left(2a-\frac{2bc}{d}\right)-\sinh\left(2a-\frac{2bc}{d}\right)\right)+64b^3(c+dx)^3\sqrt{\frac{b(c+dx)}{d}}\right)-7\sqrt{2}}{448b^3d^2\left(\frac{b(c+dx)}{d}\right)^{3/2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*x)^(5/2)*Sinh[a + b*x]^2,x]
```

```
[Out] (Sqrt[c + d*x]*(-(b*(c + d*x)*(64*b^3*(c + d*x)^3*Sqrt[(b*(c + d*x))/d] + 7
*Sqrt[2]*d^3*Gamma[7/2, (2*b*(c + d*x))/d]*(Cosh[2*a - (2*b*c)/d] - Sinh[2*
a - (2*b*c)/d]))) - 7*Sqrt[2]*d^4*Sqrt[-((b^2*(c + d*x)^2)/d^2)]*Gamma[7/2,
 (-2*b*(c + d*x))/d]*(Cosh[2*a - (2*b*c)/d] + Sinh[2*a - (2*b*c)/d])))/(448
*b^3*d^2*((b*(c + d*x))/d)^(3/2))
```

fricas [B] time = 0.53, size = 1001, normalized size = 4.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sinh(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/3584*(105*sqrt(2)*sqrt(pi)*(d^4*cosh(b*x + a)^2*cosh(-2*(b*c - a*d)/d) -
d^4*cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d) + (d^4*cosh(-2*(b*c - a*d)/d) -
d^4*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a)^2 + 2*(d^4*cosh(b*x + a)*cosh(-2*
(b*c - a*d)/d) - d^4*cosh(b*x + a)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a))*s
qrt(b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d)) + 105*sqrt(2)*sqrt(pi)*(d^4*c
osh(b*x + a)^2*cosh(-2*(b*c - a*d)/d) + d^4*cosh(b*x + a)^2*sinh(-2*(b*c -
a*d)/d) + (d^4*cosh(-2*(b*c - a*d)/d) + d^4*sinh(-2*(b*c - a*d)/d))*sinh(b*
x + a)^2 + 2*(d^4*cosh(b*x + a)*cosh(-2*(b*c - a*d)/d) + d^4*cosh(b*x + a)*
sinh(-2*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(2)*sqrt(d*x + c)
*sqrt(-b/d)) - 4*(112*b^3*d^3*x^2 + 112*b^3*c^2*d + 140*b^2*c*d^2 - 7*(16*b
^3*d^3*x^2 + 16*b^3*c^2*d - 20*b^2*c*d^2 + 15*b*d^3 + 4*(8*b^3*c*d^2 - 5*b^
2*d^3)*x)*cosh(b*x + a)^4 - 28*(16*b^3*d^3*x^2 + 16*b^3*c^2*d - 20*b^2*c*d^
2 + 15*b*d^3 + 4*(8*b^3*c*d^2 - 5*b^2*d^3)*x)*cosh(b*x + a)*sinh(b*x + a)^3
 - 7*(16*b^3*d^3*x^2 + 16*b^3*c^2*d - 20*b^2*c*d^2 + 15*b*d^3 + 4*(8*b^3*c*
d^2 - 5*b^2*d^3)*x)*sinh(b*x + a)^4 + 105*b*d^3 + 128*(b^4*d^3*x^3 + 3*b^4*
c*d^2*x^2 + 3*b^4*c^2*d*x + b^4*c^3)*cosh(b*x + a)^2 + 2*(64*b^4*d^3*x^3 +
192*b^4*c*d^2*x^2 + 192*b^4*c^2*d*x + 64*b^4*c^3 - 21*(16*b^3*d^3*x^2 + 16*
b^3*c^2*d - 20*b^2*c*d^2 + 15*b*d^3 + 4*(8*b^3*c*d^2 - 5*b^2*d^3)*x)*cosh(b
*x + a)^2)*sinh(b*x + a)^2 + 28*(8*b^3*c*d^2 + 5*b^2*d^3)*x - 4*(7*(16*b^3*
d^3*x^2 + 16*b^3*c^2*d - 20*b^2*c*d^2 + 15*b*d^3 + 4*(8*b^3*c*d^2 - 5*b^2*d
^3)*x)*cosh(b*x + a)^3 - 64*(b^4*d^3*x^3 + 3*b^4*c*d^2*x^2 + 3*b^4*c^2*d*x
+ b^4*c^3)*cosh(b*x + a))*sinh(b*x + a))*sqrt(d*x + c))/(b^4*d*cosh(b*x + a
)^2 + 2*b^4*d*cosh(b*x + a)*sinh(b*x + a) + b^4*d*sinh(b*x + a)^2)
```

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

$$\int (dx+c)^{\frac{5}{2}} \sinh (bx+a)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sinh(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/2)*sinh(b*x + a)^2, x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int (dx+c)^{\frac{5}{2}} \left(\sinh^2 (bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(5/2)*sinh(b*x+a)^2,x)
```

```
[Out] int((d*x+c)^(5/2)*sinh(b*x+a)^2,x)
```

maxima [A] time = 0.70, size = 281, normalized size = 1.18

$$-\frac{512\,(dx+c)^{\frac{7}{2}}+\frac{105\,\sqrt{2}\,\sqrt{\pi}\,d^3\,\mathrm{erf}\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{-\frac{b}{d}}\right)e^{\left(2\,a-\frac{2\,bc}{d}\right)}}{b^3\sqrt{-\frac{b}{d}}}-\frac{105\,\sqrt{2}\,\sqrt{\pi}\,d^3\,\mathrm{erf}\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{d}}\right)e^{\left(-2\,a+\frac{2\,bc}{d}\right)}}{b^3\sqrt{\frac{b}{d}}}+\frac{28\left(16\,(dx+c)^{\frac{5}{2}}b^2de^{\left(\frac{2\,bc}{d}\right)}\ldots\right.}{\ldots}}{3584\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sinh(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/3584*(512*(d*x + c)^(7/2) + 105*sqrt(2)*sqrt(pi)*d^3*erf(sqrt(2)*sqrt(d*
x + c)*sqrt(-b/d))*e^(2*a - 2*b*c/d)/(b^3*sqrt(-b/d)) - 105*sqrt(2)*sqrt(pi
)*d^3*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d))*e^(-2*a + 2*b*c/d)/(b^3*sqrt(b/d
)) + 28*(16*(d*x + c)^(5/2)*b^2*d*e^(2*b*c/d) + 20*(d*x + c)^(3/2)*b*d^2*e^
(2*b*c/d) + 15*sqrt(d*x + c)*d^3*e^(2*b*c/d))*e^(-2*a - 2*(d*x + c)*b/d)/b^
3 - 28*(16*(d*x + c)^(5/2)*b^2*d*e^(2*a) - 20*(d*x + c)^(3/2)*b*d^2*e^(2*a)
 + 15*sqrt(d*x + c)*d^3*e^(2*a))*e^(2*(d*x + c)*b/d - 2*b*c/d)/b^3)/d
```

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

$$\int \sinh\left(a+b\,x\right)^2\,\left(c+d\,x\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^2*(c + d*x)^(5/2),x)
```

```
[Out] int(sinh(a + b*x)^2*(c + d*x)^(5/2), x)
```

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

$$\int (c+dx)^{\frac{5}{2}}\sinh^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(5/2)*sinh(b*x+a)**2,x)
```

```
[Out] Integral((c + d*x)**(5/2)*sinh(a + b*x)**2, x)
```

3.46 $\int (c+dx)^{3/2} \sinh^2(a+bx)\,dx$

Optimal. Leaf size=211

$$\frac{3\sqrt{\frac{\pi}{2}}\,d^{3/2}e^{\frac{2bc}{d}-2a}\operatorname{erf}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{64b^{5/2}}+\frac{3\sqrt{\frac{\pi}{2}}\,d^{3/2}e^{2a-\frac{2bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{64b^{5/2}}-\frac{3d\sqrt{c+dx}\,\sinh^2(a+bx)}{8b^2}+\frac{(c+dx)^{3/2}\sin}{}$$

[Out] -1/5*(d*x+c)^(5/2)/d+1/2*(d*x+c)^(3/2)*cosh(b*x+a)*sinh(b*x+a)/b+3/128*d^(3/2)*exp(-2*a+2*b*c/d)*erf(2^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)+3/128*d^(3/2)*exp(2*a-2*b*c/d)*erfi(2^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)-3/16*d*(d*x+c)^(1/2)/b^2-3/8*d*sinh(b*x+a)^2*(d*x+c)^(1/2)/b^2

Rubi [A] time = 0.32, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3311, 32, 3312, 3307, 2180, 2204, 2205}

$$\frac{3\sqrt{\frac{\pi}{2}}\,d^{3/2}e^{\frac{2bc}{d}-2a}\operatorname{Erf}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{64b^{5/2}}+\frac{3\sqrt{\frac{\pi}{2}}\,d^{3/2}e^{2a-\frac{2bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{64b^{5/2}}-\frac{3d\sqrt{c+dx}\,\sinh^2(a+bx)}{8b^2}+\frac{(c+dx)^{3/2}\sin}{}$$

Antiderivative was successfully verified.

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

[Out] (-3*d*Sqrt[c + d*x])/(16*b^2) - (c + d*x)^(5/2)/(5*d) + (3*d^(3/2)*E^(-2*a + (2*b*c)/d)*Sqrt[Pi/2]*Erf[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(64*b^(5/2)) + (3*d^(3/2)*E^(2*a - (2*b*c)/d)*Sqrt[Pi/2]*Erfi[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(64*b^(5/2)) + ((c + d*x)^(3/2)*Cosh[a + b*x]*Sinh[a + b*x])/(2*b) - (3*d*Sqrt[c + d*x]*Sinh[a + b*x]^2)/(8*b^2)

Rule 32

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3311

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

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int (c+dx)^{3/2}\sinh^2(a+bx)\,dx = \frac{(c+dx)^{3/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{3d\sqrt{c+dx}\,\sinh^2(a+bx)}{8b^2} - \frac{1}{2}\int (c+d$$

$$= -\frac{(c+dx)^{5/2}}{5d} + \frac{(c+dx)^{3/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{3d\sqrt{c+dx}\,\sinh^2(a+b}{8b^2}$$

$$= -\frac{3d\sqrt{c+dx}}{16b^2} - \frac{(c+dx)^{5/2}}{5d} + \frac{(c+dx)^{3/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{3d\sqrt{c+d}}{}$$

$$= -\frac{3d\sqrt{c+dx}}{16b^2} - \frac{(c+dx)^{5/2}}{5d} + \frac{(c+dx)^{3/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{3d\sqrt{c+d}}{}$$

$$= -\frac{3d\sqrt{c+dx}}{16b^2} - \frac{(c+dx)^{5/2}}{5d} + \frac{(c+dx)^{3/2}\cosh(a+bx)\sinh(a+bx)}{2b} - \frac{3d\sqrt{c+d}}{}$$

$$= -\frac{3d\sqrt{c+dx}}{16b^2} - \frac{(c+dx)^{5/2}}{5d} + \frac{3d^{3/2}e^{-2a+\frac{2bc}{d}}\sqrt{\frac{\pi}{2}}\,\mathrm{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{64b^{5/2}} + \frac{3d^{3/2}e^{2a-\frac{2bc}{d}}}{}$$

Mathematica [A] time = 2.12, size = 163, normalized size = 0.77

$$\frac{5\sqrt{2}\,d^3\sqrt{\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{5}{2},\frac{2b(c+dx)}{d}\right)\left(\sinh\left(2a-\frac{2bc}{d}\right)-\cosh\left(2a-\frac{2bc}{d}\right)\right)+5\sqrt{2}\,d^3\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{5}{2},-\frac{2b(c+dx)}{d}\right)\left(\sinh\left(2a\right.\right.}{160b^3d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

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

```
[Out] (-32*b^3*(c + d*x)^3 + 5*Sqrt[2]*d^3*Sqrt[(b*(c + d*x))/d]*Gamma[5/2, (2*b*
(c + d*x))/d]*(-Cosh[2*a - (2*b*c)/d] + Sinh[2*a - (2*b*c)/d]) + 5*Sqrt[2]*
d^3*Sqrt[-((b*(c + d*x))/d)]*Gamma[5/2, (-2*b*(c + d*x))/d]*(Cosh[2*a - (2*
b*c)/d] + Sinh[2*a - (2*b*c)/d]))/(160*b^3*d*Sqrt[c + d*x])
```

fricas [B] time = 0.51, size = 755, normalized size = 3.58

$$\frac{15\sqrt{2}\sqrt{\pi}\left(d^3\cosh(bx+a)^2\cosh\left(-\frac{2(bc-ad)}{d}\right)-d^3\cosh(bx+a)^2\sinh\left(-\frac{2(bc-ad)}{d}\right)+\left(d^3\cosh\left(-\frac{2(bc-ad)}{d}\right)-d^3\,\mathrm{s}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/640*(15*sqrt(2)*sqrt(pi)*(d^3*cosh(b*x + a)^2*cosh(-2*(b*c - a*d)/d) - d^
3*cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d) + (d^3*cosh(-2*(b*c - a*d)/d) - d^
3*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a)^2 + 2*(d^3*cosh(b*x + a)*cosh(-2*(b
*c - a*d)/d) - d^3*cosh(b*x + a)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a))*sqr
t(b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d)) - 15*sqrt(2)*sqrt(pi)*(d^3*cosh
(b*x + a)^2*cosh(-2*(b*c - a*d)/d) + d^3*cosh(b*x + a)^2*sinh(-2*(b*c - a*d
)/d) + (d^3*cosh(-2*(b*c - a*d)/d) + d^3*sinh(-2*(b*c - a*d)/d))*sinh(b*x +
 a)^2 + 2*(d^3*cosh(b*x + a)*cosh(-2*(b*c - a*d)/d) + d^3*cosh(b*x + a)*sin
h(-2*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(2)*sqrt(d*x + c)*sq
rt(-b/d)) - 4*(20*b^2*d^2*x - 5*(4*b^2*d^2*x + 4*b^2*c*d - 3*b*d^2)*cosh(b*
x + a)^4 - 20*(4*b^2*d^2*x + 4*b^2*c*d - 3*b*d^2)*cosh(b*x + a)*sinh(b*x +
a)^3 - 5*(4*b^2*d^2*x + 4*b^2*c*d - 3*b*d^2)*sinh(b*x + a)^4 + 20*b^2*c*d +
 15*b*d^2 + 32*(b^3*d^2*x^2 + 2*b^3*c*d*x + b^3*c^2)*cosh(b*x + a)^2 + 2*(1
6*b^3*d^2*x^2 + 32*b^3*c*d*x + 16*b^3*c^2 - 15*(4*b^2*d^2*x + 4*b^2*c*d - 3
*b*d^2)*cosh(b*x + a)^2)*sinh(b*x + a)^2 - 4*(5*(4*b^2*d^2*x + 4*b^2*c*d -
3*b*d^2)*cosh(b*x + a)^3 - 16*(b^3*d^2*x^2 + 2*b^3*c*d*x + b^3*c^2)*cosh(b*
x + a))*sinh(b*x + a))*sqrt(d*x + c))/(b^3*d*cosh(b*x + a)^2 + 2*b^3*d*cosh
(b*x + a)*sinh(b*x + a) + b^3*d*sinh(b*x + a)^2)
```

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

$$\int (dx+c)^{\frac{3}{2}} \sinh(bx+a)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^(3/2)*sinh(b*x + a)^2, x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int (dx+c)^{\frac{3}{2}} \left(\sinh^2(bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((d*x+c)^(3/2)*sinh(b*x+a)^2,x)
```

maxima [A] time = 0.41, size = 239, normalized size = 1.13

$$-\frac{128\,(dx+c)^{\frac{5}{2}} - \frac{15\,\sqrt{2}\,\sqrt{\pi}\,d^2 \operatorname{erf}\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{-\frac{b}{d}}\right) e^{\left(2\,a-\frac{2\,bc}{d}\right)}}{b^2 \sqrt{-\frac{b}{d}}} - \frac{15\,\sqrt{2}\,\sqrt{\pi}\,d^2 \operatorname{erf}\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{d}}\right) e^{\left(-2\,a+\frac{2\,bc}{d}\right)}}{b^2 \sqrt{\frac{b}{d}}} + \frac{20\left(4\,(dx+c)^{\frac{3}{2}}\,bde^{\left(\frac{2\,bc}{d}\right)}+3\,\sqrt{\cdots}\right.}{\cdots}}{640\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/640*(128*(d*x + c)^(5/2) - 15*sqrt(2)*sqrt(pi)*d^2*erf(sqrt(2)*sqrt(d*x
+ c)*sqrt(-b/d))*e^(2*a - 2*b*c/d)/(b^2*sqrt(-b/d)) - 15*sqrt(2)*sqrt(pi)*d
^2*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d))*e^(-2*a + 2*b*c/d)/(b^2*sqrt(b/d))
+ 20*(4*(d*x + c)^(3/2)*b*d*e^(2*b*c/d) + 3*sqrt(d*x + c)*d^2*e^(2*b*c/d))*
e^(-2*a - 2*(d*x + c)*b/d)/b^2 - 20*(4*(d*x + c)^(3/2)*b*d*e^(2*a) - 3*sqrt
(d*x + c)*d^2*e^(2*a))*e^(2*(d*x + c)*b/d - 2*b*c/d)/b^2)/d
```

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

$$\int \sinh\left(a+b\,x\right)^2\,{\left(c+d\,x\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(a + b*x)^2*(c + d*x)^(3/2), x)
```

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

$$\int \left(c + d x\right)^{\frac{3}{2}} \sinh^{2}{\left(a + b x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(3/2)*sinh(b*x+a)**2,x)
```

```
[Out] Integral((c + d*x)**(3/2)*sinh(a + b*x)**2, x)
```

3.47 $\int \sqrt{c+dx}\, \sinh^2(a+bx)\, dx$

Optimal. Leaf size=166

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{d}\, e^{\frac{2bc}{d}-2a}\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{3/2}}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{d}\, e^{2a-\frac{2bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{3/2}}+\frac{\sqrt{c+dx}\sinh(2a+2bx)}{4b}-\frac{(c+dx)^{3/2}}{3d}$$

```
[Out] -1/3*(d*x+c)^(3/2)/d+1/32*exp(-2*a+2*b*c/d)*erf(2^(1/2)*b^(1/2)*(d*x+c)^(1/
2)/d^(1/2))*d^(1/2)*2^(1/2)*Pi^(1/2)/b^(3/2)-1/32*exp(2*a-2*b*c/d)*erfi(2^(
1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*d^(1/2)*2^(1/2)*Pi^(1/2)/b^(3/2)+1/4*si
nh(2*b*x+2*a)*(d*x+c)^(1/2)/b
```

Rubi [A] time = 0.30, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3312, 3296, 3308, 2180, 2204, 2205}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{d}\, e^{\frac{2bc}{d}-2a}\operatorname{Erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{3/2}}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{d}\, e^{2a-\frac{2bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{3/2}}+\frac{\sqrt{c+dx}\sinh(2a+2bx)}{4b}-\frac{(c+dx)^{3/2}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c + d*x]*Sinh[a + b*x]^2,x]
```

```
[Out] -(c + d*x)^(3/2)/(3*d) + (Sqrt[d]*E^(-2*a + (2*b*c)/d)*Sqrt[Pi/2]*Erf[(Sqrt
[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(16*b^(3/2)) - (Sqrt[d]*E^(2*a - (2*b*
c)/d)*Sqrt[Pi/2]*Erfi[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(16*b^(3/2)
) + (Sqrt[c + d*x]*Sinh[2*a + 2*b*x])/(4*b)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
```

```
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3296

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

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}
\int \sqrt{c+dx}\,\sinh^2(a+bx)\,dx &= -\int \left(\frac{1}{2}\sqrt{c+dx}-\frac{1}{2}\sqrt{c+dx}\,\cosh(2a+2bx)\right)dx\\
&= -\frac{(c+dx)^{3/2}}{3d}+\frac{1}{2}\int \sqrt{c+dx}\,\cosh(2a+2bx)\,dx\\
&= -\frac{(c+dx)^{3/2}}{3d}+\frac{\sqrt{c+dx}\,\sinh(2a+2bx)}{4b}-\frac{d\int \frac{\sinh(2a+2bx)}{\sqrt{c+dx}}\,dx}{8b}\\
&= -\frac{(c+dx)^{3/2}}{3d}+\frac{\sqrt{c+dx}\,\sinh(2a+2bx)}{4b}-\frac{d\int \frac{e^{-i(2ia+2ibx)}}{\sqrt{c+dx}}\,dx}{16b}+\frac{d\int \frac{e^{i(2ia+2ibx)}}{\sqrt{c+dx}}\,dx}{16b}\\
&= -\frac{(c+dx)^{3/2}}{3d}+\frac{\sqrt{c+dx}\,\sinh(2a+2bx)}{4b}+\frac{\mathrm{Subst}\left(\int e^{i\left(2ia-\frac{2ibc}{d}\right)-\frac{2bx^2}{d}}\,dx,x,\sqrt{c+d}\right.}{8b}\\
&= -\frac{(c+dx)^{3/2}}{3d}+\frac{\sqrt{d}\,e^{-2a+\frac{2bc}{d}}\sqrt{\frac{\pi}{2}}\,\mathrm{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{3/2}}-\frac{\sqrt{d}\,e^{2a-\frac{2bc}{d}}\sqrt{\frac{\pi}{2}}\,\mathrm{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+}}{\sqrt{d}}\right.}{16b^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.56, size = 129, normalized size = 0.78

$$\frac{1}{48}\sqrt{c+dx}\left(\frac{3\sqrt{2}e^{2a-\frac{2bc}{d}}\Gamma\left(\frac{3}{2},-\frac{2b(c+dx)}{d}\right)}{b\sqrt{-\frac{b(c+dx)}{d}}}-\frac{3\sqrt{2}e^{\frac{2bc}{d}-2a}\Gamma\left(\frac{3}{2},\frac{2b(c+dx)}{d}\right)}{b\sqrt{\frac{b(c+dx)}{d}}}-\frac{16(c+dx)}{d}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c + d*x]*Sinh[a + b*x]^2,x]
```

```
[Out] (Sqrt[c + d*x]*((-16*(c + d*x))/d + (3*Sqrt[2]*E^(2*a - (2*b*c)/d)*Gamma[3/
2, (-2*b*(c + d*x))/d])/(b*Sqrt[-((b*(c + d*x))/d)]) - (3*Sqrt[2]*E^(-2*a +
 (2*b*c)/d)*Gamma[3/2, (2*b*(c + d*x))/d])/(b*Sqrt[(b*(c + d*x))/d])))/48
```

fricas [B] time = 0.50, size = 590, normalized size = 3.55

$$3\sqrt{2}\sqrt{\pi}\left(d^2\cosh(bx+a)^2\cosh\left(-\frac{2(bc-ad)}{d}\right)-d^2\cosh(bx+a)^2\sinh\left(-\frac{2(bc-ad)}{d}\right)+\left(d^2\cosh\left(-\frac{2(bc-ad)}{d}\right)-d^2\sinh\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2*(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/96*(3*sqrt(2)*sqrt(pi)*(d^2*cosh(b*x + a)^2*cosh(-2*(b*c - a*d)/d) - d^2*
cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d) + (d^2*cosh(-2*(b*c - a*d)/d) - d^2*
sinh(-2*(b*c - a*d)/d))*sinh(b*x + a)^2 + 2*(d^2*cosh(b*x + a)*cosh(-2*(b*c
 - a*d)/d) - d^2*cosh(b*x + a)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(
b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d)) + 3*sqrt(2)*sqrt(pi)*(d^2*cosh(b*
x + a)^2*cosh(-2*(b*c - a*d)/d) + d^2*cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d
) + (d^2*cosh(-2*(b*c - a*d)/d) + d^2*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a)
^2 + 2*(d^2*cosh(b*x + a)*cosh(-2*(b*c - a*d)/d) + d^2*cosh(b*x + a)*sinh(-
2*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(
-b/d)) + 4*(3*b*d*cosh(b*x + a)^4 + 12*b*d*cosh(b*x + a)*sinh(b*x + a)^3 +
3*b*d*sinh(b*x + a)^4 - 8*(b^2*d*x + b^2*c)*cosh(b*x + a)^2 - 2*(4*b^2*d*x
- 9*b*d*cosh(b*x + a)^2 + 4*b^2*c)*sinh(b*x + a)^2 - 3*b*d + 4*(3*b*d*cosh(
b*x + a)^3 - 4*(b^2*d*x + b^2*c)*cosh(b*x + a))*sinh(b*x + a))*sqrt(d*x + c
))/(b^2*d*cosh(b*x + a)^2 + 2*b^2*d*cosh(b*x + a)*sinh(b*x + a) + b^2*d*sin
h(b*x + a)^2)
```

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

$$\int\sqrt{dx+c}\,\sinh(bx+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2*(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*x + c)*sinh(b*x + a)^2, x)
```

maple [F] time = 0.11, size = 0, normalized size = 0.00

$$\int \left(\sinh^{2}\left(bx+a\right)\right)\sqrt{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)^2*(d*x+c)^(1/2),x)
```

```
[Out] int(sinh(b*x+a)^2*(d*x+c)^(1/2),x)
```

maxima [A] time = 0.41, size = 189, normalized size = 1.14

$$-\frac{\frac{3\sqrt{2}\sqrt{\pi}\,d\,\mathrm{erf}\left(\sqrt{2}\sqrt{dx+c}\sqrt{-\frac{b}{d}}\right)e^{\left(2a-\frac{2bc}{d}\right)}}{b\sqrt{-\frac{b}{d}}}-\frac{3\sqrt{2}\sqrt{\pi}\,d\,\mathrm{erf}\left(\sqrt{2}\sqrt{dx+c}\sqrt{\frac{b}{d}}\right)e^{\left(-2a+\frac{2bc}{d}\right)}}{b\sqrt{\frac{b}{d}}}+32\,(dx+c)^{\frac{3}{2}}-\frac{12\sqrt{dx+c}\,de^{\left(2a+\frac{2(dx+c)b}{d}-\frac{2bc}{d}\right)}}{b}}{96\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2*(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/96*(3*sqrt(2)*sqrt(pi)*d*erf(sqrt(2)*sqrt(d*x + c)*sqrt(-b/d))*e^(2*a -
2*b*c/d)/(b*sqrt(-b/d)) - 3*sqrt(2)*sqrt(pi)*d*erf(sqrt(2)*sqrt(d*x + c)*sq
rt(b/d))*e^(-2*a + 2*b*c/d)/(b*sqrt(b/d)) + 32*(d*x + c)^(3/2) - 12*sqrt(d*
x + c)*d*e^(2*a + 2*(d*x + c)*b/d - 2*b*c/d)/b + 12*sqrt(d*x + c)*d*e^(-2*a
 - 2*(d*x + c)*b/d + 2*b*c/d)/b)/d
```

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

$$\int \sinh\left(a+b\,x\right)^2\,\sqrt{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^2*(c + d*x)^(1/2),x)
```

```
[Out] int(sinh(a + b*x)^2*(c + d*x)^(1/2), x)
```

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

$$\int \sqrt{c+dx}\,\sinh^{2}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**2*(d*x+c)**(1/2),x)
```

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

3.48 $\int \frac{\sinh^2(a+bx)}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=139

$$\frac{\sqrt{\frac{\pi}{2}}\, e^{\frac{2bc}{d}-2a}\operatorname{erf}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4\sqrt{b}\,\sqrt{d}}+\frac{\sqrt{\frac{\pi}{2}}\, e^{2a-\frac{2bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4\sqrt{b}\,\sqrt{d}}-\frac{\sqrt{c+dx}}{d}$$

```
[Out] 1/8*exp(-2*a+2*b*c/d)*erf(2^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi
^(1/2)/b^(1/2)/d^(1/2)+1/8*exp(2*a-2*b*c/d)*erfi(2^(1/2)*b^(1/2)*(d*x+c)^(1
/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/b^(1/2)/d^(1/2)-(d*x+c)^(1/2)/d
```

Rubi [A] time = 0.24, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3312, 3307, 2180, 2204, 2205}

$$\frac{\sqrt{\frac{\pi}{2}}\, e^{\frac{2bc}{d}-2a}\operatorname{Erf}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4\sqrt{b}\,\sqrt{d}}+\frac{\sqrt{\frac{\pi}{2}}\, e^{2a-\frac{2bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4\sqrt{b}\,\sqrt{d}}-\frac{\sqrt{c+dx}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[a + b*x]^2/Sqrt[c + d*x],x]
```

```
[Out] -(Sqrt[c + d*x]/d) + (E^(-2*a + (2*b*c)/d)*Sqrt[Pi/2]*Erf[(Sqrt[2]*Sqrt[b]*
Sqrt[c + d*x])/Sqrt[d]])/(4*Sqrt[b]*Sqrt[d]) + (E^(2*a - (2*b*c)/d)*Sqrt[Pi
/2]*Erfi[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(4*Sqrt[b]*Sqrt[d])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
```

```
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}
\int \frac{\sinh^2(a+bx)}{\sqrt{c+dx}}\,dx &= -\int \left(\frac{1}{2\sqrt{c+dx}}-\frac{\cosh(2a+2bx)}{2\sqrt{c+dx}}\right)dx\\
&= -\frac{\sqrt{c+dx}}{d}+\frac{1}{2}\int \frac{\cosh(2a+2bx)}{\sqrt{c+dx}}\,dx\\
&= -\frac{\sqrt{c+dx}}{d}+\frac{1}{4}\int \frac{e^{-i(2ia+2ibx)}}{\sqrt{c+dx}}\,dx+\frac{1}{4}\int \frac{e^{i(2ia+2ibx)}}{\sqrt{c+dx}}\,dx\\
&= -\frac{\sqrt{c+dx}}{d}+\frac{\operatorname{Subst}\left(\int e^{i\left(2ia-\frac{2ibc}{d}\right)-\frac{2bx^2}{d}}\,dx,x,\sqrt{c+dx}\right)}{2d}+\frac{\operatorname{Subst}\left(\int e^{-i\left(2ia-\frac{2ibc}{d}\right)+\frac{2bx^2}{d}}\,dx,x,\right.}{2d}\\
&= -\frac{\sqrt{c+dx}}{d}+\frac{e^{-2a+\frac{2bc}{d}}\sqrt{\frac{\pi}{2}}\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{4\sqrt{b}\sqrt{d}}+\frac{e^{2a-\frac{2bc}{d}}\sqrt{\frac{\pi}{2}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{4\sqrt{b}\sqrt{d}}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 142, normalized size = 1.02

$$\frac{e^{2a-\frac{2bc}{d}}\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},-\frac{2b(c+dx)}{d}\right)}{4\sqrt{2}\,b\sqrt{c+dx}}-\frac{e^{\frac{2bc}{d}-2a}\sqrt{\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},\frac{2b(c+dx)}{d}\right)}{4\sqrt{2}\,b\sqrt{c+dx}}-\frac{\sqrt{c+dx}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[a + b*x]^2/Sqrt[c + d*x],x]
```

```
[Out] -(Sqrt[c + d*x]/d) + (E^(2*a - (2*b*c)/d)*Sqrt[-((b*(c + d*x))/d)]*Gamma[1/
2, (-2*b*(c + d*x))/d])/(4*Sqrt[2]*b*Sqrt[c + d*x]) - (E^(-2*a + (2*b*c)/d)
*Sqrt[(b*(c + d*x))/d]*Gamma[1/2, (2*b*(c + d*x))/d])/(4*Sqrt[2]*b*Sqrt[c +
 d*x])
```

fricas [A] time = 1.19, size = 155, normalized size = 1.12

$$\frac{\sqrt{2}\,\sqrt{\pi}\left(d\cosh\left(-\frac{2\,(bc-ad)}{d}\right) - d\sinh\left(-\frac{2\,(bc-ad)}{d}\right)\right)\sqrt{\frac{b}{d}}\,\operatorname{erf}\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{d}}\right) - \sqrt{2}\,\sqrt{\pi}\left(d\cosh\left(-\frac{2\,(bc-ad)}{d}\right) + d\sinh}{8\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/8*(sqrt(2)*sqrt(pi)*(d*cosh(-2*(b*c - a*d)/d) - d*sinh(-2*(b*c - a*d)/d))
*sqrt(b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d)) - sqrt(2)*sqrt(pi)*(d*cosh(
-2*(b*c - a*d)/d) + d*sinh(-2*(b*c - a*d)/d))*sqrt(-b/d)*erf(sqrt(2)*sqrt(d
*x + c)*sqrt(-b/d)) - 8*sqrt(d*x + c)*b)/(b*d)
```

giac [A] time = 0.58, size = 115, normalized size = 0.83

$$-\frac{\left(\frac{\sqrt{2}\,\sqrt{\pi}\,d\,\operatorname{erf}\left(-\frac{\sqrt{2}\,\sqrt{bd}\,\sqrt{dx+c}}{d}\right)e^{\left(\frac{2\,bc}{d}\right)}}{\sqrt{bd}} + \frac{\sqrt{2}\,\sqrt{\pi}\,d\,\operatorname{erf}\left(-\frac{\sqrt{2}\,\sqrt{-bd}\,\sqrt{dx+c}}{d}\right)e^{\left(-\frac{2\,(bc-2\,ad)}{d}\right)}}{\sqrt{-bd}} + 8\,\sqrt{dx+c}\,e^{(2\,a)}\right)e^{(-2\,a)}}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] -1/8*(sqrt(2)*sqrt(pi)*d*erf(-sqrt(2)*sqrt(b*d)*sqrt(d*x + c)/d)*e^(2*b*c/d
)/sqrt(b*d) + sqrt(2)*sqrt(pi)*d*erf(-sqrt(2)*sqrt(-b*d)*sqrt(d*x + c)/d)*e
^(-2*(b*c - 2*a*d)/d)/sqrt(-b*d) + 8*sqrt(d*x + c)*e^(2*a))*e^(-2*a)/d
```

maple [F] time = 0.13, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)^2/(d*x+c)^(1/2),x)
```

```
[Out] int(sinh(b*x+a)^2/(d*x+c)^(1/2),x)
```

maxima [A] time = 0.50, size = 107, normalized size = 0.77

$$\frac{\frac{\sqrt{2}\sqrt{\pi}\,\mathrm{erf}\left(\sqrt{2}\sqrt{dx+c}\sqrt{-\frac{b}{d}}\right)e^{\left(2a-\frac{2bc}{d}\right)}}{\sqrt{-\frac{b}{d}}}+\frac{\sqrt{2}\sqrt{\pi}\,\mathrm{erf}\left(\sqrt{2}\sqrt{dx+c}\sqrt{\frac{b}{d}}\right)e^{\left(-2a+\frac{2bc}{d}\right)}}{\sqrt{\frac{b}{d}}}-8\sqrt{dx+c}}{8d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/8*(sqrt(2)*sqrt(pi)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(-b/d))*e^(2*a - 2*b*c/
d)/sqrt(-b/d) + sqrt(2)*sqrt(pi)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d))*e^(-2
*a + 2*b*c/d)/sqrt(b/d) - 8*sqrt(d*x + c))/d
```

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

$$\int \frac{\sinh\left(a+b\,x\right)^2}{\sqrt{c+d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^2/(c + d*x)^(1/2),x)
```

```
[Out] int(sinh(a + b*x)^2/(c + d*x)^(1/2), x)
```

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

$$\int \frac{\sinh^2\left(a+bx\right)}{\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**2/(d*x+c)**(1/2),x)
```

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

3.49 $\int \frac{\sinh^2(a+bx)}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=142

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e^{\frac{2bc}{d}-2a}\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}+\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e^{2a-\frac{2bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sinh^2(a+bx)}{d\sqrt{c+dx}}$$

```
[Out] -1/2*exp(-2*a+2*b*c/d)*erf(2^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*b^(1/2)*2
^(1/2)*Pi^(1/2)/d^(3/2)+1/2*exp(2*a-2*b*c/d)*erfi(2^(1/2)*b^(1/2)*(d*x+c)^(
1/2)/d^(1/2))*b^(1/2)*2^(1/2)*Pi^(1/2)/d^(3/2)-2*sinh(b*x+a)^2/d/(d*x+c)^(1
/2)
```

Rubi [A] time = 0.25, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3313, 12, 3308, 2180, 2204, 2205}

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e^{\frac{2bc}{d}-2a}\operatorname{Erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}+\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e^{2a-\frac{2bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sinh^2(a+bx)}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

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

```
[Out] -((Sqrt[b]*E^(-2*a + (2*b*c)/d)*Sqrt[Pi/2]*Erf[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*
x])/Sqrt[d]])/d^(3/2)) + (Sqrt[b]*E^(2*a - (2*b*c)/d)*Sqrt[Pi/2]*Erfi[(Sqrt
[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/d^(3/2) - (2*Sinh[a + b*x]^2)/(d*Sqrt[
c + d*x])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rubi steps

$$\int \frac{\sinh^2(a+bx)}{(c+dx)^{3/2}}\,dx = -\frac{2\sinh^2(a+bx)}{d\sqrt{c+dx}} - \frac{(4ib)\int \frac{i\sinh(2a+2bx)}{2\sqrt{c+dx}}\,dx}{d}$$

$$= -\frac{2\sinh^2(a+bx)}{d\sqrt{c+dx}} + \frac{(2b)\int \frac{\sinh(2a+2bx)}{\sqrt{c+dx}}\,dx}{d}$$

$$= -\frac{2\sinh^2(a+bx)}{d\sqrt{c+dx}} + \frac{b\int \frac{e^{-i(2ia+2ibx)}}{\sqrt{c+dx}}\,dx}{d} - \frac{b\int \frac{e^{i(2ia+2ibx)}}{\sqrt{c+dx}}\,dx}{d}$$

$$= -\frac{2\sinh^2(a+bx)}{d\sqrt{c+dx}} - \frac{(2b)\,\text{Subst}\left(\int e^{i\left(2ia-\frac{2ibc}{d}\right)-\frac{2bx^2}{d}}\,dx, x, \sqrt{c+dx}\right)}{d^2} + \frac{(2b)\,\text{Subst}\left(\int e^{-i\left(2ia-\right.}\right.}{}$$

$$= -\frac{\sqrt{b}\,e^{-2a+\frac{2bc}{d}}\sqrt{\frac{\pi}{2}}\,\text{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}} + \frac{\sqrt{b}\,e^{2a-\frac{2bc}{d}}\sqrt{\frac{\pi}{2}}\,\text{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}} - \frac{2\sinh^2(a+bx)}{d\sqrt{c+dx}}$$

Mathematica [B] time = 4.58, size = 570, normalized size = 4.01

$$\frac{e^{-\frac{2b(c+dx)}{d}}\left(-\sqrt{2\pi}\sqrt{b}\cosh(2a)\sqrt{c+dx}\,e^{\frac{2b(c+dx)}{d}}\sinh\left(\frac{2bc}{d}\right)\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)-\sqrt{2\pi}\sqrt{b}\cosh(2a)\sqrt{c+dx}\,e^{\frac{2b(c+dx)}{d}}\sin\cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

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

```
[Out] (2*Sqrt[d]*E^((2*b*(c + d*x))/d) - Sqrt[d]*Cosh[2*a]*Cosh[(2*b*c)/d] - Sqrt
[d]*E^((4*b*(c + d*x))/d)*Cosh[2*a]*Cosh[(2*b*c)/d] + Sqrt[d]*Cosh[(2*b*c)/
d]*Sinh[2*a] - Sqrt[d]*E^((4*b*(c + d*x))/d)*Cosh[(2*b*c)/d]*Sinh[2*a] + Sq
rt[2]*Sqrt[d]*E^((2*b*(c + d*x))/d)*Sqrt[-((b*(c + d*x))/d)]*Gamma[1/2, (-2
*b*(c + d*x))/d]*(Cosh[2*a - (2*b*c)/d] + Cosh[(2*b*c)/d]*Sinh[2*a]) - Sqrt
[d]*Cosh[2*a]*Sinh[(2*b*c)/d] + Sqrt[d]*E^((4*b*(c + d*x))/d)*Cosh[2*a]*Sin
h[(2*b*c)/d] - Sqrt[b]*E^((2*b*(c + d*x))/d)*Sqrt[2*Pi]*Sqrt[c + d*x]*Cosh[
2*a]*Erf[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]]*Sinh[(2*b*c)/d] - Sqrt[b]
*E^((2*b*(c + d*x))/d)*Sqrt[2*Pi]*Sqrt[c + d*x]*Cosh[2*a]*Erfi[(Sqrt[2]*Sqr
t[b]*Sqrt[c + d*x])/Sqrt[d]]*Sinh[(2*b*c)/d] + Sqrt[d]*Sinh[2*a]*Sinh[(2*b*
c)/d] + Sqrt[d]*E^((4*b*(c + d*x))/d)*Sinh[2*a]*Sinh[(2*b*c)/d] + Sqrt[2]*S
qrt[d]*E^((2*b*(c + d*x))/d)*Sqrt[(b*(c + d*x))/d]*Gamma[1/2, (2*b*(c + d*x
))/d]*(Cosh[2*a]*Cosh[(2*b*c)/d] - Sinh[2*a]*(Cosh[(2*b*c)/d] + Sinh[(2*b*c
)/d])))/(2*d^(3/2)*E^((2*b*(c + d*x))/d)*Sqrt[c + d*x])
```

fricas [B] time = 1.16, size = 571, normalized size = 4.02

$$-\frac{\sqrt{2}\sqrt{\pi}\left((dx+c)\cosh(bx+a)^2\cosh\left(-\frac{2(bc-ad)}{d}\right)-(dx+c)\cosh(bx+a)^2\sinh\left(-\frac{2(bc-ad)}{d}\right)+\left((dx+c)\cosh\left(-\cdots\right.\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(sqrt(2)*sqrt(pi)*((d*x + c)*cosh(b*x + a)^2*cosh(-2*(b*c - a*d)/d) -
(d*x + c)*cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d) + ((d*x + c)*cosh(-2*(b*c
- a*d)/d) - (d*x + c)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a)^2 + 2*((d*x + c
)*cosh(b*x + a)*cosh(-2*(b*c - a*d)/d) - (d*x + c)*cosh(b*x + a)*sinh(-2*(b
*c - a*d)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d))
 + sqrt(2)*sqrt(pi)*((d*x + c)*cosh(b*x + a)^2*cosh(-2*(b*c - a*d)/d) + (d*
x + c)*cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d) + ((d*x + c)*cosh(-2*(b*c - a
*d)/d) + (d*x + c)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a)^2 + 2*((d*x + c)*c
osh(b*x + a)*cosh(-2*(b*c - a*d)/d) + (d*x + c)*cosh(b*x + a)*sinh(-2*(b*c
- a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(-b/d))
+ (cosh(b*x + a)^4 + 4*cosh(b*x + a)*sinh(b*x + a)^3 + sinh(b*x + a)^4 + 2*
```

```
(3*cosh(b*x + a)^2 - 1)*sinh(b*x + a)^2 - 2*cosh(b*x + a)^2 + 4*(cosh(b*x +
 a)^3 - cosh(b*x + a))*sinh(b*x + a) + 1)*sqrt(d*x + c))/((d^2*x + c*d)*cos
h(b*x + a)^2 + 2*(d^2*x + c*d)*cosh(b*x + a)*sinh(b*x + a) + (d^2*x + c*d)*
sinh(b*x + a)^2)
```

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

$$\int \frac{\sinh(bx+a)^2}{(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(sinh(b*x + a)^2/(d*x + c)^(3/2), x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{\sinh^2(bx+a)}{(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(b*x+a)^2/(d*x+c)^(3/2),x)
```

maxima [A] time = 0.70, size = 116, normalized size = 0.82

$$-\frac{\frac{\sqrt{2}\sqrt{\frac{(dx+c)b}{d}}\,e^{\left(\frac{2(bc-ad)}{d}\right)}\Gamma\left(-\frac{1}{2},\frac{2(dx+c)b}{d}\right)}{\sqrt{dx+c}}+\frac{\sqrt{2}\sqrt{-\frac{(dx+c)b}{d}}\,e^{\left(-\frac{2(bc-ad)}{d}\right)}\Gamma\left(-\frac{1}{2},-\frac{2(dx+c)b}{d}\right)}{\sqrt{dx+c}}-\frac{4}{\sqrt{dx+c}}}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(sqrt(2)*sqrt((d*x + c)*b/d)*e^(2*(b*c - a*d)/d)*gamma(-1/2, 2*(d*x +
c)*b/d)/sqrt(d*x + c) + sqrt(2)*sqrt(-(d*x + c)*b/d)*e^(-2*(b*c - a*d)/d)*g
amma(-1/2, -2*(d*x + c)*b/d)/sqrt(d*x + c) - 4/sqrt(d*x + c))/d
```

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

$$\int \frac{\sinh(a+b\,x)^2}{(c+d\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(a + b*x)^2/(c + d*x)^(3/2), x)
```

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

$$\int \frac{\sinh^2(a+bx)}{(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**2/(d*x+c)**(3/2),x)
```

```
[Out] Integral(sinh(a + b*x)**2/(c + d*x)**(3/2), x)
```

3.50 $\int \frac{\sinh^2(a+bx)}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=174

$$\frac{2\sqrt{2\pi}\,b^{3/2}e^{\frac{2bc}{d}-2a}\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}+\frac{2\sqrt{2\pi}\,b^{3/2}e^{2a-\frac{2bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{8b\sinh(a+bx)\cosh(a+bx)}{3d^2\sqrt{c+dx}}-\frac{2\sinh^2(}{3d(c+}$$

```
[Out] -2/3*sinh(b*x+a)^2/d/(d*x+c)^(3/2)+2/3*b^(3/2)*exp(-2*a+2*b*c/d)*erf(2^(1/2
)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/d^(5/2)+2/3*b^(3/2)*exp(2
*a-2*b*c/d)*erfi(2^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/d^
(5/2)-8/3*b*cosh(b*x+a)*sinh(b*x+a)/d^2/(d*x+c)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3314, 32, 3312, 3307, 2180, 2204, 2205}

$$\frac{2\sqrt{2\pi}\,b^{3/2}e^{\frac{2bc}{d}-2a}\operatorname{Erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}+\frac{2\sqrt{2\pi}\,b^{3/2}e^{2a-\frac{2bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{8b\sinh(a+bx)\cosh(a+bx)}{3d^2\sqrt{c+dx}}-\frac{2\sinh^2}{3d(c+}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[a + b*x]^2/(c + d*x)^(5/2),x]
```

```
[Out] (2*b^(3/2)*E^(-2*a + (2*b*c)/d)*Sqrt[2*Pi]*Erf[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*
x])/Sqrt[d]])/(3*d^(5/2)) + (2*b^(3/2)*E^(2*a - (2*b*c)/d)*Sqrt[2*Pi]*Erfi[
(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(3*d^(5/2)) - (8*b*Cosh[a + b*x]*
Sinh[a + b*x])/(3*d^2*Sqrt[c + d*x]) - (2*Sinh[a + b*x]^2)/(3*d*(c + d*x)^(
3/2))
```

Rule 32

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

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

Rubi steps

$$\int \frac{\sinh^2(a+bx)}{(c+dx)^{5/2}}\,dx = -\frac{8b\cosh(a+bx)\sinh(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sinh^2(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(8b^2\right)\int \frac{1}{\sqrt{c+dx}}\,dx}{3d^2} + \frac{\left(16b^2\right)\int \frac{\sinh^2(a\cdots}{\sqrt{c+d\cdots}}}{3d^2}$$

$$= \frac{16b^2\sqrt{c+dx}}{3d^3} - \frac{8b\cosh(a+bx)\sinh(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sinh^2(a+bx)}{3d(c+dx)^{3/2}} - \frac{\left(16b^2\right)\int\left(\frac{1}{2\sqrt{c+dx}} - \frac{\mathrm{c}\cdots}{}\right.}{3d^2}$$

$$= -\frac{8b\cosh(a+bx)\sinh(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sinh^2(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(8b^2\right)\int \frac{\cosh(2a+2bx)}{\sqrt{c+dx}}\,dx}{3d^2}$$

$$= -\frac{8b\cosh(a+bx)\sinh(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sinh^2(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(4b^2\right)\int \frac{e^{-i(2ia+2ibx)}}{\sqrt{c+dx}}\,dx}{3d^2} + \frac{\left(4b^2\right)\int \frac{e^{i(2ia+\cdots}}{\sqrt{c+\cdots}}}{3d^2}$$

$$= -\frac{8b\cosh(a+bx)\sinh(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sinh^2(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(8b^2\right)\mathrm{Subst}\left(\int e^{i\left(2ia-\frac{2ibc}{d}\right)-\frac{2bx^2}{d}}\,dx, x, \cdots\right.}{3d^3}$$

$$= \frac{2b^{3/2}e^{-2a+\frac{2bc}{d}}\sqrt{2\pi}\,\mathrm{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}} + \frac{2b^{3/2}e^{2a-\frac{2bc}{d}}\sqrt{2\pi}\,\mathrm{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}} - \frac{8b\cosh(a+\cdots}{3d^2\cdots}$$

Mathematica [A] time = 1.12, size = 156, normalized size = 0.90

$$-\frac{2e^{-2\left(a+\frac{bc}{d}\right)}\left(e^{2\left(a+\frac{bc}{d}\right)}\left(2b(c+dx)\sinh(2(a+bx))+d\sinh^2(a+bx)\right)+\sqrt{2}\,e^{4a}d\left(-\frac{b(c+dx)}{d}\right)^{3/2}\Gamma\left(\frac{1}{2},-\frac{2b(c+dx)}{d}\right)+\sqrt{\cdots}\right.}{3d^2(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[a + b*x]^2/(c + d*x)^(5/2),x]
```

```
[Out] (-2*(Sqrt[2]*d*E^(4*a)*(-((b*(c + d*x))/d))^(3/2)*Gamma[1/2, (-2*b*(c + d*x
))/d] + Sqrt[2]*d*E^((4*b*c)/d)*((b*(c + d*x))/d)^(3/2)*Gamma[1/2, (2*b*(c
+ d*x))/d] + E^(2*(a + (b*c)/d))*(d*Sinh[a + b*x]^2 + 2*b*(c + d*x)*Sinh[2*
(a + b*x)])))/(3*d^2*E^(2*(a + (b*c)/d))*(c + d*x)^(3/2))
```

fricas [B] time = 0.78, size = 864, normalized size = 4.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/6*(4*sqrt(2)*sqrt(pi)*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^2*co
sh(-2*(b*c - a*d)/d) - (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^2*sinh
(-2*(b*c - a*d)/d) + ((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(-2*(b*c - a*d)/d
) - (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a)^2
 + 2*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*cosh(-2*(b*c - a*d)/d)
- (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*sinh(-2*(b*c - a*d)/d))*sin
h(b*x + a))*sqrt(b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d)) - 4*sqrt(2)*sqrt
(pi)*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^2*cosh(-2*(b*c - a*d)/d
) + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d)
+ ((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(-2*(b*c - a*d)/d) + (b*d^2*x^2 + 2*
b*c*d*x + b*c^2)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a)^2 + 2*((b*d^2*x^2 +
2*b*c*d*x + b*c^2)*cosh(b*x + a)*cosh(-2*(b*c - a*d)/d) + (b*d^2*x^2 + 2*b*
c*d*x + b*c^2)*cosh(b*x + a)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b
/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(-b/d)) - ((4*b*d*x + 4*b*c + d)*cosh(b*x
 + a)^4 + 4*(4*b*d*x + 4*b*c + d)*cosh(b*x + a)*sinh(b*x + a)^3 + (4*b*d*x
+ 4*b*c + d)*sinh(b*x + a)^4 - 4*b*d*x - 2*d*cosh(b*x + a)^2 + 2*(3*(4*b*d*
x + 4*b*c + d)*cosh(b*x + a)^2 - d)*sinh(b*x + a)^2 - 4*b*c + 4*((4*b*d*x +
 4*b*c + d)*cosh(b*x + a)^3 - d*cosh(b*x + a))*sinh(b*x + a) + d)*sqrt(d*x
+ c))/((d^4*x^2 + 2*c*d^3*x + c^2*d^2)*cosh(b*x + a)^2 + 2*(d^4*x^2 + 2*c*d
^3*x + c^2*d^2)*cosh(b*x + a)*sinh(b*x + a) + (d^4*x^2 + 2*c*d^3*x + c^2*d^
2)*sinh(b*x + a)^2)
```

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

$$\int \frac{\sinh(bx+a)^2}{(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sinh(b*x + a)^2/(d*x + c)^(5/2), x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{\sinh^2(bx+a)}{(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)^2/(d*x+c)^(5/2),x)
```

```
[Out] int(sinh(b*x+a)^2/(d*x+c)^(5/2),x)
```

maxima [A] time = 0.47, size = 118, normalized size = 0.68

$$-\frac{\frac{3\sqrt{2}\left(\frac{(dx+c)b}{d}\right)^{\frac{3}{2}}e^{\left(\frac{2(bc-ad)}{d}\right)}\Gamma\left(-\frac{3}{2},\frac{2(dx+c)b}{d}\right)}{(dx+c)^{\frac{3}{2}}}+\frac{3\sqrt{2}\left(-\frac{(dx+c)b}{d}\right)^{\frac{3}{2}}e^{\left(-\frac{2(bc-ad)}{d}\right)}\Gamma\left(-\frac{3}{2},-\frac{2(dx+c)b}{d}\right)}{(dx+c)^{\frac{3}{2}}}-\frac{2}{(dx+c)^{\frac{3}{2}}}}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/6*(3*sqrt(2)*((d*x + c)*b/d)^(3/2)*e^(2*(b*c - a*d)/d)*gamma(-3/2, 2*(d*
x + c)*b/d)/(d*x + c)^(3/2) + 3*sqrt(2)*(-(d*x + c)*b/d)^(3/2)*e^(-2*(b*c -
 a*d)/d)*gamma(-3/2, -2*(d*x + c)*b/d)/(d*x + c)^(3/2) - 2/(d*x + c)^(3/2))
/d
```

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

$$\int \frac{\sinh(a+b\,x)^2}{(c+d\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^2/(c + d*x)^(5/2),x)
```

```
[Out] int(sinh(a + b*x)^2/(c + d*x)^(5/2), x)
```

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

$$\int \frac{\sinh^2(a+bx)}{(c+dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**2/(d*x+c)**(5/2),x)
```

```
[Out] Integral(sinh(a + b*x)**2/(c + d*x)**(5/2), x)
```

3.51 $\int \frac{\sinh^2(a+bx)}{(c+dx)^{7/2}}\,dx$

Optimal. Leaf size=220

$$-\frac{8\sqrt{2\pi}\,b^{5/2}e^{\frac{2bc}{d}-2a}\operatorname{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}+\frac{8\sqrt{2\pi}\,b^{5/2}e^{2a-\frac{2bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}-\frac{32b^2\sinh^2(a+bx)}{15d^3\sqrt{c+dx}}-\frac{8b\sinh(a+bx)\,\mathrm{co}}{15d^2(c+dx}$$

```
[Out] -8/15*b*cosh(b*x+a)*sinh(b*x+a)/d^2/(d*x+c)^(3/2)-2/5*sinh(b*x+a)^2/d/(d*x+
c)^(5/2)-8/15*b^(5/2)*exp(-2*a+2*b*c/d)*erf(2^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d
^(1/2))*2^(1/2)*Pi^(1/2)/d^(7/2)+8/15*b^(5/2)*exp(2*a-2*b*c/d)*erfi(2^(1/2)
*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/d^(7/2)-16/15*b^2/d^3/(d*x
+c)^(1/2)-32/15*b^2*sinh(b*x+a)^2/d^3/(d*x+c)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {3314, 32, 3313, 12, 3308, 2180, 2204, 2205}

$$-\frac{8\sqrt{2\pi}\,b^{5/2}e^{\frac{2bc}{d}-2a}\operatorname{Erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}+\frac{8\sqrt{2\pi}\,b^{5/2}e^{2a-\frac{2bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}-\frac{32b^2\sinh^2(a+bx)}{15d^3\sqrt{c+dx}}-\frac{8b\sinh(a+bx)\,\mathrm{c}}{15d^2(c+d}$$

Antiderivative was successfully verified.

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

```
[Out] (-16*b^2)/(15*d^3*Sqrt[c + d*x]) - (8*b^(5/2)*E^(-2*a + (2*b*c)/d)*Sqrt[2*P
i]*Erf[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(15*d^(7/2)) + (8*b^(5/2)*
E^(2*a - (2*b*c)/d)*Sqrt[2*Pi]*Erfi[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]
])/(15*d^(7/2)) - (8*b*Cosh[a + b*x]*Sinh[a + b*x])/(15*d^2*(c + d*x)^(3/2)
) - (2*Sinh[a + b*x]^2)/(5*d*(c + d*x)^(5/2)) - (32*b^2*Sinh[a + b*x]^2)/(1
5*d^3*Sqrt[c + d*x])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 32

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3314

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

Rubi steps

$$\int \frac{\sinh^2(a+bx)}{(c+dx)^{7/2}}\,dx = -\frac{8b\cosh(a+bx)\sinh(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sinh^2(a+bx)}{5d(c+dx)^{5/2}} + \frac{\left(8b^2\right)\int \frac{1}{(c+dx)^{3/2}}\,dx}{15d^2} + \frac{\left(16b^2\right)\int \frac{\sinh^2(a\cdots}{(c+dx)\cdots}}{15d^2}$$

$$= -\frac{16b^2}{15d^3\sqrt{c+dx}} - \frac{8b\cosh(a+bx)\sinh(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sinh^2(a+bx)}{5d(c+dx)^{5/2}} - \frac{32b^2\sinh^2(a+bx)}{15d^3\sqrt{c+dx}} - \cdots$$

$$= -\frac{16b^2}{15d^3\sqrt{c+dx}} - \frac{8b\cosh(a+bx)\sinh(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sinh^2(a+bx)}{5d(c+dx)^{5/2}} - \frac{32b^2\sinh^2(a+bx)}{15d^3\sqrt{c+dx}} + \cdots$$

$$= -\frac{16b^2}{15d^3\sqrt{c+dx}} - \frac{8b\cosh(a+bx)\sinh(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sinh^2(a+bx)}{5d(c+dx)^{5/2}} - \frac{32b^2\sinh^2(a+bx)}{15d^3\sqrt{c+dx}} + \cdots$$

$$= -\frac{16b^2}{15d^3\sqrt{c+dx}} - \frac{8b\cosh(a+bx)\sinh(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sinh^2(a+bx)}{5d(c+dx)^{5/2}} - \frac{32b^2\sinh^2(a+bx)}{15d^3\sqrt{c+dx}} - \cdots$$

$$= -\frac{16b^2}{15d^3\sqrt{c+dx}} - \frac{8b^{5/2}e^{-2a+\frac{2bc}{d}}\sqrt{2\pi}\,\mathrm{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}} + \frac{8b^{5/2}e^{2a-\frac{2bc}{d}}\sqrt{2\pi}\,\mathrm{erfi}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\cdots\right.}{15d^{7/2}}$$

Mathematica [B] time = 8.58, size = 825, normalized size = 3.75

$$\frac{e^{-\frac{2b(c+dx)}{d}}\left(16\sqrt{2}\,d^2e^{\frac{2b(c+dx)}{d}}\Gamma\left(\frac{1}{2},-\frac{2b(c+dx)}{d}\right)\left(\cosh\left(2a-\frac{2bc}{d}\right)+\sinh\left(2a-\frac{2bc}{d}\right)\right)\left(-\frac{b(c+dx)}{d}\right)^{5/2}+6d^2e^{\frac{2b(c+dx)}{d}}-16b^2c^2e\cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

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

```
[Out] (6*d^2*E^((2*b*(c + d*x))/d) - 16*b^2*c^2*Cosh[2*a - (2*b*c)/d] + 4*b*c*d*C
osh[2*a - (2*b*c)/d] - 3*d^2*Cosh[2*a - (2*b*c)/d] - 16*b^2*c^2*E^((4*b*(c
+ d*x))/d)*Cosh[2*a - (2*b*c)/d] - 4*b*c*d*E^((4*b*(c + d*x))/d)*Cosh[2*a -
 (2*b*c)/d] - 3*d^2*E^((4*b*(c + d*x))/d)*Cosh[2*a - (2*b*c)/d] - 32*b^2*c*
d*x*Cosh[2*a - (2*b*c)/d] + 4*b*d^2*x*Cosh[2*a - (2*b*c)/d] - 32*b^2*c*d*E^
((4*b*(c + d*x))/d)*x*Cosh[2*a - (2*b*c)/d] - 4*b*d^2*E^((4*b*(c + d*x))/d)
*x*Cosh[2*a - (2*b*c)/d] - 16*b^2*d^2*x^2*Cosh[2*a - (2*b*c)/d] - 16*b^2*d^
2*E^((4*b*(c + d*x))/d)*x^2*Cosh[2*a - (2*b*c)/d] + 16*Sqrt[2]*d^2*E^((2*b*
(c + d*x))/d)*((b*(c + d*x))/d)^(5/2)*Gamma[1/2, (2*b*(c + d*x))/d]*(Cosh[2
*a - (2*b*c)/d] - Sinh[2*a - (2*b*c)/d]) + 16*b^2*c^2*Sinh[2*a - (2*b*c)/d]
 - 4*b*c*d*Sinh[2*a - (2*b*c)/d] + 3*d^2*Sinh[2*a - (2*b*c)/d] - 16*b^2*c^2
```

```
*E^((4*b*(c + d*x))/d)*Sinh[2*a - (2*b*c)/d] - 4*b*c*d*E^((4*b*(c + d*x))/d
)*Sinh[2*a - (2*b*c)/d] - 3*d^2*E^((4*b*(c + d*x))/d)*Sinh[2*a - (2*b*c)/d]
 + 32*b^2*c*d*x*Sinh[2*a - (2*b*c)/d] - 4*b*d^2*x*Sinh[2*a - (2*b*c)/d] - 3
2*b^2*c*d*E^((4*b*(c + d*x))/d)*x*Sinh[2*a - (2*b*c)/d] - 4*b*d^2*E^((4*b*(
c + d*x))/d)*x*Sinh[2*a - (2*b*c)/d] + 16*b^2*d^2*x^2*Sinh[2*a - (2*b*c)/d]
 - 16*b^2*d^2*E^((4*b*(c + d*x))/d)*x^2*Sinh[2*a - (2*b*c)/d] + 16*Sqrt[2]*
d^2*E^((2*b*(c + d*x))/d)*(-((b*(c + d*x))/d))^(5/2)*Gamma[1/2, (-2*b*(c +
d*x))/d]*(Cosh[2*a - (2*b*c)/d] + Sinh[2*a - (2*b*c)/d]))/(30*d^3*E^((2*b*(
c + d*x))/d)*(c + d*x)^(5/2))
```

fricas [B] time = 0.91, size = 1352, normalized size = 6.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/30*(16*sqrt(2)*sqrt(pi)*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x
+ b^2*c^3)*cosh(b*x + a)^2*cosh(-2*(b*c - a*d)/d) - (b^2*d^3*x^3 + 3*b^2*c*
d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d) +
 ((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(-2*(b*c -
a*d)/d) - (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sinh(-2
*(b*c - a*d)/d))*sinh(b*x + a)^2 + 2*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^
2*c^2*d*x + b^2*c^3)*cosh(b*x + a)*cosh(-2*(b*c - a*d)/d) - (b^2*d^3*x^3 +
3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)*sinh(-2*(b*c - a*d
)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d)) + 16*sq
rt(2)*sqrt(pi)*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*c
osh(b*x + a)^2*cosh(-2*(b*c - a*d)/d) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*
b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d) + ((b^2*d^3*x
^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(-2*(b*c - a*d)/d) + (b
^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sinh(-2*(b*c - a*d)
/d))*sinh(b*x + a)^2 + 2*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x +
b^2*c^3)*cosh(b*x + a)*cosh(-2*(b*c - a*d)/d) + (b^2*d^3*x^3 + 3*b^2*c*d^2*
x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)*sinh(-2*(b*c - a*d)/d))*sinh(b
*x + a))*sqrt(-b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(-b/d)) + (16*b^2*d^2*x^2
 + (16*b^2*d^2*x^2 + 16*b^2*c^2 + 4*b*c*d + 3*d^2 + 4*(8*b^2*c*d + b*d^2)*x
)*cosh(b*x + a)^4 + 4*(16*b^2*d^2*x^2 + 16*b^2*c^2 + 4*b*c*d + 3*d^2 + 4*(8
*b^2*c*d + b*d^2)*x)*cosh(b*x + a)*sinh(b*x + a)^3 + (16*b^2*d^2*x^2 + 16*b
^2*c^2 + 4*b*c*d + 3*d^2 + 4*(8*b^2*c*d + b*d^2)*x)*sinh(b*x + a)^4 + 16*b^
2*c^2 - 6*d^2*cosh(b*x + a)^2 - 4*b*c*d + 6*((16*b^2*d^2*x^2 + 16*b^2*c^2 +
 4*b*c*d + 3*d^2 + 4*(8*b^2*c*d + b*d^2)*x)*cosh(b*x + a)^2 - d^2)*sinh(b*x
 + a)^2 + 3*d^2 + 4*(8*b^2*c*d - b*d^2)*x + 4*((16*b^2*d^2*x^2 + 16*b^2*c^2
 + 4*b*c*d + 3*d^2 + 4*(8*b^2*c*d + b*d^2)*x)*cosh(b*x + a)^3 - 3*d^2*cosh(
b*x + a))*sinh(b*x + a))*sqrt(d*x + c))/((d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4
*x + c^3*d^3)*cosh(b*x + a)^2 + 2*(d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4*x + c^
```

```
3*d^3)*cosh(b*x + a)*sinh(b*x + a) + (d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4*x +
 c^3*d^3)*sinh(b*x + a)^2)
```

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

$$\int \frac{\sinh(bx+a)^2}{(dx+c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sinh(b*x + a)^2/(d*x + c)^(7/2), x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{\sinh^2(bx+a)}{(dx+c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)^2/(d*x+c)^(7/2),x)
```

```
[Out] int(sinh(b*x+a)^2/(d*x+c)^(7/2),x)
```

maxima [A] time = 0.85, size = 118, normalized size = 0.54

$$-\frac{\frac{5\sqrt{2}\left(\frac{(dx+c)b}{d}\right)^{\frac{5}{2}}e^{\left(\frac{2(bc-ad)}{d}\right)}\Gamma\left(-\frac{5}{2},\frac{2(dx+c)b}{d}\right)}{(dx+c)^{\frac{5}{2}}}+\frac{5\sqrt{2}\left(-\frac{(dx+c)b}{d}\right)^{\frac{5}{2}}e^{\left(-\frac{2(bc-ad)}{d}\right)}\Gamma\left(-\frac{5}{2},-\frac{2(dx+c)b}{d}\right)}{(dx+c)^{\frac{5}{2}}}-\frac{1}{(dx+c)^{\frac{5}{2}}}}{5d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(7/2),x, algorithm="maxima")
```

```
[Out] -1/5*(5*sqrt(2)*((d*x + c)*b/d)^(5/2)*e^(2*(b*c - a*d)/d)*gamma(-5/2, 2*(d*
x + c)*b/d)/(d*x + c)^(5/2) + 5*sqrt(2)*(-(d*x + c)*b/d)^(5/2)*e^(-2*(b*c -
 a*d)/d)*gamma(-5/2, -2*(d*x + c)*b/d)/(d*x + c)^(5/2) - 1/(d*x + c)^(5/2))
/d
```

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

$$\int \frac{{\sinh\left(a+b\,x\right)}^2}{{\left(c+d\,x\right)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^2/(c + d*x)^(7/2),x)
```

```
[Out] int(sinh(a + b*x)^2/(c + d*x)^(7/2), x)
```

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

$$\int \frac{\sinh^2(a+bx)}{(c+dx)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**2/(d*x+c)**(7/2),x)
```

```
[Out] Integral(sinh(a + b*x)**2/(c + d*x)**(7/2), x)
```

3.52 $\int \frac{\sinh^2(a+bx)}{(c+dx)^{9/2}}\,dx$

Optimal. Leaf size=251

$$\frac{32\sqrt{2\pi}\,b^{7/2}e^{\frac{2bc}{d}-2a}\operatorname{erf}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{105d^{9/2}}+\frac{32\sqrt{2\pi}\,b^{7/2}e^{2a-\frac{2bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{105d^{9/2}}-\frac{128b^3\sinh(a+bx)\cosh(a+bx)}{105d^4\sqrt{c+dx}}-\frac{32b}{10}$$

```
[Out] -16/105*b^2/d^3/(d*x+c)^(3/2)-8/35*b*cosh(b*x+a)*sinh(b*x+a)/d^2/(d*x+c)^(5
/2)-2/7*sinh(b*x+a)^2/d/(d*x+c)^(7/2)-32/105*b^2*sinh(b*x+a)^2/d^3/(d*x+c)^
(3/2)+32/105*b^(7/2)*exp(-2*a+2*b*c/d)*erf(2^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^
(1/2))*2^(1/2)*Pi^(1/2)/d^(9/2)+32/105*b^(7/2)*exp(2*a-2*b*c/d)*erfi(2^(1/2
)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/d^(9/2)-128/105*b^3*cosh(
b*x+a)*sinh(b*x+a)/d^4/(d*x+c)^(1/2)
```

Rubi [A] time = 0.39, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3314, 32, 3312, 3307, 2180, 2204, 2205}

$$\frac{32\sqrt{2\pi}\,b^{7/2}e^{\frac{2bc}{d}-2a}\operatorname{Erf}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{105d^{9/2}}+\frac{32\sqrt{2\pi}\,b^{7/2}e^{2a-\frac{2bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{105d^{9/2}}-\frac{32b^2\sinh^2(a+bx)}{105d^3(c+dx)^{3/2}}-\frac{128b^3\sinh(a+b}{105d^4\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[a + b*x]^2/(c + d*x)^(9/2),x]
```

```
[Out] (-16*b^2)/(105*d^3*(c + d*x)^(3/2)) + (32*b^(7/2)*E^(-2*a + (2*b*c)/d)*Sqrt
[2*Pi]*Erf[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(105*d^(9/2)) + (32*b^
(7/2)*E^(2*a - (2*b*c)/d)*Sqrt[2*Pi]*Erfi[(Sqrt[2]*Sqrt[b]*Sqrt[c + d*x])/S
qrt[d]])/(105*d^(9/2)) - (8*b*Cosh[a + b*x]*Sinh[a + b*x])/(35*d^2*(c + d*x
)^(5/2)) - (128*b^3*Cosh[a + b*x]*Sinh[a + b*x])/(105*d^4*Sqrt[c + d*x]) -
(2*Sinh[a + b*x]^2)/(7*d*(c + d*x)^(7/2)) - (32*b^2*Sinh[a + b*x]^2)/(105*d
^3*(c + d*x)^(3/2))
```

Rule 32

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
```

```
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

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

Rubi steps

$$\int \frac{\sinh^2(a+bx)}{(c+dx)^{9/2}}\,dx = -\frac{8b\cosh(a+bx)\sinh(a+bx)}{35d^2(c+dx)^{5/2}} - \frac{2\sinh^2(a+bx)}{7d(c+dx)^{7/2}} + \frac{(8b^2)\int \frac{1}{(c+dx)^{5/2}}\,dx}{35d^2} + \frac{(16b^2)\int \frac{\sinh^2(a\cdots}{(c+dx)\cdots}}{35d^2}$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} - \frac{8b\cosh(a+bx)\sinh(a+bx)}{35d^2(c+dx)^{5/2}} - \frac{128b^3\cosh(a+bx)\sinh(a+bx)}{105d^4\sqrt{c+dx}} - 2\cdots$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} + \frac{256b^4\sqrt{c+dx}}{105d^5} - \frac{8b\cosh(a+bx)\sinh(a+bx)}{35d^2(c+dx)^{5/2}} - \frac{128b^3\cosh(a+bx\cdots}{105d^4\sqrt{c\cdots}}$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} - \frac{8b\cosh(a+bx)\sinh(a+bx)}{35d^2(c+dx)^{5/2}} - \frac{128b^3\cosh(a+bx)\sinh(a+bx)}{105d^4\sqrt{c+dx}} - 2\cdots$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} - \frac{8b\cosh(a+bx)\sinh(a+bx)}{35d^2(c+dx)^{5/2}} - \frac{128b^3\cosh(a+bx)\sinh(a+bx)}{105d^4\sqrt{c+dx}} - 2\cdots$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} - \frac{8b\cosh(a+bx)\sinh(a+bx)}{35d^2(c+dx)^{5/2}} - \frac{128b^3\cosh(a+bx)\sinh(a+bx)}{105d^4\sqrt{c+dx}} - 2\cdots$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} + \frac{32b^{7/2}e^{-2a+\frac{2bc}{d}}\sqrt{2\pi}\,\mathrm{erf}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{105d^{9/2}} + \frac{32b^{7/2}e^{2a-\frac{2bc}{d}}\sqrt{2\pi}\,\mathrm{erfi}\left(\frac{\sqrt{2}\sqrt{b}\cdots}{\sqrt{d}}\right)}{105d^{9/2}}$$

Mathematica [A] time = 0.54, size = 222, normalized size = 0.88

$$\frac{2\left(-32b^3(c+dx)^3\sinh(2(a+bx)) + 16\sqrt{2}\,b^3(c+dx)^3e^{2a-\frac{2bc}{d}}\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},-\frac{2b(c+dx)}{d}\right) - 16\sqrt{2}\,b^3(c+dx)^3e^{\frac{2bc}{d}-2a}\cdots\right.}{105\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[a + b*x]^2/(c + d*x)^(9/2),x]
```

```
[Out] (2*(-8*b^2*d*(c + d*x)^2 + 16*Sqrt[2]*b^3*E^(2*a - (2*b*c)/d)*(c + d*x)^3*S
qrt[-((b*(c + d*x))/d)]*Gamma[1/2, (-2*b*(c + d*x))/d] - 16*Sqrt[2]*b^3*E^(
-2*a + (2*b*c)/d)*(c + d*x)^3*Sqrt[(b*(c + d*x))/d]*Gamma[1/2, (2*b*(c + d*
x))/d] - 15*d^3*Sinh[a + b*x]^2 - 16*b^2*d*(c + d*x)^2*Sinh[a + b*x]^2 - 6*
b*d^2*(c + d*x)*Sinh[2*(a + b*x)] - 32*b^3*(c + d*x)^3*Sinh[2*(a + b*x)]))/
(105*d^4*(c + d*x)^(7/2))
```

fricas [B] time = 0.58, size = 1827, normalized size = 7.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sinh(b*x+a)^2/(d*x+c)^(9/2),x, algorithm="fricas")

[Out] 1/210*(64*sqrt(2)*sqrt(pi)*((b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*cosh(b*x + a)^2*cosh(-2*(b*c - a*d)/d) - (b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d) + ((b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*cosh(-2*(b*c - a*d)/d) - (b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a)^2 + 2*((b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*cosh(b*x + a)*cosh(-2*(b*c - a*d)/d) - (b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*cosh(b*x + a)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(b/d)) - 64*sqrt(2)*sqrt(pi)*((b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*cosh(b*x + a)^2*cosh(-2*(b*c - a*d)/d) + (b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*cosh(b*x + a)^2*sinh(-2*(b*c - a*d)/d) + ((b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*cosh(-2*(b*c - a*d)/d) + (b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a)^2 + 2*((b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*cosh(b*x + a)*cosh(-2*(b*c - a*d)/d) + (b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*cosh(b*x + a)*sinh(-2*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(2)*sqrt(d*x + c)*sqrt(-b/d)) + (64*b^3*d^3*x^3 + 64*b^3*c^3 - 16*b^2*c^2*d + 30*d^3*cosh(b*x + a)^2 - (64*b^3*d^3*x^3 + 64*b^3*c^3 + 16*b^2*c^2*d + 12*b*c*d^2 + 15*d^3 + 16*(12*b^3*c*d^2 + b^2*d^3)*x^2 + 4*(48*b^3*c^2*d + 8*b^2*c*d^2 + 3*b*d^3)*x)*cosh(b*x + a)^4 - 4*(64*b^3*d^3*x^3 + 64*b^3*c^3 + 16*b^2*c^2*d + 12*b*c*d^2 + 15*d^3 + 16*(12*b^3*c*d^2 + b^2*d^3)*x^2 + 4*(48*b^3*c^2*d + 8*b^2*c*d^2 + 3*b*d^3)*x)*cosh(b*x + a)*sinh(b*x + a)^3 - (64*b^3*d^3*x^3 + 64*b^3*c^3 + 16*b^2*c^2*d + 12*b*c*d^2 + 15*d^3 + 16*(12*b^3*c*d^2 + b^2*d^3)*x^2 + 4*(48*b^3*c^2*d + 8*b^2*c*d^2 + 3*b*d^3)*x)*sinh(b*x + a)^4 + 12*b*c*d^2 - 15*d^3 + 16*(12*b^3*c*d^2 - b^2*d^3)*x^2 + 6*(5*d^3 - (64*b^3*d^3*x^3 + 64*b^3*c^3 + 16*b^2*c^2*d + 12*b*c*d^2 + 15*d^3 + 16*(12*b^3*c*d^2 + b^2*d^3)*x^2 + 4*(48*b^3*c^2*d + 8*b^2*c*d^2 + 3*b*d^3)*x)*cosh(b*x + a)^2)*sinh(b*x + a)^2 + 4*(48*b^3*c^2*d - 8*b^2*c*d^2 + 3*b*d^3)*x + 4*(15*d^3*cosh(b*x + a) - (64*b^3*d^3*x^3 + 64*b^3*c^3 + 16*b^2*c^2*d + 12*b*c*d^2 + 15*d^3 + 16*(12*b^3*c*d^2 + b^2*d^3)*x^2 + 4*(48*b^3*c^2*d + 8*b^2*c*d^2 + 3*b*d^3)*x)*cosh(b*x + a)^3)*sinh(b*x + a))*sqrt(d*x + c))/((d^8*x^4 + 4*c*d^7*x^3 + 6*c^2*d^6*x^2 + 4*c^3*d^5*x + c^4*d^4)*cosh(b*x + a)^2 + 2*(d^8*x^4 + 4*c*d^7*x^3 + 6*c^2*d^6*x^2 + 4*c^3*d^5*x + c^4*d^4)*cosh(b*x + a)*sinh(b*x + a) + (d^8*x^4 + 4*c*d^7*x^3 + 6*c^2*d^6*x^2 + 4*c^3*d^5*x + c^4*d^4)*sinh(b*x + a)^2)

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

$$\int \frac{\sinh(bx+a)^2}{(dx+c)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(9/2),x, algorithm="giac")
[Out] integrate(sinh(b*x + a)^2/(d*x + c)^(9/2), x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{\sinh^2(bx+a)}{(dx+c)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)^2/(d*x+c)^(9/2),x)
[Out] int(sinh(b*x+a)^2/(d*x+c)^(9/2),x)
```

maxima [A] time = 0.52, size = 118, normalized size = 0.47

$$-\frac{\frac{14\sqrt{2}\left(\frac{(dx+c)b}{d}\right)^{\frac{7}{2}}e^{\left(\frac{2(bc-ad)}{d}\right)}\Gamma\left(-\frac{7}{2},\frac{2(dx+c)b}{d}\right)}{(dx+c)^{\frac{7}{2}}}+\frac{14\sqrt{2}\left(-\frac{(dx+c)b}{d}\right)^{\frac{7}{2}}e^{\left(-\frac{2(bc-ad)}{d}\right)}\Gamma\left(-\frac{7}{2},-\frac{2(dx+c)b}{d}\right)}{(dx+c)^{\frac{7}{2}}}-\frac{1}{(dx+c)^{\frac{7}{2}}}}{7\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^2/(d*x+c)^(9/2),x, algorithm="maxima")
[Out] -1/7*(14*sqrt(2)*((d*x + c)*b/d)^(7/2)*e^(2*(b*c - a*d)/d)*gamma(-7/2, 2*(d
*x + c)*b/d)/(d*x + c)^(7/2) + 14*sqrt(2)*(-(d*x + c)*b/d)^(7/2)*e^(-2*(b*c
 - a*d)/d)*gamma(-7/2, -2*(d*x + c)*b/d)/(d*x + c)^(7/2) - 1/(d*x + c)^(7/2
))/d
```

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

$$\int \frac{{\sinh\left(a+b\,x\right)}^2}{{\left(c+d\,x\right)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^2/(c + d*x)^(9/2),x)
```

```
[Out] int(sinh(a + b*x)^2/(c + d*x)^(9/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**2/(d*x+c)**(9/2),x)
```

```
[Out] Timed out
```

3.53 $\int (c+dx)^{5/2}\sinh^3(a+bx)\,dx$

Optimal. Leaf size=381

$$\frac{45\sqrt{\pi}\,d^{5/2}e^{\frac{bc}{d}-a}\operatorname{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{64b^{7/2}}-\frac{5\sqrt{\frac{\pi}{3}}\,d^{5/2}e^{\frac{3bc}{d}-3a}\operatorname{erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{576b^{7/2}}+\frac{45\sqrt{\pi}\,d^{5/2}e^{a-\frac{bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{64b^{7/2}}-\frac{5\sqrt{\frac{\pi}{3}}\,d^{5/2}e^{3a-\frac{3b}{d}}}{5}$$

```
[Out] -2/3*(d*x+c)^(5/2)*cosh(b*x+a)/b+5/3*d*(d*x+c)^(3/2)*sinh(b*x+a)/b^2+1/3*(d
*x+c)^(5/2)*cosh(b*x+a)*sinh(b*x+a)^2/b-5/18*d*(d*x+c)^(3/2)*sinh(b*x+a)^3/
b^2-5/1728*d^(5/2)*exp(-3*a+3*b*c/d)*erf(3^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1
/2))*3^(1/2)*Pi^(1/2)/b^(7/2)-5/1728*d^(5/2)*exp(3*a-3*b*c/d)*erfi(3^(1/2)*
b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*3^(1/2)*Pi^(1/2)/b^(7/2)+45/64*d^(5/2)*exp(-
a+b*c/d)*erf(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/b^(7/2)+45/64*d^(5/2)*
exp(a-b*c/d)*erfi(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/b^(7/2)-45/16*d^2
*cosh(b*x+a)*(d*x+c)^(1/2)/b^3+5/144*d^2*cosh(3*b*x+3*a)*(d*x+c)^(1/2)/b^3
```

Rubi [A] time = 1.07, antiderivative size = 381, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3311, 3296, 3307, 2180, 2204, 2205, 3312}

$$\frac{45\sqrt{\pi}\,d^{5/2}e^{\frac{bc}{d}-a}\operatorname{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{64b^{7/2}}-\frac{5\sqrt{\frac{\pi}{3}}\,d^{5/2}e^{\frac{3bc}{d}-3a}\operatorname{Erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{576b^{7/2}}+\frac{45\sqrt{\pi}\,d^{5/2}e^{a-\frac{bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{64b^{7/2}}-\frac{5\sqrt{\frac{\pi}{3}}\,d^{5/2}e^{3a-}}{5}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^(5/2)*Sinh[a + b*x]^3,x]
```

```
[Out] (-45*d^2*Sqrt[c + d*x]*Cosh[a + b*x])/(16*b^3) - (2*(c + d*x)^(5/2)*Cosh[a
+ b*x])/(3*b) + (5*d^2*Sqrt[c + d*x]*Cosh[3*a + 3*b*x])/(144*b^3) + (45*d^(
5/2)*E^(-a + (b*c)/d)*Sqrt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(64*b^
(7/2)) - (5*d^(5/2)*E^(-3*a + (3*b*c)/d)*Sqrt[Pi/3]*Erf[(Sqrt[3]*Sqrt[b]*Sq
rt[c + d*x])/Sqrt[d]])/(576*b^(7/2)) + (45*d^(5/2)*E^(a - (b*c)/d)*Sqrt[Pi]
*Erfi[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(64*b^(7/2)) - (5*d^(5/2)*E^(3*a -
(3*b*c)/d)*Sqrt[Pi/3]*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(576*b
^(7/2)) + (5*d*(c + d*x)^(3/2)*Sinh[a + b*x])/(3*b^2) + ((c + d*x)^(5/2)*Co
sh[a + b*x]*Sinh[a + b*x]^2)/(3*b) - (5*d*(c + d*x)^(3/2)*Sinh[a + b*x]^3)/
(18*b^2)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3296

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

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3311

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

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int (c+dx)^{5/2}\sinh^3(a+bx)\,dx = \frac{(c+dx)^{5/2}\cosh(a+bx)\sinh^2(a+bx)}{3b} - \frac{5d(c+dx)^{3/2}\sinh^3(a+bx)}{18b^2} - \frac{2}{3}\int (c+$$

$$= -\frac{2(c+dx)^{5/2}\cosh(a+bx)}{3b} + \frac{(c+dx)^{5/2}\cosh(a+bx)\sinh^2(a+bx)}{3b} - \frac{5d(c+dx}{}$$

$$= -\frac{2(c+dx)^{5/2}\cosh(a+bx)}{3b} + \frac{5d(c+dx)^{3/2}\sinh(a+bx)}{3b^2} + \frac{(c+dx)^{5/2}\cosh(a+}{3b}$$

$$= -\frac{45d^2\sqrt{c+dx}\,\cosh(a+bx)}{16b^3} - \frac{2(c+dx)^{5/2}\cosh(a+bx)}{3b} + \frac{5d^2\sqrt{c+dx}\,\cosh(3a}{144b^3}$$

$$= -\frac{45d^2\sqrt{c+dx}\,\cosh(a+bx)}{16b^3} - \frac{2(c+dx)^{5/2}\cosh(a+bx)}{3b} + \frac{5d^2\sqrt{c+dx}\,\cosh(3a}{144b^3}$$

$$= -\frac{45d^2\sqrt{c+dx}\,\cosh(a+bx)}{16b^3} - \frac{2(c+dx)^{5/2}\cosh(a+bx)}{3b} + \frac{5d^2\sqrt{c+dx}\,\cosh(3a}{144b^3}$$

$$= -\frac{45d^2\sqrt{c+dx}\,\cosh(a+bx)}{16b^3} - \frac{2(c+dx)^{5/2}\cosh(a+bx)}{3b} + \frac{5d^2\sqrt{c+dx}\,\cosh(3a}{144b^3}$$

Mathematica [A] time = 9.04, size = 243, normalized size = 0.64

$$-\frac{d^3\left(\sqrt{3}\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{7}{2},-\frac{3b(c+dx)}{d}\right)\left(\sinh\left(3a-\frac{3bc}{d}\right)+\cosh\left(3a-\frac{3bc}{d}\right)\right)+\left(\sinh\left(a-\frac{bc}{d}\right)-\cosh\left(a-\frac{bc}{d}\right)\right)\left(\sqrt{\frac{b(c+a}{d}}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^(5/2)*Sinh[a + b*x]^3,x]
```

```
[Out] -1/648*(d^3*(Sqrt[3]*Sqrt[-((b*(c + d*x))/d)]*Gamma[7/2, (-3*b*(c + d*x))/d
]*(Cosh[3*a - (3*b*c)/d] + Sinh[3*a - (3*b*c)/d]) + (Sqrt[(b*(c + d*x))/d]*
(-243*Gamma[7/2, (b*(c + d*x))/d] + Sqrt[3]*Gamma[7/2, (3*b*(c + d*x))/d]*(
Cosh[2*a - (2*b*c)/d] - Sinh[2*a - (2*b*c)/d])) + 243*Sqrt[-((b*(c + d*x))/
d)]*Gamma[7/2, -((b*(c + d*x))/d)]*(Cosh[2*a - (2*b*c)/d] + Sinh[2*a - (2*b
*c)/d]))*(-Cosh[a - (b*c)/d] + Sinh[a - (b*c)/d])))/(b^4*Sqrt[c + d*x])
```

fricas [B] time = 0.51, size = 2090, normalized size = 5.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)^(5/2)*sinh(b*x+a)^3,x, algorithm="fricas")

[Out] -1/1728*(5*sqrt(3)*sqrt(pi)*(d^3*cosh(b*x + a)^3*cosh(-3*(b*c - a*d)/d) - d ^3*cosh(b*x + a)^3*sinh(-3*(b*c - a*d)/d) + (d^3*cosh(-3*(b*c - a*d)/d) - d ^3*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*(d^3*cosh(b*x + a)*cosh(-3*(b*c - a*d)/d) - d^3*cosh(b*x + a)*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*(d^3*cosh(b*x + a)^2*cosh(-3*(b*c - a*d)/d) - d^3*cosh(b*x + a)^2*sinh(- 3*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(b /d)) - 5*sqrt(3)*sqrt(pi)*(d^3*cosh(b*x + a)^3*cosh(-3*(b*c - a*d)/d) + d^3 *cosh(b*x + a)^3*sinh(-3*(b*c - a*d)/d) + (d^3*cosh(-3*(b*c - a*d)/d) + d^3 *sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*(d^3*cosh(b*x + a)*cosh(-3*(b* c - a*d)/d) + d^3*cosh(b*x + a)*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^2 + 3 *(d^3*cosh(b*x + a)^2*cosh(-3*(b*c - a*d)/d) + d^3*cosh(b*x + a)^2*sinh(-3* (b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(-b /d)) - 1215*sqrt(pi)*(d^3*cosh(b*x + a)^3*cosh(-(b*c - a*d)/d) - d^3*cosh(b *x + a)^3*sinh(-(b*c - a*d)/d) + (d^3*cosh(-(b*c - a*d)/d) - d^3*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*(d^3*cosh(b*x + a)*cosh(-(b*c - a*d)/d) - d ^3*cosh(b*x + a)*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*(d^3*cosh(b*x + a)^2*cosh(-(b*c - a*d)/d) - d^3*cosh(b*x + a)^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(d*x + c)*sqrt(b/d)) + 1215*sqrt(pi)*(d^3*cosh(b*x + a)^3*cosh(-(b*c - a*d)/d) + d^3*cosh(b*x + a)^3*sinh(-(b*c - a*d)/d) + (d^3*cosh(-(b*c - a*d)/d) + d^3*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^3 + 3 *(d^3*cosh(b*x + a)*cosh(-(b*c - a*d)/d) + d^3*cosh(b*x + a)*sinh(-(b*c - a *d)/d))*sinh(b*x + a)^2 + 3*(d^3*cosh(b*x + a)^2*cosh(-(b*c - a*d)/d) + d^3 *cosh(b*x + a)^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(d *x + c)*sqrt(-b/d)) - 6*(12*b^3*d^2*x^2 + (12*b^3*d^2*x^2 + 12*b^3*c^2 - 10 *b^2*c*d + 5*b*d^2 + 2*(12*b^3*c*d - 5*b^2*d^2)*x)*cosh(b*x + a)^6 + 6*(12* b^3*d^2*x^2 + 12*b^3*c^2 - 10*b^2*c*d + 5*b*d^2 + 2*(12*b^3*c*d - 5*b^2*d^2)*x)*cosh(b*x + a)*sinh(b*x + a)^5 + (12*b^3*d^2*x^2 + 12*b^3*c^2 - 10*b^2* c*d + 5*b*d^2 + 2*(12*b^3*c*d - 5*b^2*d^2)*x)*sinh(b*x + a)^6 + 12*b^3*c^2 - 27*(4*b^3*d^2*x^2 + 4*b^3*c^2 - 10*b^2*c*d + 15*b*d^2 + 2*(4*b^3*c*d - 5* b^2*d^2)*x)*cosh(b*x + a)^4 - 3*(36*b^3*d^2*x^2 + 36*b^3*c^2 - 90*b^2*c*d + 135*b*d^2 - 5*(12*b^3*d^2*x^2 + 12*b^3*c^2 - 10*b^2*c*d + 5*b*d^2 + 2*(12* b^3*c*d - 5*b^2*d^2)*x)*cosh(b*x + a)^2 + 18*(4*b^3*c*d - 5*b^2*d^2)*x)*sin h(b*x + a)^4 + 10*b^2*c*d + 4*(5*(12*b^3*d^2*x^2 + 12*b^3*c^2 - 10*b^2*c*d + 5*b*d^2 + 2*(12*b^3*c*d - 5*b^2*d^2)*x)*cosh(b*x + a)^3 - 27*(4*b^3*d^2*x ^2 + 4*b^3*c^2 - 10*b^2*c*d + 15*b*d^2 + 2*(4*b^3*c*d - 5*b^2*d^2)*x)*cosh(b*x + a))*sinh(b*x + a)^3 + 5*b*d^2 - 27*(4*b^3*d^2*x^2 + 4*b^3*c^2 + 10*b^ 2*c*d + 15*b*d^2 + 2*(4*b^3*c*d + 5*b^2*d^2)*x)*cosh(b*x + a)^2 - 3*(36*b^3 *d^2*x^2 + 36*b^3*c^2 - 5*(12*b^3*d^2*x^2 + 12*b^3*c^2 - 10*b^2*c*d + 5*b*d ^2 + 2*(12*b^3*c*d - 5*b^2*d^2)*x)*cosh(b*x + a)^4 + 90*b^2*c*d + 135*b*d^2 + 54*(4*b^3*d^2*x^2 + 4*b^3*c^2 - 10*b^2*c*d + 15*b*d^2 + 2*(4*b^3*c*d - 5 *b^2*d^2)*x)*cosh(b*x + a)^2 + 18*(4*b^3*c*d + 5*b^2*d^2)*x)*sinh(b*x + a)^ 2 + 2*(12*b^3*c*d + 5*b^2*d^2)*x + 6*((12*b^3*d^2*x^2 + 12*b^3*c^2 - 10*b^2 *c*d + 5*b*d^2 + 2*(12*b^3*c*d - 5*b^2*d^2)*x)*cosh(b*x + a)^5 - 18*(4*b^3*

```
d^2*x^2 + 4*b^3*c^2 - 10*b^2*c*d + 15*b*d^2 + 2*(4*b^3*c*d - 5*b^2*d^2)*x)*
cosh(b*x + a)^3 - 9*(4*b^3*d^2*x^2 + 4*b^3*c^2 + 10*b^2*c*d + 15*b*d^2 + 2*
(4*b^3*c*d + 5*b^2*d^2)*x)*cosh(b*x + a))*sinh(b*x + a))*sqrt(d*x + c))/(b^
4*cosh(b*x + a)^3 + 3*b^4*cosh(b*x + a)^2*sinh(b*x + a) + 3*b^4*cosh(b*x +
a)*sinh(b*x + a)^2 + b^4*sinh(b*x + a)^3)
```

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

$$\int (dx+c)^{\frac{5}{2}} \sinh(bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sinh(b*x+a)^3,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/2)*sinh(b*x + a)^3, x)
```

maple [F] time = 0.17, size = 0, normalized size = 0.00

$$\int (dx+c)^{\frac{5}{2}} \left(\sinh^3(bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(5/2)*sinh(b*x+a)^3,x)
```

```
[Out] int((d*x+c)^(5/2)*sinh(b*x+a)^3,x)
```

maxima [A] time = 0.70, size = 513, normalized size = 1.35

$$-\frac{\frac{5\sqrt{3}\sqrt{\pi}d^3\operatorname{erf}\left(\sqrt{3}\sqrt{dx+c}\sqrt{-\frac{b}{d}}\right)e^{\left(3a-\frac{3bc}{d}\right)}}{b^3\sqrt{-\frac{b}{d}}}+\frac{5\sqrt{3}\sqrt{\pi}d^3\operatorname{erf}\left(\sqrt{3}\sqrt{dx+c}\sqrt{\frac{b}{d}}\right)e^{\left(-3a+\frac{3bc}{d}\right)}}{b^3\sqrt{\frac{b}{d}}}-\frac{1215\sqrt{\pi}d^3\operatorname{erf}\left(\sqrt{dx+c}\sqrt{-\frac{b}{d}}\right)e^{\left(a-\frac{bc}{d}\right)}}{b^3\sqrt{-\frac{b}{d}}}-\frac{1215\sqrt{\pi}\cdots}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sinh(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/1728*(5*sqrt(3)*sqrt(pi)*d^3*erf(sqrt(3)*sqrt(d*x + c)*sqrt(-b/d))*e^(3*
a - 3*b*c/d)/(b^3*sqrt(-b/d)) + 5*sqrt(3)*sqrt(pi)*d^3*erf(sqrt(3)*sqrt(d*x
 + c)*sqrt(b/d))*e^(-3*a + 3*b*c/d)/(b^3*sqrt(b/d)) - 1215*sqrt(pi)*d^3*erf
(sqrt(d*x + c)*sqrt(-b/d))*e^(a - b*c/d)/(b^3*sqrt(-b/d)) - 1215*sqrt(pi)*d
^3*erf(sqrt(d*x + c)*sqrt(b/d))*e^(-a + b*c/d)/(b^3*sqrt(b/d)) + 162*(4*(d*
x + c)^(5/2)*b^2*d*e^(b*c/d) + 10*(d*x + c)^(3/2)*b*d^2*e^(b*c/d) + 15*sqrt
(d*x + c)*d^3*e^(b*c/d))*e^(-a - (d*x + c)*b/d)/b^3 - 6*(12*(d*x + c)^(5/2)
*b^2*d*e^(3*b*c/d) + 10*(d*x + c)^(3/2)*b*d^2*e^(3*b*c/d) + 5*sqrt(d*x + c)
```

```
*d^3*e^(3*b*c/d))*e^(-3*a - 3*(d*x + c)*b/d)/b^3 - 6*(12*(d*x + c)^(5/2)*b^
2*d*e^(3*a) - 10*(d*x + c)^(3/2)*b*d^2*e^(3*a) + 5*sqrt(d*x + c)*d^3*e^(3*a
))*e^(3*(d*x + c)*b/d - 3*b*c/d)/b^3 + 162*(4*(d*x + c)^(5/2)*b^2*d*e^a - 1
0*(d*x + c)^(3/2)*b*d^2*e^a + 15*sqrt(d*x + c)*d^3*e^a)*e^((d*x + c)*b/d -
b*c/d)/b^3)/d
```

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

$$\int \sinh(a+bx)^3 (c+dx)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^3*(c + d*x)^(5/2),x)
```

```
[Out] int(sinh(a + b*x)^3*(c + d*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(5/2)*sinh(b*x+a)**3,x)
```

```
[Out] Timed out
```

3.54 $\int (c+dx)^{3/2}\sinh^3(a+bx)\,dx$

Optimal. Leaf size=325

$$\frac{9\sqrt{\pi}\,d^{3/2}e^{\frac{bc}{d}-a}\operatorname{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{32b^{5/2}}-\frac{\sqrt{\frac{\pi}{3}}\,d^{3/2}e^{\frac{3bc}{d}-3a}\operatorname{erf}\left(\frac{\sqrt{3}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{96b^{5/2}}-\frac{9\sqrt{\pi}\,d^{3/2}e^{a-\frac{bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{32b^{5/2}}+\frac{\sqrt{\frac{\pi}{3}}\,d^{3/2}e^{3a-\frac{3bc}{d}}\operatorname{erfi}}{96b^{5/2}}$$

```
[Out] -2/3*(d*x+c)^(3/2)*cosh(b*x+a)/b+1/3*(d*x+c)^(3/2)*cosh(b*x+a)*sinh(b*x+a)^
2/b-1/288*d^(3/2)*exp(-3*a+3*b*c/d)*erf(3^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/
2))*3^(1/2)*Pi^(1/2)/b^(5/2)+1/288*d^(3/2)*exp(3*a-3*b*c/d)*erfi(3^(1/2)*b^
(1/2)*(d*x+c)^(1/2)/d^(1/2))*3^(1/2)*Pi^(1/2)/b^(5/2)+9/32*d^(3/2)*exp(-a+b
*c/d)*erf(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/b^(5/2)-9/32*d^(3/2)*exp(
a-b*c/d)*erfi(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/b^(5/2)+d*sinh(b*x+a)
*(d*x+c)^(1/2)/b^2-1/6*d*sinh(b*x+a)^3*(d*x+c)^(1/2)/b^2
```

Rubi [A] time = 0.80, antiderivative size = 325, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3311, 3296, 3308, 2180, 2204, 2205, 3312}

$$\frac{9\sqrt{\pi}\,d^{3/2}e^{\frac{bc}{d}-a}\operatorname{Erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{32b^{5/2}}-\frac{\sqrt{\frac{\pi}{3}}\,d^{3/2}e^{\frac{3bc}{d}-3a}\operatorname{Erf}\left(\frac{\sqrt{3}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{96b^{5/2}}-\frac{9\sqrt{\pi}\,d^{3/2}e^{a-\frac{bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{32b^{5/2}}+\frac{\sqrt{\frac{\pi}{3}}\,d^{3/2}e^{3a-\frac{3bc}{d}}\operatorname{Er}}{96b^{5}}$$

Antiderivative was successfully verified.

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

```
[Out] (-2*(c + d*x)^(3/2)*Cosh[a + b*x])/(3*b) + (9*d^(3/2)*E^(-a + (b*c)/d)*Sqrt
[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(32*b^(5/2)) - (d^(3/2)*E^(-3*a
+ (3*b*c)/d)*Sqrt[Pi/3]*Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(96*b
^(5/2)) - (9*d^(3/2)*E^(a - (b*c)/d)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[c + d*x])/
Sqrt[d]])/(32*b^(5/2)) + (d^(3/2)*E^(3*a - (3*b*c)/d)*Sqrt[Pi/3]*Erfi[(Sqrt
[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(96*b^(5/2)) + (d*Sqrt[c + d*x]*Sinh[a
 + b*x])/b^2 + ((c + d*x)^(3/2)*Cosh[a + b*x]*Sinh[a + b*x]^2)/(3*b) - (d*S
qrt[c + d*x]*Sinh[a + b*x]^3)/(6*b^2)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3296

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

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3311

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

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int (c+dx)^{3/2}\sinh^3(a+bx)\,dx = \frac{(c+dx)^{3/2}\cosh(a+bx)\sinh^2(a+bx)}{3b} - \frac{d\sqrt{c+dx}\,\sinh^3(a+bx)}{6b^2} - \frac{2}{3}\int (c+dx$$

$$= -\frac{2(c+dx)^{3/2}\cosh(a+bx)}{3b} + \frac{(c+dx)^{3/2}\cosh(a+bx)\sinh^2(a+bx)}{3b} - \frac{d\sqrt{c+dx}}{}$$

$$= -\frac{2(c+dx)^{3/2}\cosh(a+bx)}{3b} + \frac{d\sqrt{c+dx}\,\sinh(a+bx)}{b^2} + \frac{(c+dx)^{3/2}\cosh(a+bx)}{3b}$$

$$= -\frac{2(c+dx)^{3/2}\cosh(a+bx)}{3b} + \frac{d\sqrt{c+dx}\,\sinh(a+bx)}{b^2} + \frac{(c+dx)^{3/2}\cosh(a+bx)}{3b}$$

$$= -\frac{2(c+dx)^{3/2}\cosh(a+bx)}{3b} + \frac{d\sqrt{c+dx}\,\sinh(a+bx)}{b^2} + \frac{(c+dx)^{3/2}\cosh(a+bx)}{3b}$$

$$= -\frac{2(c+dx)^{3/2}\cosh(a+bx)}{3b} + \frac{9d^{3/2}e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\operatorname{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{32b^{5/2}} - \frac{d^{3/2}e^{-3a+\frac{3bc}{d}}\sqrt{\frac{\pi}{3}}\,\mathrm{er}}{96b^5}$$

Mathematica [A] time = 3.72, size = 243, normalized size = 0.75

$$\frac{d^2\left(\sqrt{3}\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{5}{2},-\frac{3b(c+dx)}{d}\right)\left(\sinh\left(3a-\frac{3bc}{d}\right)+\cosh\left(3a-\frac{3bc}{d}\right)\right)+\left(\sinh\left(a-\frac{bc}{d}\right)-\cosh\left(a-\frac{bc}{d}\right)\right)\left(81\sqrt{-\frac{b(}{}}\right.\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (d^2*(Sqrt[3]*Sqrt[-((b*(c + d*x))/d)]*Gamma[5/2, (-3*b*(c + d*x))/d]*(Cosh
[3*a - (3*b*c)/d] + Sinh[3*a - (3*b*c)/d]) + (81*Sqrt[-((b*(c + d*x))/d)]*G
amma[5/2, -((b*(c + d*x))/d)]*(Cosh[2*a - (2*b*c)/d] + Sinh[2*a - (2*b*c)/d
]) + Sqrt[(b*(c + d*x))/d]*(81*Gamma[5/2, (b*(c + d*x))/d] + Sqrt[3]*Gamma[
5/2, (3*b*(c + d*x))/d]*(-Cosh[2*a - (2*b*c)/d] + Sinh[2*a - (2*b*c)/d])))*
(-Cosh[a - (b*c)/d] + Sinh[a - (b*c)/d])))/(216*b^3*Sqrt[c + d*x])
```

fricas [B] time = 0.55, size = 1543, normalized size = 4.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/288*(sqrt(3)*sqrt(pi)*(d^2*cosh(b*x + a)^3*cosh(-3*(b*c - a*d)/d) - d^2*
cosh(b*x + a)^3*sinh(-3*(b*c - a*d)/d) + (d^2*cosh(-3*(b*c - a*d)/d) - d^2*
sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*(d^2*cosh(b*x + a)*cosh(-3*(b*c
 - a*d)/d) - d^2*cosh(b*x + a)*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*
(d^2*cosh(b*x + a)^2*cosh(-3*(b*c - a*d)/d) - d^2*cosh(b*x + a)^2*sinh(-3*(
b*c - a*d)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(b/d)
) + sqrt(3)*sqrt(pi)*(d^2*cosh(b*x + a)^3*cosh(-3*(b*c - a*d)/d) + d^2*cosh
(b*x + a)^3*sinh(-3*(b*c - a*d)/d) + (d^2*cosh(-3*(b*c - a*d)/d) + d^2*sinh
(-3*(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*(d^2*cosh(b*x + a)*cosh(-3*(b*c - a
*d)/d) + d^2*cosh(b*x + a)*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*(d^2
*cosh(b*x + a)^2*cosh(-3*(b*c - a*d)/d) + d^2*cosh(b*x + a)^2*sinh(-3*(b*c
- a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(-b/d))
- 81*sqrt(pi)*(d^2*cosh(b*x + a)^3*cosh(-(b*c - a*d)/d) - d^2*cosh(b*x + a)
^3*sinh(-(b*c - a*d)/d) + (d^2*cosh(-(b*c - a*d)/d) - d^2*sinh(-(b*c - a*d)
/d))*sinh(b*x + a)^3 + 3*(d^2*cosh(b*x + a)*cosh(-(b*c - a*d)/d) - d^2*cosh
(b*x + a)*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*(d^2*cosh(b*x + a)^2*co
sh(-(b*c - a*d)/d) - d^2*cosh(b*x + a)^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a
))*sqrt(b/d)*erf(sqrt(d*x + c)*sqrt(b/d)) - 81*sqrt(pi)*(d^2*cosh(b*x + a)^
3*cosh(-(b*c - a*d)/d) + d^2*cosh(b*x + a)^3*sinh(-(b*c - a*d)/d) + (d^2*co
sh(-(b*c - a*d)/d) + d^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*(d^2*cos
h(b*x + a)*cosh(-(b*c - a*d)/d) + d^2*cosh(b*x + a)*sinh(-(b*c - a*d)/d))*s
inh(b*x + a)^2 + 3*(d^2*cosh(b*x + a)^2*cosh(-(b*c - a*d)/d) + d^2*cosh(b*x
 + a)^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(d*x + c)*s
qrt(-b/d)) - 6*((2*b^2*d*x + 2*b^2*c - b*d)*cosh(b*x + a)^6 + 6*(2*b^2*d*x
+ 2*b^2*c - b*d)*cosh(b*x + a)*sinh(b*x + a)^5 + (2*b^2*d*x + 2*b^2*c - b*d
)*sinh(b*x + a)^6 - 9*(2*b^2*d*x + 2*b^2*c - 3*b*d)*cosh(b*x + a)^4 - 3*(6*
b^2*d*x + 6*b^2*c - 5*(2*b^2*d*x + 2*b^2*c - b*d)*cosh(b*x + a)^2 - 9*b*d)*
sinh(b*x + a)^4 + 2*b^2*d*x + 4*(5*(2*b^2*d*x + 2*b^2*c - b*d)*cosh(b*x + a
)^3 - 9*(2*b^2*d*x + 2*b^2*c - 3*b*d)*cosh(b*x + a))*sinh(b*x + a)^3 + 2*b^
2*c - 9*(2*b^2*d*x + 2*b^2*c + 3*b*d)*cosh(b*x + a)^2 + 3*(5*(2*b^2*d*x + 2
*b^2*c - b*d)*cosh(b*x + a)^4 - 6*b^2*d*x - 6*b^2*c - 18*(2*b^2*d*x + 2*b^2
*c - 3*b*d)*cosh(b*x + a)^2 - 9*b*d)*sinh(b*x + a)^2 + b*d + 6*((2*b^2*d*x
+ 2*b^2*c - b*d)*cosh(b*x + a)^5 - 6*(2*b^2*d*x + 2*b^2*c - 3*b*d)*cosh(b*x
 + a)^3 - 3*(2*b^2*d*x + 2*b^2*c + 3*b*d)*cosh(b*x + a))*sinh(b*x + a))*sqr
t(d*x + c))/(b^3*cosh(b*x + a)^3 + 3*b^3*cosh(b*x + a)^2*sinh(b*x + a) + 3*
b^3*cosh(b*x + a)*sinh(b*x + a)^2 + b^3*sinh(b*x + a)^3)
```

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

$$\int (dx + c)^{\frac{3}{2}} \sinh (bx + a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^(3/2)*sinh(b*x + a)^3, x)
```

maple [F] time = 0.16, size = 0, normalized size = 0.00

$$\int (dx+c)^{\frac{3}{2}} \left(\sinh^3(bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((d*x+c)^(3/2)*sinh(b*x+a)^3,x)
```

maxima [A] time = 0.46, size = 430, normalized size = 1.32

$$\frac{\sqrt{3}\sqrt{\pi}d^2 \operatorname{erf}\left(\sqrt{3}\sqrt{dx+c}\sqrt{-\frac{b}{d}}\right)e^{\left(3a-\frac{3bc}{d}\right)}}{b^2\sqrt{-\frac{b}{d}}} - \frac{\sqrt{3}\sqrt{\pi}d^2 \operatorname{erf}\left(\sqrt{3}\sqrt{dx+c}\sqrt{\frac{b}{d}}\right)e^{\left(-3a+\frac{3bc}{d}\right)}}{b^2\sqrt{\frac{b}{d}}} - \frac{81\sqrt{\pi}d^2 \operatorname{erf}\left(\sqrt{dx+c}\sqrt{-\frac{b}{d}}\right)e^{\left(a-\frac{bc}{d}\right)}}{b^2\sqrt{-\frac{b}{d}}} + \frac{81\sqrt{\pi}d^2 \operatorname{erf}\left(\sqrt{dx\right.}{b^2\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/288*(sqrt(3)*sqrt(pi)*d^2*erf(sqrt(3)*sqrt(d*x + c)*sqrt(-b/d))*e^(3*a -
3*b*c/d)/(b^2*sqrt(-b/d)) - sqrt(3)*sqrt(pi)*d^2*erf(sqrt(3)*sqrt(d*x + c)*
sqrt(b/d))*e^(-3*a + 3*b*c/d)/(b^2*sqrt(b/d)) - 81*sqrt(pi)*d^2*erf(sqrt(d*
x + c)*sqrt(-b/d))*e^(a - b*c/d)/(b^2*sqrt(-b/d)) + 81*sqrt(pi)*d^2*erf(sqr
t(d*x + c)*sqrt(b/d))*e^(-a + b*c/d)/(b^2*sqrt(b/d)) - 54*(2*(d*x + c)^(3/2
)*b*d*e^(b*c/d) + 3*sqrt(d*x + c)*d^2*e^(b*c/d))*e^(-a - (d*x + c)*b/d)/b^2
 + 6*(2*(d*x + c)^(3/2)*b*d*e^(3*b*c/d) + sqrt(d*x + c)*d^2*e^(3*b*c/d))*e^
(-3*a - 3*(d*x + c)*b/d)/b^2 + 6*(2*(d*x + c)^(3/2)*b*d*e^(3*a) - sqrt(d*x
+ c)*d^2*e^(3*a))*e^(3*(d*x + c)*b/d - 3*b*c/d)/b^2 - 54*(2*(d*x + c)^(3/2)
*b*d*e^a - 3*sqrt(d*x + c)*d^2*e^a)*e^((d*x + c)*b/d - b*c/d)/b^2)/d
```

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

$$\int \sinh(a+b\,x)^3\,(c+d\,x)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(a + b*x)^3*(c + d*x)^(3/2), x)
```

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

$$\int (c+dx)^{\frac{3}{2}} \sinh^3(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(3/2)*sinh(b*x+a)**3,x)
```

```
[Out] Integral((c + d*x)**(3/2)*sinh(a + b*x)**3, x)
```

3.55 $\int \sqrt{c+dx}\,\sinh^3(a+bx)\,dx$

Optimal. Leaf size=275

$$\frac{3\sqrt{\pi}\,\sqrt{d}\,e^{\frac{bc}{d}-a}\operatorname{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{3/2}}-\frac{\sqrt{\frac{\pi}{3}}\,\sqrt{d}\,e^{\frac{3bc}{d}-3a}\operatorname{erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{48b^{3/2}}+\frac{3\sqrt{\pi}\,\sqrt{d}\,e^{a-\frac{bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{3/2}}-\frac{\sqrt{\frac{\pi}{3}}\,\sqrt{d}\,e^{3a-\frac{3bc}{d}}\operatorname{erfi}}{48b^{3/2}}$$

```
[Out] -1/144*exp(-3*a+3*b*c/d)*erf(3^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*d^(1/2)
*3^(1/2)*Pi^(1/2)/b^(3/2)-1/144*exp(3*a-3*b*c/d)*erfi(3^(1/2)*b^(1/2)*(d*x+
c)^(1/2)/d^(1/2))*d^(1/2)*3^(1/2)*Pi^(1/2)/b^(3/2)+3/16*exp(-a+b*c/d)*erf(b
^(1/2)*(d*x+c)^(1/2)/d^(1/2))*d^(1/2)*Pi^(1/2)/b^(3/2)+3/16*exp(a-b*c/d)*er
fi(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*d^(1/2)*Pi^(1/2)/b^(3/2)-3/4*cosh(b*x+a)*
(d*x+c)^(1/2)/b+1/12*cosh(3*b*x+3*a)*(d*x+c)^(1/2)/b
```

Rubi [A] time = 0.52, antiderivative size = 275, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3312, 3296, 3307, 2180, 2204, 2205}

$$\frac{3\sqrt{\pi}\,\sqrt{d}\,e^{\frac{bc}{d}-a}\operatorname{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{3/2}}-\frac{\sqrt{\frac{\pi}{3}}\,\sqrt{d}\,e^{\frac{3bc}{d}-3a}\operatorname{Erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{48b^{3/2}}+\frac{3\sqrt{\pi}\,\sqrt{d}\,e^{a-\frac{bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{3/2}}-\frac{\sqrt{\frac{\pi}{3}}\,\sqrt{d}\,e^{3a-\frac{3bc}{d}}\operatorname{Erf}}{48b^{3}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c + d*x]*Sinh[a + b*x]^3,x]
```

```
[Out] (-3*Sqrt[c + d*x]*Cosh[a + b*x])/(4*b) + (Sqrt[c + d*x]*Cosh[3*a + 3*b*x])/
(12*b) + (3*Sqrt[d]*E^(-a + (b*c)/d)*Sqrt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/S
qrt[d]])/(16*b^(3/2)) - (Sqrt[d]*E^(-3*a + (3*b*c)/d)*Sqrt[Pi/3]*Erf[(Sqrt[
3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(48*b^(3/2)) + (3*Sqrt[d]*E^(a - (b*c)/
d)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(16*b^(3/2)) - (Sqrt[d]*
E^(3*a - (3*b*c)/d)*Sqrt[Pi/3]*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]
])/(48*b^(3/2))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3296

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

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int \sqrt{c+dx}\,\sinh^3(a+bx)\,dx = i\int\left(\frac{3}{4}i\sqrt{c+dx}\,\sinh(a+bx)-\frac{1}{4}i\sqrt{c+dx}\,\sinh(3a+3bx)\right)dx$$
$$=\frac{1}{4}\int\sqrt{c+dx}\,\sinh(3a+3bx)\,dx-\frac{3}{4}\int\sqrt{c+dx}\,\sinh(a+bx)\,dx$$
$$=-\frac{3\sqrt{c+dx}\,\cosh(a+bx)}{4b}+\frac{\sqrt{c+dx}\,\cosh(3a+3bx)}{12b}-\frac{d\int\frac{\cosh(3a+3bx)}{\sqrt{c+dx}}dx}{24b}+\frac{(3d)}{}$$
$$=-\frac{3\sqrt{c+dx}\,\cosh(a+bx)}{4b}+\frac{\sqrt{c+dx}\,\cosh(3a+3bx)}{12b}-\frac{d\int\frac{e^{-i(3ia+3ibx)}}{\sqrt{c+dx}}dx}{48b}-\frac{d\int\frac{e^{i(3}}{}}{}$$
$$=-\frac{3\sqrt{c+dx}\,\cosh(a+bx)}{4b}+\frac{\sqrt{c+dx}\,\cosh(3a+3bx)}{12b}-\frac{\text{Subst}\left(\int e^{i\left(3ia-\frac{3ibc}{d}\right)-\frac{3bx^2}{d}}d\right.}{24b}$$
$$=-\frac{3\sqrt{c+dx}\,\cosh(a+bx)}{4b}+\frac{\sqrt{c+dx}\,\cosh(3a+3bx)}{12b}+\frac{3\sqrt{d}\,e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\text{erf}\left(\frac{\sqrt{b}\sqrt{c+}}{\sqrt{d}}\right.}{16b^{3/2}}$$

Mathematica [A] time = 0.28, size = 209, normalized size = 0.76

$$\frac{\sqrt{c+dx}\,e^{-3\left(a+\frac{bc}{d}\right)}\left(\sqrt{3}\,e^{6a}\sqrt{\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{3}{2},-\frac{3b(c+dx)}{d}\right)-27e^{4a+\frac{2bc}{d}}\sqrt{\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{3}{2},-\frac{b(c+dx)}{d}\right)+e^{\frac{4bc}{d}}\sqrt{-\frac{b(c+dx)}{d}}\left(\sqrt{3}\,e^{\frac{2bc}{d}}\Gamma\left(\right.\right.\right.}{72b\sqrt{-\frac{b^2(c+dx)^2}{d^2}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c + d*x]*Sinh[a + b*x]^3,x]
```

```
[Out] (Sqrt[c + d*x]*(Sqrt[3]*E^(6*a)*Sqrt[(b*(c + d*x))/d]*Gamma[3/2, (-3*b*(c +
 d*x))/d] - 27*E^(4*a + (2*b*c)/d)*Sqrt[(b*(c + d*x))/d]*Gamma[3/2, -((b*(c
 + d*x))/d)] + E^((4*b*c)/d)*Sqrt[-((b*(c + d*x))/d)]*(-27*E^(2*a)*Gamma[3/
2, (b*(c + d*x))/d] + Sqrt[3]*E^((2*b*c)/d)*Gamma[3/2, (3*b*(c + d*x))/d]))
)/(72*b*E^(3*(a + (b*c)/d))*Sqrt[-((b^2*(c + d*x)^2)/d^2)])
```

fricas [B] time = 0.47, size = 1216, normalized size = 4.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3*(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/144*(sqrt(3)*sqrt(pi)*(d*cosh(b*x + a)^3*cosh(-3*(b*c - a*d)/d) - d*cosh
(b*x + a)^3*sinh(-3*(b*c - a*d)/d) + (d*cosh(-3*(b*c - a*d)/d) - d*sinh(-3*
(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*(d*cosh(b*x + a)*cosh(-3*(b*c - a*d)/d)
 - d*cosh(b*x + a)*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*(d*cosh(b*x
+ a)^2*cosh(-3*(b*c - a*d)/d) - d*cosh(b*x + a)^2*sinh(-3*(b*c - a*d)/d))*s
inh(b*x + a))*sqrt(b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(b/d)) - sqrt(3)*sqrt
(pi)*(d*cosh(b*x + a)^3*cosh(-3*(b*c - a*d)/d) + d*cosh(b*x + a)^3*sinh(-3*
(b*c - a*d)/d) + (d*cosh(-3*(b*c - a*d)/d) + d*sinh(-3*(b*c - a*d)/d))*sinh
(b*x + a)^3 + 3*(d*cosh(b*x + a)*cosh(-3*(b*c - a*d)/d) + d*cosh(b*x + a)*s
inh(-3*(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*(d*cosh(b*x + a)^2*cosh(-3*(b*c
- a*d)/d) + d*cosh(b*x + a)^2*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-
b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(-b/d)) - 27*sqrt(pi)*(d*cosh(b*x + a)^3
*cosh(-(b*c - a*d)/d) - d*cosh(b*x + a)^3*sinh(-(b*c - a*d)/d) + (d*cosh(-(
b*c - a*d)/d) - d*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*(d*cosh(b*x + a
)*cosh(-(b*c - a*d)/d) - d*cosh(b*x + a)*sinh(-(b*c - a*d)/d))*sinh(b*x + a
)^2 + 3*(d*cosh(b*x + a)^2*cosh(-(b*c - a*d)/d) - d*cosh(b*x + a)^2*sinh(-(
b*c - a*d)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(d*x + c)*sqrt(b/d)) + 27*s
qrt(pi)*(d*cosh(b*x + a)^3*cosh(-(b*c - a*d)/d) + d*cosh(b*x + a)^3*sinh(-(
b*c - a*d)/d) + (d*cosh(-(b*c - a*d)/d) + d*sinh(-(b*c - a*d)/d))*sinh(b*x
+ a)^3 + 3*(d*cosh(b*x + a)*cosh(-(b*c - a*d)/d) + d*cosh(b*x + a)*sinh(-(b
*c - a*d)/d))*sinh(b*x + a)^2 + 3*(d*cosh(b*x + a)^2*cosh(-(b*c - a*d)/d) +
 d*cosh(b*x + a)^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt
(d*x + c)*sqrt(-b/d)) - 6*(b*cosh(b*x + a)^6 + 6*b*cosh(b*x + a)*sinh(b*x +
 a)^5 + b*sinh(b*x + a)^6 - 9*b*cosh(b*x + a)^4 + 3*(5*b*cosh(b*x + a)^2 -
3*b)*sinh(b*x + a)^4 + 4*(5*b*cosh(b*x + a)^3 - 9*b*cosh(b*x + a))*sinh(b*x
 + a)^3 - 9*b*cosh(b*x + a)^2 + 3*(5*b*cosh(b*x + a)^4 - 18*b*cosh(b*x + a)
^2 - 3*b)*sinh(b*x + a)^2 + 6*(b*cosh(b*x + a)^5 - 6*b*cosh(b*x + a)^3 - 3*
b*cosh(b*x + a))*sinh(b*x + a) + b)*sqrt(d*x + c))/(b^2*cosh(b*x + a)^3 + 3
*b^2*cosh(b*x + a)^2*sinh(b*x + a) + 3*b^2*cosh(b*x + a)*sinh(b*x + a)^2 +
b^2*sinh(b*x + a)^3)
```

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

$$\int \sqrt{dx+c}\,\sinh(bx+a)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3*(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*x + c)*sinh(b*x + a)^3, x)
```

maple [F] time = 0.17, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)^3*(d*x+c)^(1/2),x)
```

```
[Out] int(sinh(b*x+a)^3*(d*x+c)^(1/2),x)
```

maxima [A] time = 0.54, size = 333, normalized size = 1.21

$$-\frac{\frac{\sqrt{3}\sqrt{\pi}d\,\mathrm{erf}\left(\sqrt{3}\sqrt{dx+c}\sqrt{-\frac{b}{d}}\right)e^{\left(3a-\frac{3bc}{d}\right)}}{b\sqrt{-\frac{b}{d}}}+\frac{\sqrt{3}\sqrt{\pi}d\,\mathrm{erf}\left(\sqrt{3}\sqrt{dx+c}\sqrt{\frac{b}{d}}\right)e^{\left(-3a+\frac{3bc}{d}\right)}}{b\sqrt{\frac{b}{d}}}-\frac{27\sqrt{\pi}d\,\mathrm{erf}\left(\sqrt{dx+c}\sqrt{-\frac{b}{d}}\right)e^{\left(a-\frac{bc}{d}\right)}}{b\sqrt{-\frac{b}{d}}}-\frac{27\sqrt{\pi}d\,\mathrm{erf}\left(\sqrt{dx+c}\cdots\right.}{b\sqrt{\frac{b}{d}}}\cdots}{14\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3*(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/144*(sqrt(3)*sqrt(pi)*d*erf(sqrt(3)*sqrt(d*x + c)*sqrt(-b/d))*e^(3*a - 3
*b*c/d)/(b*sqrt(-b/d)) + sqrt(3)*sqrt(pi)*d*erf(sqrt(3)*sqrt(d*x + c)*sqrt(
b/d))*e^(-3*a + 3*b*c/d)/(b*sqrt(b/d)) - 27*sqrt(pi)*d*erf(sqrt(d*x + c)*sq
rt(-b/d))*e^(a - b*c/d)/(b*sqrt(-b/d)) - 27*sqrt(pi)*d*erf(sqrt(d*x + c)*sq
rt(b/d))*e^(-a + b*c/d)/(b*sqrt(b/d)) - 6*sqrt(d*x + c)*d*e^(3*a + 3*(d*x +
 c)*b/d - 3*b*c/d)/b + 54*sqrt(d*x + c)*d*e^(a + (d*x + c)*b/d - b*c/d)/b +
 54*sqrt(d*x + c)*d*e^(-a - (d*x + c)*b/d + b*c/d)/b - 6*sqrt(d*x + c)*d*e^
(-3*a - 3*(d*x + c)*b/d + 3*b*c/d)/b)/d
```

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

$$\int \sinh\left(a+b\,x\right)^3\,\sqrt{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^3*(c + d*x)^(1/2),x)
```

```
[Out] int(sinh(a + b*x)^3*(c + d*x)^(1/2), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**3*(d*x+c)**(1/2),x)
```

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

3.56 $\int \frac{\sinh^3(a+bx)}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=228

$$\frac{3\sqrt{\pi}\,e^{\frac{bc}{d}-a}\operatorname{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\,\sqrt{d}}-\frac{\sqrt{\frac{\pi}{3}}\,e^{\frac{3bc}{d}-3a}\operatorname{erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\,\sqrt{d}}-\frac{3\sqrt{\pi}\,e^{a-\frac{bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\,\sqrt{d}}+\frac{\sqrt{\frac{\pi}{3}}\,e^{3a-\frac{3bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\,\sqrt{d}}$$

```
[Out] -1/24*exp(-3*a+3*b*c/d)*erf(3^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*3^(1/2)*
Pi^(1/2)/b^(1/2)/d^(1/2)+1/24*exp(3*a-3*b*c/d)*erfi(3^(1/2)*b^(1/2)*(d*x+c)
^(1/2)/d^(1/2))*3^(1/2)*Pi^(1/2)/b^(1/2)/d^(1/2)+3/8*exp(-a+b*c/d)*erf(b^(1
/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/b^(1/2)/d^(1/2)-3/8*exp(a-b*c/d)*erfi(b
^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/b^(1/2)/d^(1/2)
```

Rubi [A] time = 0.40, antiderivative size = 228, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3312, 3308, 2180, 2204, 2205}

$$\frac{3\sqrt{\pi}\,e^{\frac{bc}{d}-a}\operatorname{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\,\sqrt{d}}-\frac{\sqrt{\frac{\pi}{3}}\,e^{\frac{3bc}{d}-3a}\operatorname{Erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\,\sqrt{d}}-\frac{3\sqrt{\pi}\,e^{a-\frac{bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\,\sqrt{d}}+\frac{\sqrt{\frac{\pi}{3}}\,e^{3a-\frac{3bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\,\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[a + b*x]^3/Sqrt[c + d*x],x]
```

```
[Out] (3*E^(-a + (b*c)/d)*Sqrt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(8*Sqrt[
b]*Sqrt[d]) - (E^(-3*a + (3*b*c)/d)*Sqrt[Pi/3]*Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c
+ d*x])/Sqrt[d]])/(8*Sqrt[b]*Sqrt[d]) - (3*E^(a - (b*c)/d)*Sqrt[Pi]*Erfi[(S
qrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(8*Sqrt[b]*Sqrt[d]) + (E^(3*a - (3*b*c)/d)*
Sqrt[Pi/3]*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(8*Sqrt[b]*Sqrt[d
])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}
\int \frac{\sinh^3(a+bx)}{\sqrt{c+dx}}\,dx &= i\int \left(\frac{3i\sinh(a+bx)}{4\sqrt{c+dx}}-\frac{i\sinh(3a+3bx)}{4\sqrt{c+dx}}\right)dx\\
&= \frac{1}{4}\int \frac{\sinh(3a+3bx)}{\sqrt{c+dx}}\,dx-\frac{3}{4}\int \frac{\sinh(a+bx)}{\sqrt{c+dx}}\,dx\\
&= \frac{1}{8}\int \frac{e^{-i(3ia+3ibx)}}{\sqrt{c+dx}}\,dx-\frac{1}{8}\int \frac{e^{i(3ia+3ibx)}}{\sqrt{c+dx}}\,dx-\frac{3}{8}\int \frac{e^{-i(ia+ibx)}}{\sqrt{c+dx}}\,dx+\frac{3}{8}\int \frac{e^{i(ia+ibx)}}{\sqrt{c+dx}}\,dx\\
&= -\frac{\operatorname{Subst}\left(\int e^{i\left(3ia-\frac{3ibc}{d}\right)-\frac{3bx^2}{d}}\,dx,x,\sqrt{c+dx}\right)}{4d}+\frac{\operatorname{Subst}\left(\int e^{-i\left(3ia-\frac{3ibc}{d}\right)+\frac{3bx^2}{d}}\,dx,x,\sqrt{c+dx}\right)}{4d}+\cdots\\
&= \frac{3e^{-a+\frac{bc}{d}}\sqrt{\pi}\operatorname{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\sqrt{d}}-\frac{e^{-3a+\frac{3bc}{d}}\sqrt{\frac{\pi}{3}}\operatorname{erf}\left(\frac{\sqrt{3}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\sqrt{d}}-\frac{3e^{a-\frac{bc}{d}}\sqrt{\pi}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{8\sqrt{b}\sqrt{d}}+\cdots
\end{aligned}$$

Mathematica [A] time = 0.17, size = 191, normalized size = 0.84

$$\frac{e^{-3\left(a+\frac{bc}{d}\right)}\left(\sqrt{3}e^{6a}\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},-\frac{3b(c+dx)}{d}\right)-9e^{4a+\frac{2bc}{d}}\sqrt{-\frac{b(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},-\frac{b(c+dx)}{d}\right)+e^{\frac{4bc}{d}}\sqrt{\frac{b(c+dx)}{d}}\left(\sqrt{3}e^{\frac{2bc}{d}}\Gamma\left(\frac{1}{2},\frac{3b(c+dx)}{d}\cdots\right.\right.\right.}{24b\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[a + b*x]^3/Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[3]*E^(6*a)*Sqrt[-((b*(c + d*x))/d)]*Gamma[1/2, (-3*b*(c + d*x))/d] -
9*E^(4*a + (2*b*c)/d)*Sqrt[-((b*(c + d*x))/d)]*Gamma[1/2, -((b*(c + d*x))/d
)] + E^((4*b*c)/d)*Sqrt[(b*(c + d*x))/d]*(-9*E^(2*a)*Gamma[1/2, (b*(c + d*x
))/d] + Sqrt[3]*E^((2*b*c)/d)*Gamma[1/2, (3*b*(c + d*x))/d]))/(24*b*E^(3*(a
 + (b*c)/d))*Sqrt[c + d*x])
```

fricas [A] time = 0.53, size = 252, normalized size = 1.11

$$-\frac{\sqrt{3}\sqrt{\pi}\sqrt{\frac{b}{d}}\left(\cosh\left(-\frac{3(bc-ad)}{d}\right)-\sinh\left(-\frac{3(bc-ad)}{d}\right)\right)\operatorname{erf}\left(\sqrt{3}\sqrt{dx+c}\sqrt{\frac{b}{d}}\right)+\sqrt{3}\sqrt{\pi}\sqrt{-\frac{b}{d}}\left(\cosh\left(-\frac{3(bc-ad)}{d}\right)+\sin$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3/(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/24*(sqrt(3)*sqrt(pi)*sqrt(b/d)*(cosh(-3*(b*c - a*d)/d) - sinh(-3*(b*c -
a*d)/d))*erf(sqrt(3)*sqrt(d*x + c)*sqrt(b/d)) + sqrt(3)*sqrt(pi)*sqrt(-b/d)
*(cosh(-3*(b*c - a*d)/d) + sinh(-3*(b*c - a*d)/d))*erf(sqrt(3)*sqrt(d*x + c
)*sqrt(-b/d)) - 9*sqrt(pi)*sqrt(b/d)*(cosh(-(b*c - a*d)/d) - sinh(-(b*c - a
*d)/d))*erf(sqrt(d*x + c)*sqrt(b/d)) - 9*sqrt(pi)*sqrt(-b/d)*(cosh(-(b*c -
a*d)/d) + sinh(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(-b/d)))/b
```

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

$$\int \frac{\sinh(bx+a)^3}{\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3/(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sinh(b*x + a)^3/sqrt(d*x + c), x)
```

maple [F] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\sinh^3(bx+a)}{\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)^3/(d*x+c)^(1/2),x)
```

```
[Out] int(sinh(b*x+a)^3/(d*x+c)^(1/2),x)
```

maxima [A] time = 0.45, size = 178, normalized size = 0.78

$$\frac{\frac{\sqrt{3}\,\sqrt{\pi}\,\operatorname{erf}\left(\sqrt{3}\,\sqrt{dx+c}\,\sqrt{-\frac{b}{d}}\right)e^{\left(3\,a-\frac{3\,bc}{d}\right)}}{\sqrt{-\frac{b}{d}}}-\frac{\sqrt{3}\,\sqrt{\pi}\,\operatorname{erf}\left(\sqrt{3}\,\sqrt{dx+c}\,\sqrt{\frac{b}{d}}\right)e^{\left(-3\,a+\frac{3\,bc}{d}\right)}}{\sqrt{\frac{b}{d}}}-\frac{9\,\sqrt{\pi}\,\operatorname{erf}\left(\sqrt{dx+c}\,\sqrt{-\frac{b}{d}}\right)e^{\left(a-\frac{bc}{d}\right)}}{\sqrt{-\frac{b}{d}}}+\frac{9\,\sqrt{\pi}\,\operatorname{erf}\left(\sqrt{dx+c}\,\sqrt{\frac{b}{d}}\right)e^{(-}}{\sqrt{\frac{b}{d}}}}{24\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3/(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/24*(sqrt(3)*sqrt(pi)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(-b/d))*e^(3*a - 3*b*c
/d)/sqrt(-b/d) - sqrt(3)*sqrt(pi)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(b/d))*e^(-
3*a + 3*b*c/d)/sqrt(b/d) - 9*sqrt(pi)*erf(sqrt(d*x + c)*sqrt(-b/d))*e^(a -
b*c/d)/sqrt(-b/d) + 9*sqrt(pi)*erf(sqrt(d*x + c)*sqrt(b/d))*e^(-a + b*c/d)/
sqrt(b/d))/d
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^3/(c + d*x)^(1/2),x)
```

```
[Out] int(sinh(a + b*x)^3/(c + d*x)^(1/2), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**3/(d*x+c)**(1/2),x)
```

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

3.57 $\int \frac{\sinh^3(a+bx)}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=246

$$-\frac{3\sqrt{\pi}\,\sqrt{b}\,e^{\frac{bc}{d}-a}\mathrm{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4d^{3/2}}+\frac{\sqrt{3\pi}\,\sqrt{b}\,e^{\frac{3bc}{d}-3a}\mathrm{erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4d^{3/2}}-\frac{3\sqrt{\pi}\,\sqrt{b}\,e^{a-\frac{bc}{d}}\mathrm{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4d^{3/2}}+\frac{\sqrt{3\pi}\,\sqrt{b}\,e^{3a-\frac{3bc}{d}}}{4}$$

```
[Out] -3/4*exp(-a+b*c/d)*erf(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*b^(1/2)*Pi^(1/2)/d^(3
/2)-3/4*exp(a-b*c/d)*erfi(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*b^(1/2)*Pi^(1/2)/d
^(3/2)+1/4*exp(-3*a+3*b*c/d)*erf(3^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*b^(
1/2)*3^(1/2)*Pi^(1/2)/d^(3/2)+1/4*exp(3*a-3*b*c/d)*erfi(3^(1/2)*b^(1/2)*(d*
x+c)^(1/2)/d^(1/2))*b^(1/2)*3^(1/2)*Pi^(1/2)/d^(3/2)-2*sinh(b*x+a)^3/d/(d*x
+c)^(1/2)
```

Rubi [A] time = 0.45, antiderivative size = 246, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3313, 3307, 2180, 2204, 2205}

$$-\frac{3\sqrt{\pi}\,\sqrt{b}\,e^{\frac{bc}{d}-a}\mathrm{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4d^{3/2}}+\frac{\sqrt{3\pi}\,\sqrt{b}\,e^{\frac{3bc}{d}-3a}\mathrm{Erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4d^{3/2}}-\frac{3\sqrt{\pi}\,\sqrt{b}\,e^{a-\frac{bc}{d}}\mathrm{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{4d^{3/2}}+\frac{\sqrt{3\pi}\,\sqrt{b}\,e^{3a-\frac{3b}{}}}{}$$

Antiderivative was successfully verified.

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

```
[Out] (-3*Sqrt[b]*E^(-a + (b*c)/d)*Sqrt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])
/(4*d^(3/2)) + (Sqrt[b]*E^(-3*a + (3*b*c)/d)*Sqrt[3*Pi]*Erf[(Sqrt[3]*Sqrt[b
]*Sqrt[c + d*x])/Sqrt[d]])/(4*d^(3/2)) - (3*Sqrt[b]*E^(a - (b*c)/d)*Sqrt[Pi
]*Erfi[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(4*d^(3/2)) + (Sqrt[b]*E^(3*a - (3
*b*c)/d)*Sqrt[3*Pi]*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(4*d^(3/
2)) - (2*Sinh[a + b*x]^3)/(d*Sqrt[c + d*x])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rubi steps

$$\int \frac{\sinh^3(a+bx)}{(c+dx)^{3/2}}\,dx = -\frac{2\sinh^3(a+bx)}{d\sqrt{c+dx}} - \frac{(6b)\int \left(\frac{\cosh(a+bx)}{4\sqrt{c+dx}} - \frac{\cosh(3a+3bx)}{4\sqrt{c+dx}}\right)dx}{d}$$

$$= -\frac{2\sinh^3(a+bx)}{d\sqrt{c+dx}} - \frac{(3b)\int \frac{\cosh(a+bx)}{\sqrt{c+dx}}\,dx}{2d} + \frac{(3b)\int \frac{\cosh(3a+3bx)}{\sqrt{c+dx}}\,dx}{2d}$$

$$= -\frac{2\sinh^3(a+bx)}{d\sqrt{c+dx}} - \frac{(3b)\int \frac{e^{-i(ia+ibx)}}{\sqrt{c+dx}}\,dx}{4d} - \frac{(3b)\int \frac{e^{i(ia+ibx)}}{\sqrt{c+dx}}\,dx}{4d} + \frac{(3b)\int \frac{e^{-i(3ia+3ibx)}}{\sqrt{c+dx}}\,dx}{4d} + \frac{(3b)\int \frac{e^{i \cdots}}{\cdots}}{\cdots}$$

$$= -\frac{2\sinh^3(a+bx)}{d\sqrt{c+dx}} + \frac{(3b)\,\mathrm{Subst}\left(\int e^{i\left(3ia-\frac{3ibc}{d}\right)-\frac{3bx^2}{d}}\,dx, x, \sqrt{c+dx}\right)}{2d^2} - \frac{(3b)\,\mathrm{Subst}\left(\int e^{i\left(ia-\frac{ibc}{d}\right)\cdots}\right.}{2d^2 \cdots}$$

$$= -\frac{3\sqrt{b}\,e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{4d^{3/2}} + \frac{\sqrt{b}\,e^{-3a+\frac{3bc}{d}}\sqrt{3\pi}\,\mathrm{erf}\left(\frac{\sqrt{3}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{4d^{3/2}} - \frac{3\sqrt{b}\,e^{a-\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erfi}\left(\cdots\right.}{4d^{3/2}}$$

<u>Mathematica</u> [B] time = 10.11, size = 2058, normalized size = 8.37

Result too large to show

Antiderivative was successfully verified.

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

```
[Out] (-3*(Cosh[a]*(-(((-((1 + E^((2*b*(c + d*x))/d))/E^((b*(c + d*x))/d)) + Sqrt
[-((b*(c + d*x))/d)]*Gamma[1/2, -((b*(c + d*x))/d)] + Sqrt[(b*(c + d*x))/d]
*Gamma[1/2, (b*(c + d*x))/d])*Sinh[(b*c)/d])/(d*Sqrt[c + d*x])) + (Cosh[(b*
c)/d]*(Sqrt[-((b*(c + d*x))/d)]*Gamma[1/2, -((b*(c + d*x))/d)] - Sqrt[(b*(c
 + d*x))/d]*Gamma[1/2, (b*(c + d*x))/d] - 2*Sinh[(b*(c + d*x))/d]))/(d*Sqrt
[c + d*x])) + Sinh[a]*((Cosh[(b*c)/d]*(-((1 + E^((2*b*(c + d*x))/d))/E^((b*
(c + d*x))/d)) + Sqrt[-((b*(c + d*x))/d)]*Gamma[1/2, -((b*(c + d*x))/d)] +
Sqrt[(b*(c + d*x))/d]*Gamma[1/2, (b*(c + d*x))/d]))/(d*Sqrt[c + d*x]) + (Si
nh[(b*c)/d]*(-(Sqrt[-((b*(c + d*x))/d)]*Gamma[1/2, -((b*(c + d*x))/d)]) + S
qrt[(b*(c + d*x))/d]*Gamma[1/2, (b*(c + d*x))/d] + 2*Sinh[(b*(c + d*x))/d])
)/(d*Sqrt[c + d*x]))))/4 + (-(Sinh[3*a]*(-(((1 + 2*Cosh[(2*b*c)/d])*(-((1 +
 E^((6*b*(c + d*x))/d))/E^((3*b*(c + d*x))/d)) + Sqrt[3]*Sqrt[-((b*(c + d*x
))/d)]*Gamma[1/2, (-3*b*(c + d*x))/d] + Sqrt[3]*Sqrt[(b*(c + d*x))/d]*Gamma
[1/2, (3*b*(c + d*x))/d])*Sinh[(b*c)/d])/(d*Sqrt[c + d*x])) + (Cosh[(b*c)/d
]*(-1 + 2*Cosh[(2*b*c)/d])*((Sqrt[b]*Sqrt[6*Pi]*(Erf[(Sqrt[3]*Sqrt[b]*Sqrt[
c + d*x])/Sqrt[d]] + Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]]))/Sqrt[d
] - (2*Sqrt[2]*Sinh[(3*b*(c + d*x))/d])/Sqrt[c + d*x]))/(Sqrt[2]*d))) - Cos
h[3*a]*((Cosh[(b*c)/d]*(-1 + 2*Cosh[(2*b*c)/d])*(-((1 + E^((6*b*(c + d*x))/
d))/E^((3*b*(c + d*x))/d)) + Sqrt[3]*Sqrt[-((b*(c + d*x))/d)]*Gamma[1/2, (-
3*b*(c + d*x))/d] + Sqrt[3]*Sqrt[(b*(c + d*x))/d]*Gamma[1/2, (3*b*(c + d*x)
)/d]))/(d*Sqrt[c + d*x]) - ((1 + 2*Cosh[(2*b*c)/d])*Sinh[(b*c)/d]*((Sqrt[b]
*Sqrt[6*Pi]*(Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] + Erfi[(Sqrt[3]*S
qrt[b]*Sqrt[c + d*x])/Sqrt[d]]))/Sqrt[d] - (2*Sqrt[2]*Sinh[(3*b*(c + d*x))/
d])/Sqrt[c + d*x]))/(Sqrt[2]*d)))/8 + (Sinh[3*a]*(-(((1 + 2*Cosh[(2*b*c)/d]
)*(-((1 + E^((6*b*(c + d*x))/d))/E^((3*b*(c + d*x))/d)) + Sqrt[3]*Sqrt[-((b
*(c + d*x))/d)]*Gamma[1/2, (-3*b*(c + d*x))/d] + Sqrt[3]*Sqrt[(b*(c + d*x))
/d]*Gamma[1/2, (3*b*(c + d*x))/d])*Sinh[(b*c)/d])/(d*Sqrt[c + d*x])) + (Cos
h[(b*c)/d]*(-1 + 2*Cosh[(2*b*c)/d])*((Sqrt[b]*Sqrt[6*Pi]*(Erf[(Sqrt[3]*Sqrt
[b]*Sqrt[c + d*x])/Sqrt[d]] + Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]]
))/Sqrt[d] - (2*Sqrt[2]*Sinh[(3*b*(c + d*x))/d])/Sqrt[c + d*x]))/(Sqrt[2]*d
)) + Cosh[3*a]*((Cosh[(b*c)/d]*(-1 + 2*Cosh[(2*b*c)/d])*(-((1 + E^((6*b*(c
+ d*x))/d))/E^((3*b*(c + d*x))/d)) + Sqrt[3]*Sqrt[-((b*(c + d*x))/d)]*Gamma
[1/2, (-3*b*(c + d*x))/d] + Sqrt[3]*Sqrt[(b*(c + d*x))/d]*Gamma[1/2, (3*b*(
c + d*x))/d]))/(d*Sqrt[c + d*x]) - ((1 + 2*Cosh[(2*b*c)/d])*Sinh[(b*c)/d]*(
(Sqrt[b]*Sqrt[6*Pi]*(Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] + Erfi[(S
qrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]]))/Sqrt[d] - (2*Sqrt[2]*Sinh[(3*b*(c
+ d*x))/d])/Sqrt[c + d*x]))/(Sqrt[2]*d)))/8 + (Cosh[3*a]*(-(((1 + 2*Cosh[(2
```

```
*b*c)/d])*(-((1 + E^((6*b*(c + d*x))/d))/E^((3*b*(c + d*x))/d)) + Sqrt[3]*S
qrt[-((b*(c + d*x))/d)]*Gamma[1/2, (-3*b*(c + d*x))/d] + Sqrt[3]*Sqrt[(b*(c
 + d*x))/d]*Gamma[1/2, (3*b*(c + d*x))/d])*Sinh[(b*c)/d])/(d*Sqrt[c + d*x])
) + (Cosh[(b*c)/d]*(-1 + 2*Cosh[(2*b*c)/d])*((Sqrt[b]*Sqrt[6*Pi]*(Erf[(Sqrt
[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] + Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/
Sqrt[d]]))/Sqrt[d] - (2*Sqrt[2]*Sinh[(3*b*(c + d*x))/d])/Sqrt[c + d*x]))/(S
qrt[2]*d)) + Sinh[3*a]*((Cosh[(b*c)/d]*(-1 + 2*Cosh[(2*b*c)/d])*(-((1 + E^(
(6*b*(c + d*x))/d))/E^((3*b*(c + d*x))/d)) + Sqrt[3]*Sqrt[-((b*(c + d*x))/d
)]*Gamma[1/2, (-3*b*(c + d*x))/d] + Sqrt[3]*Sqrt[(b*(c + d*x))/d]*Gamma[1/2
, (3*b*(c + d*x))/d]))/(d*Sqrt[c + d*x]) - ((1 + 2*Cosh[(2*b*c)/d])*Sinh[(b
*c)/d]*((Sqrt[b]*Sqrt[6*Pi]*(Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] +
 Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]]))/Sqrt[d] - (2*Sqrt[2]*Sinh[
(3*b*(c + d*x))/d])/Sqrt[c + d*x]))/(Sqrt[2]*d)))/4
```

fricas [B] time = 0.49, size = 1346, normalized size = 5.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(sqrt(3)*sqrt(pi)*((d*x + c)*cosh(b*x + a)^3*cosh(-3*(b*c - a*d)/d) - (
d*x + c)*cosh(b*x + a)^3*sinh(-3*(b*c - a*d)/d) + ((d*x + c)*cosh(-3*(b*c -
 a*d)/d) - (d*x + c)*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*((d*x + c)
*cosh(b*x + a)*cosh(-3*(b*c - a*d)/d) - (d*x + c)*cosh(b*x + a)*sinh(-3*(b*
c - a*d)/d))*sinh(b*x + a)^2 + 3*((d*x + c)*cosh(b*x + a)^2*cosh(-3*(b*c -
a*d)/d) - (d*x + c)*cosh(b*x + a)^2*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a))*
sqrt(b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(b/d)) - sqrt(3)*sqrt(pi)*((d*x + c
)*cosh(b*x + a)^3*cosh(-3*(b*c - a*d)/d) + (d*x + c)*cosh(b*x + a)^3*sinh(-
3*(b*c - a*d)/d) + ((d*x + c)*cosh(-3*(b*c - a*d)/d) + (d*x + c)*sinh(-3*(b
*c - a*d)/d))*sinh(b*x + a)^3 + 3*((d*x + c)*cosh(b*x + a)*cosh(-3*(b*c - a
*d)/d) + (d*x + c)*cosh(b*x + a)*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^2 +
3*((d*x + c)*cosh(b*x + a)^2*cosh(-3*(b*c - a*d)/d) + (d*x + c)*cosh(b*x +
a)^2*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(3)*sqrt(d*x
 + c)*sqrt(-b/d)) - 3*sqrt(pi)*((d*x + c)*cosh(b*x + a)^3*cosh(-(b*c - a*d)
/d) - (d*x + c)*cosh(b*x + a)^3*sinh(-(b*c - a*d)/d) + ((d*x + c)*cosh(-(b*
c - a*d)/d) - (d*x + c)*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*((d*x + c
)*cosh(b*x + a)*cosh(-(b*c - a*d)/d) - (d*x + c)*cosh(b*x + a)*sinh(-(b*c -
 a*d)/d))*sinh(b*x + a)^2 + 3*((d*x + c)*cosh(b*x + a)^2*cosh(-(b*c - a*d)/
d) - (d*x + c)*cosh(b*x + a)^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(b/
d)*erf(sqrt(d*x + c)*sqrt(b/d)) + 3*sqrt(pi)*((d*x + c)*cosh(b*x + a)^3*cos
h(-(b*c - a*d)/d) + (d*x + c)*cosh(b*x + a)^3*sinh(-(b*c - a*d)/d) + ((d*x
+ c)*cosh(-(b*c - a*d)/d) + (d*x + c)*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^3
 + 3*((d*x + c)*cosh(b*x + a)*cosh(-(b*c - a*d)/d) + (d*x + c)*cosh(b*x + a
)*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*((d*x + c)*cosh(b*x + a)^2*cosh
```

```
(-(b*c - a*d)/d) + (d*x + c)*cosh(b*x + a)^2*sinh(-(b*c - a*d)/d))*sinh(b*x
 + a))*sqrt(-b/d)*erf(sqrt(d*x + c)*sqrt(-b/d)) - (cosh(b*x + a)^6 + 6*cosh
(b*x + a)*sinh(b*x + a)^5 + sinh(b*x + a)^6 + 3*(5*cosh(b*x + a)^2 - 1)*sin
h(b*x + a)^4 - 3*cosh(b*x + a)^4 + 4*(5*cosh(b*x + a)^3 - 3*cosh(b*x + a))*
sinh(b*x + a)^3 + 3*(5*cosh(b*x + a)^4 - 6*cosh(b*x + a)^2 + 1)*sinh(b*x +
a)^2 + 3*cosh(b*x + a)^2 + 6*(cosh(b*x + a)^5 - 2*cosh(b*x + a)^3 + cosh(b*
x + a))*sinh(b*x + a) - 1)*sqrt(d*x + c))/((d^2*x + c*d)*cosh(b*x + a)^3 +
3*(d^2*x + c*d)*cosh(b*x + a)^2*sinh(b*x + a) + 3*(d^2*x + c*d)*cosh(b*x +
a)*sinh(b*x + a)^2 + (d^2*x + c*d)*sinh(b*x + a)^3)
```

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

$$\int \frac{\sinh\left(bx+a\right)^{3}}{\left(dx+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(sinh(b*x + a)^3/(d*x + c)^(3/2), x)
```

maple [F] time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{\sinh^{3}\left(bx+a\right)}{\left(dx+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(b*x+a)^3/(d*x+c)^(3/2),x)
```

maxima [A] time = 0.58, size = 197, normalized size = 0.80

$$\frac{\frac{\sqrt{3}\sqrt{\frac{(dx+c)b}{d}}\,e^{\left(\frac{3\,(bc-ad)}{d}\right)}\Gamma\left(-\frac{1}{2},\frac{3\,(dx+c)b}{d}\right)}{\sqrt{dx+c}}-\frac{\sqrt{3}\sqrt{-\frac{(dx+c)b}{d}}\,e^{\left(-\frac{3\,(bc-ad)}{d}\right)}\Gamma\left(-\frac{1}{2},-\frac{3\,(dx+c)b}{d}\right)}{\sqrt{dx+c}}-\frac{3\sqrt{\frac{(dx+c)b}{d}}\,e^{\left(-a+\frac{bc}{d}\right)}\Gamma\left(-\frac{1}{2},\frac{(dx+c)b}{d}\right)}{\sqrt{dx+c}}+\frac{3\sqrt{-\frac{(dx+c)b}{d}}\,e^{\left(a-\right.}}{\sqrt{a}}}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(sqrt(3)*sqrt((d*x + c)*b/d)*e^(3*(b*c - a*d)/d)*gamma(-1/2, 3*(d*x + c
)*b/d)/sqrt(d*x + c) - sqrt(3)*sqrt(-(d*x + c)*b/d)*e^(-3*(b*c - a*d)/d)*ga
mma(-1/2, -3*(d*x + c)*b/d)/sqrt(d*x + c) - 3*sqrt((d*x + c)*b/d)*e^(-a + b
```

```
*c/d)*gamma(-1/2, (d*x + c)*b/d)/sqrt(d*x + c) + 3*sqrt(-(d*x + c)*b/d)*e^(
a - b*c/d)*gamma(-1/2, -(d*x + c)*b/d)/sqrt(d*x + c))/d
```

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

$$\int \frac{\sinh(a+bx)^3}{(c+dx)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(sinh(a + b*x)^3/(c + d*x)^(3/2), x)
```

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

$$\int \frac{\sinh^3(a+bx)}{(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**3/(d*x+c)**(3/2),x)
```

```
[Out] Integral(sinh(a + b*x)**3/(c + d*x)**(3/2), x)
```

3.58 $\int \frac{\sinh^3(a+bx)}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=277

$$\frac{\sqrt{\pi}\, b^{3/2} e^{\frac{bc}{d}-a} \operatorname{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{2d^{5/2}} - \frac{\sqrt{3\pi}\, b^{3/2} e^{\frac{3bc}{d}-3a} \operatorname{erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{2d^{5/2}} - \frac{\sqrt{\pi}\, b^{3/2} e^{a-\frac{bc}{d}} \operatorname{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{2d^{5/2}} + \frac{\sqrt{3\pi}\, b^{3/2} e^{3a-\frac{3bc}{d}} \operatorname{erf}}{2d^{5/2}}$$

```
[Out] -2/3*sinh(b*x+a)^3/d/(d*x+c)^(3/2)+1/2*b^(3/2)*exp(-a+b*c/d)*erf(b^(1/2)*(d
*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/d^(5/2)-1/2*b^(3/2)*exp(a-b*c/d)*erfi(b^(1/2)
*(d*x+c)^(1/2)/d^(1/2))*Pi^(1/2)/d^(5/2)-1/2*b^(3/2)*exp(-3*a+3*b*c/d)*erf(
3^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*3^(1/2)*Pi^(1/2)/d^(5/2)+1/2*b^(3/2)
*exp(3*a-3*b*c/d)*erfi(3^(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*3^(1/2)*Pi^(1
/2)/d^(5/2)-4*b*cosh(b*x+a)*sinh(b*x+a)^2/d^2/(d*x+c)^(1/2)
```

Rubi [A] time = 0.67, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3314, 3308, 2180, 2204, 2205, 3312}

$$\frac{\sqrt{\pi}\, b^{3/2} e^{\frac{bc}{d}-a} \operatorname{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{2d^{5/2}} - \frac{\sqrt{3\pi}\, b^{3/2} e^{\frac{3bc}{d}-3a} \operatorname{Erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{2d^{5/2}} - \frac{\sqrt{\pi}\, b^{3/2} e^{a-\frac{bc}{d}} \operatorname{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{2d^{5/2}} + \frac{\sqrt{3\pi}\, b^{3/2} e^{3a-\frac{3bc}{d}} \operatorname{Er}}{2d^{5}}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[a + b*x]^3/(c + d*x)^(5/2),x]
```

```
[Out] (b^(3/2)*E^(-a + (b*c)/d)*Sqrt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(2
*d^(5/2)) - (b^(3/2)*E^(-3*a + (3*b*c)/d)*Sqrt[3*Pi]*Erf[(Sqrt[3]*Sqrt[b]*S
qrt[c + d*x])/Sqrt[d]])/(2*d^(5/2)) - (b^(3/2)*E^(a - (b*c)/d)*Sqrt[Pi]*Erf
i[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(2*d^(5/2)) + (b^(3/2)*E^(3*a - (3*b*c)
/d)*Sqrt[3*Pi]*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(2*d^(5/2)) -
 (4*b*Cosh[a + b*x]*Sinh[a + b*x]^2)/(d^2*Sqrt[c + d*x]) - (2*Sinh[a + b*x]
^3)/(3*d*(c + d*x)^(3/2))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

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

Rubi steps

$$\int \frac{\sinh^3(a+bx)}{(c+dx)^{5/2}}\,dx = -\frac{4b\cosh(a+bx)\sinh^2(a+bx)}{d^2\sqrt{c+dx}} - \frac{2\sinh^3(a+bx)}{3d(c+dx)^{3/2}} + \frac{(8b^2)\int \frac{\sinh(a+bx)}{\sqrt{c+dx}}\,dx}{d^2} + \frac{(12b^2)\int \frac{\sin}{}}{d^2}$$

$$= -\frac{4b\cosh(a+bx)\sinh^2(a+bx)}{d^2\sqrt{c+dx}} - \frac{2\sinh^3(a+bx)}{3d(c+dx)^{3/2}} + \frac{(12ib^2)\int \left(\frac{3i\sinh(a+bx)}{4\sqrt{c+dx}} - \frac{i\sinh(3a+3bx}{4\sqrt{c+dx}}\right.}{d^2}$$

$$= -\frac{4b\cosh(a+bx)\sinh^2(a+bx)}{d^2\sqrt{c+dx}} - \frac{2\sinh^3(a+bx)}{3d(c+dx)^{3/2}} - \frac{(8b^2)\,\mathrm{Subst}\left(\int e^{i\left(ia-\frac{ibc}{d}\right)-\frac{bx^2}{d}}\,dx, x, \sqrt{}\right.}{d^3}$$

$$= -\frac{4b^{3/2}e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}} + \frac{4b^{3/2}e^{a-\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}} - \frac{4b\cosh(a+bx)\sinh^2(}{d^2\sqrt{c+dx}}$$

$$= -\frac{4b^{3/2}e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}} + \frac{4b^{3/2}e^{a-\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}} - \frac{4b\cosh(a+bx)\sinh^2(}{d^2\sqrt{c+dx}}$$

$$= \frac{b^{3/2}e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{2d^{5/2}} - \frac{b^{3/2}e^{-3a+\frac{3bc}{d}}\sqrt{3\pi}\,\mathrm{erf}\left(\frac{\sqrt{3}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{2d^{5/2}} - \frac{b^{3/2}e^{a-\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erfi}\left(\frac{\sqrt{b}}{}\right.}{2d^{5/2}}$$

Mathematica [A] time = 2.91, size = 253, normalized size = 0.91

$$\frac{e^{-3\left(a+\frac{bc}{d}\right)}\left(-3\sqrt{3}\,e^{6a}d\left(-\frac{b(c+dx)}{d}\right)^{3/2}\Gamma\left(\frac{1}{2},-\frac{3b(c+dx)}{d}\right)+3de^{4a+\frac{2bc}{d}}\left(-\frac{b(c+dx)}{d}\right)^{3/2}\Gamma\left(\frac{1}{2},-\frac{b(c+dx)}{d}\right)-3de^{2a+\frac{4bc}{d}}\left(\frac{b(c+dx)}{d}\right)^{3/2}\right.}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[a + b*x]^3/(c + d*x)^(5/2),x]
```

```
[Out] (-3*Sqrt[3]*d*E^(6*a)*(-((b*(c + d*x))/d))^(3/2)*Gamma[1/2, (-3*b*(c + d*x)
)/d] + 3*d*E^(4*a + (2*b*c)/d)*(-((b*(c + d*x))/d))^(3/2)*Gamma[1/2, -((b*(
c + d*x))/d)] - 3*d*E^(2*a + (4*b*c)/d)*((b*(c + d*x))/d)^(3/2)*Gamma[1/2,
(b*(c + d*x))/d] + 3*Sqrt[3]*d*E^((6*b*c)/d)*((b*(c + d*x))/d)^(3/2)*Gamma[
1/2, (3*b*(c + d*x))/d] - 4*E^(3*(a + (b*c)/d))*Sinh[a + b*x]^2*(6*b*(c + d
*x)*Cosh[a + b*x] + d*Sinh[a + b*x]))/(6*d^2*E^(3*(a + (b*c)/d))*(c + d*x)^
(3/2))
```

fricas [B] time = 0.57, size = 2059, normalized size = 7.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3/(d*x+c)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(6*sqrt(3)*sqrt(pi)*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^3*
cosh(-3*(b*c - a*d)/d) - (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^3*si
nh(-3*(b*c - a*d)/d) + ((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(-3*(b*c - a*d)
/d) - (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)
^3 + 3*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*cosh(-3*(b*c - a*d)/d
) - (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*sinh(-3*(b*c - a*d)/d))*s
inh(b*x + a)^2 + 3*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^2*cosh(-3
*(b*c - a*d)/d) - (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^2*sinh(-3*(
b*c - a*d)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(b/d)
) + 6*sqrt(3)*sqrt(pi)*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^3*cos
h(-3*(b*c - a*d)/d) + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^3*sinh(
-3*(b*c - a*d)/d) + ((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(-3*(b*c - a*d)/d)
 + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^3
+ 3*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*cosh(-3*(b*c - a*d)/d) +
 (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*sinh(-3*(b*c - a*d)/d))*sinh
(b*x + a)^2 + 3*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^2*cosh(-3*(b
*c - a*d)/d) + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^2*sinh(-3*(b*c
 - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(-b/d))
 - 6*sqrt(pi)*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^3*cosh(-(b*c -
 a*d)/d) - (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^3*sinh(-(b*c - a*d
)/d) + ((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(-(b*c - a*d)/d) - (b*d^2*x^2 +
 2*b*c*d*x + b*c^2)*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*((b*d^2*x^2 +
 2*b*c*d*x + b*c^2)*cosh(b*x + a)*cosh(-(b*c - a*d)/d) - (b*d^2*x^2 + 2*b*c
*d*x + b*c^2)*cosh(b*x + a)*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*((b*d
^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^2*cosh(-(b*c - a*d)/d) - (b*d^2*x
^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a)
)*sqrt(b/d)*erf(sqrt(d*x + c)*sqrt(b/d)) - 6*sqrt(pi)*((b*d^2*x^2 + 2*b*c*d
*x + b*c^2)*cosh(b*x + a)^3*cosh(-(b*c - a*d)/d) + (b*d^2*x^2 + 2*b*c*d*x +
 b*c^2)*cosh(b*x + a)^3*sinh(-(b*c - a*d)/d) + ((b*d^2*x^2 + 2*b*c*d*x + b*
c^2)*cosh(-(b*c - a*d)/d) + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*sinh(-(b*c - a*
d)/d))*sinh(b*x + a)^3 + 3*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*c
osh(-(b*c - a*d)/d) + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x + a)*sinh(-(
b*c - a*d)/d))*sinh(b*x + a)^2 + 3*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*
x + a)^2*cosh(-(b*c - a*d)/d) + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cosh(b*x +
a)^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(d*x + c)*sqrt
(-b/d)) + ((6*b*d*x + 6*b*c + d)*cosh(b*x + a)^6 + 6*(6*b*d*x + 6*b*c + d)*
cosh(b*x + a)*sinh(b*x + a)^5 + (6*b*d*x + 6*b*c + d)*sinh(b*x + a)^6 - 3*(
2*b*d*x + 2*b*c + d)*cosh(b*x + a)^4 - 3*(2*b*d*x - 5*(6*b*d*x + 6*b*c + d)
*cosh(b*x + a)^2 + 2*b*c + d)*sinh(b*x + a)^4 + 4*(5*(6*b*d*x + 6*b*c + d)*
cosh(b*x + a)^3 - 3*(2*b*d*x + 2*b*c + d)*cosh(b*x + a))*sinh(b*x + a)^3 +
6*b*d*x - 3*(2*b*d*x + 2*b*c - d)*cosh(b*x + a)^2 + 3*(5*(6*b*d*x + 6*b*c +
```

```
d)*cosh(b*x + a)^4 - 2*b*d*x - 6*(2*b*d*x + 2*b*c + d)*cosh(b*x + a)^2 - 2
*b*c + d)*sinh(b*x + a)^2 + 6*b*c + 6*((6*b*d*x + 6*b*c + d)*cosh(b*x + a)^
5 - 2*(2*b*d*x + 2*b*c + d)*cosh(b*x + a)^3 - (2*b*d*x + 2*b*c - d)*cosh(b*
x + a))*sinh(b*x + a) - d)*sqrt(d*x + c))/((d^4*x^2 + 2*c*d^3*x + c^2*d^2)*
cosh(b*x + a)^3 + 3*(d^4*x^2 + 2*c*d^3*x + c^2*d^2)*cosh(b*x + a)^2*sinh(b*
x + a) + 3*(d^4*x^2 + 2*c*d^3*x + c^2*d^2)*cosh(b*x + a)*sinh(b*x + a)^2 +
(d^4*x^2 + 2*c*d^3*x + c^2*d^2)*sinh(b*x + a)^3)
```

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

$$\int \frac{\sinh\left(bx+a\right)^{3}}{\left(dx+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3/(d*x+c)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sinh(b*x + a)^3/(d*x + c)^(5/2), x)
```

maple [F] time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{\sinh^{3}\left(bx+a\right)}{\left(dx+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)^3/(d*x+c)^(5/2),x)
```

```
[Out] int(sinh(b*x+a)^3/(d*x+c)^(5/2),x)
```

maxima [A] time = 0.63, size = 196, normalized size = 0.71

$$\frac{3\left(\frac{\sqrt{3}\left(\frac{(dx+c)b}{d}\right)^{\frac{3}{2}}e^{\left(\frac{3(bc-ad)}{d}\right)}\Gamma\left(-\frac{3}{2},\frac{3(dx+c)b}{d}\right)}{(dx+c)^{\frac{3}{2}}}-\frac{\sqrt{3}\left(-\frac{(dx+c)b}{d}\right)^{\frac{3}{2}}e^{\left(-\frac{3(bc-ad)}{d}\right)}\Gamma\left(-\frac{3}{2},-\frac{3(dx+c)b}{d}\right)}{(dx+c)^{\frac{3}{2}}}-\frac{\left(\frac{(dx+c)b}{d}\right)^{\frac{3}{2}}e^{\left(-a+\frac{bc}{d}\right)}\Gamma\left(-\frac{3}{2},\frac{(dx+c)b}{d}\right)}{(dx+c)^{\frac{3}{2}}}+\frac{\left(-\frac{(dx+c)b}{d}\right)^{\frac{3}{2}}\cdots}{\cdots}\right)}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3/(d*x+c)^(5/2),x, algorithm="maxima")
```

```
[Out] 3/8*(sqrt(3)*((d*x + c)*b/d)^(3/2)*e^(3*(b*c - a*d)/d)*gamma(-3/2, 3*(d*x +
c)*b/d)/(d*x + c)^(3/2) - sqrt(3)*(-(d*x + c)*b/d)^(3/2)*e^(-3*(b*c - a*d)
/d)*gamma(-3/2, -3*(d*x + c)*b/d)/(d*x + c)^(3/2) - ((d*x + c)*b/d)^(3/2)*e
^(-a + b*c/d)*gamma(-3/2, (d*x + c)*b/d)/(d*x + c)^(3/2) + (-(d*x + c)*b/d)
^(3/2)*e^(a - b*c/d)*gamma(-3/2, -(d*x + c)*b/d)/(d*x + c)^(3/2))/d
```

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

$$\int \frac{\sinh{(a+b\,x)}^3}{{(c+d\,x)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^3/(c + d*x)^(5/2),x)
```

```
[Out] int(sinh(a + b*x)^3/(c + d*x)^(5/2), x)
```

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

$$\int \frac{\sinh^{3}{\left(a + bx \right)}}{\left(c + dx\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**3/(d*x+c)**(5/2),x)
```

```
[Out] Integral(sinh(a + b*x)**3/(c + d*x)**(5/2), x)
```

3.59 $\int \frac{\sinh^3(a+bx)}{(c+dx)^{7/2}}\,dx$

Optimal. Leaf size=331

$$-\frac{\sqrt{\pi}\,b^{5/2}e^{\frac{bc}{d}-a}\operatorname{erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}}+\frac{3\sqrt{3\pi}\,b^{5/2}e^{\frac{3bc}{d}-3a}\operatorname{erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}}-\frac{\sqrt{\pi}\,b^{5/2}e^{a-\frac{bc}{d}}\operatorname{erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}}+\frac{3\sqrt{3\pi}\,b^{5/2}e^{3a-\frac{3b}{d}}}{5}$$

```
[Out] -4/5*b*cosh(b*x+a)*sinh(b*x+a)^2/d^2/(d*x+c)^(3/2)-2/5*sinh(b*x+a)^3/d/(d*x
+c)^(5/2)-1/5*b^(5/2)*exp(-a+b*c/d)*erf(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*Pi^(
1/2)/d^(7/2)-1/5*b^(5/2)*exp(a-b*c/d)*erfi(b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*P
i^(1/2)/d^(7/2)+3/5*b^(5/2)*exp(-3*a+3*b*c/d)*erf(3^(1/2)*b^(1/2)*(d*x+c)^(
1/2)/d^(1/2))*3^(1/2)*Pi^(1/2)/d^(7/2)+3/5*b^(5/2)*exp(3*a-3*b*c/d)*erfi(3^
(1/2)*b^(1/2)*(d*x+c)^(1/2)/d^(1/2))*3^(1/2)*Pi^(1/2)/d^(7/2)-16/5*b^2*sinh
(b*x+a)/d^3/(d*x+c)^(1/2)-24/5*b^2*sinh(b*x+a)^3/d^3/(d*x+c)^(1/2)
```

Rubi [A] time = 0.77, antiderivative size = 331, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3314, 3297, 3307, 2180, 2204, 2205, 3313}

$$-\frac{\sqrt{\pi}\,b^{5/2}e^{\frac{bc}{d}-a}\operatorname{Erf}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}}+\frac{3\sqrt{3\pi}\,b^{5/2}e^{\frac{3bc}{d}-3a}\operatorname{Erf}\left(\frac{\sqrt{3}\,\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}}-\frac{\sqrt{\pi}\,b^{5/2}e^{a-\frac{bc}{d}}\operatorname{Erfi}\left(\frac{\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}}+\frac{3\sqrt{3\pi}\,b^{5/2}e^{3a-3}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[a + b*x]^3/(c + d*x)^(7/2),x]
```

```
[Out] -(b^(5/2)*E^(-a + (b*c)/d)*Sqrt[Pi]*Erf[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(
5*d^(7/2)) + (3*b^(5/2)*E^(-3*a + (3*b*c)/d)*Sqrt[3*Pi]*Erf[(Sqrt[3]*Sqrt[b
]*Sqrt[c + d*x])/Sqrt[d]])/(5*d^(7/2)) - (b^(5/2)*E^(a - (b*c)/d)*Sqrt[Pi]*
Erfi[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(5*d^(7/2)) + (3*b^(5/2)*E^(3*a - (3
*b*c)/d)*Sqrt[3*Pi]*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]])/(5*d^(7/
2)) - (16*b^2*Sinh[a + b*x])/(5*d^3*Sqrt[c + d*x]) - (4*b*Cosh[a + b*x]*Sin
h[a + b*x]^2)/(5*d^2*(c + d*x)^(3/2)) - (2*Sinh[a + b*x]^3)/(5*d*(c + d*x)^
(5/2)) - (24*b^2*Sinh[a + b*x]^3)/(5*d^3*Sqrt[c + d*x])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3297

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

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3314

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

Rubi steps

$$\int \frac{\sinh^3(a+bx)}{(c+dx)^{7/2}}\,dx = -\frac{4b\cosh(a+bx)\sinh^2(a+bx)}{5d^2(c+dx)^{3/2}} - \frac{2\sinh^3(a+bx)}{5d(c+dx)^{5/2}} + \frac{(8b^2)\int\frac{\sinh(a+bx)}{(c+dx)^{3/2}}\,dx}{5d^2} + \frac{(12b^2)\int\frac{\sin}{(c}}{5d}$$

$$= -\frac{16b^2\sinh(a+bx)}{5d^3\sqrt{c+dx}} - \frac{4b\cosh(a+bx)\sinh^2(a+bx)}{5d^2(c+dx)^{3/2}} - \frac{2\sinh^3(a+bx)}{5d(c+dx)^{5/2}} - \frac{24b^2\sinh^3(a}{5d^3\sqrt{c+d}}$$

$$= -\frac{16b^2\sinh(a+bx)}{5d^3\sqrt{c+dx}} - \frac{4b\cosh(a+bx)\sinh^2(a+bx)}{5d^2(c+dx)^{3/2}} - \frac{2\sinh^3(a+bx)}{5d(c+dx)^{5/2}} - \frac{24b^2\sinh^3(a}{5d^3\sqrt{c+d}}$$

$$= -\frac{16b^2\sinh(a+bx)}{5d^3\sqrt{c+dx}} - \frac{4b\cosh(a+bx)\sinh^2(a+bx)}{5d^2(c+dx)^{3/2}} - \frac{2\sinh^3(a+bx)}{5d(c+dx)^{5/2}} - \frac{24b^2\sinh^3(a}{5d^3\sqrt{c+d}}$$

$$= \frac{8b^{5/2}e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}} + \frac{8b^{5/2}e^{a-\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erfi}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}} - \frac{16b^2\sinh(a+bx)}{5d^3\sqrt{c+dx}} - 4b$$

$$= -\frac{b^{5/2}e^{-a+\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}} + \frac{3b^{5/2}e^{-3a+\frac{3bc}{d}}\sqrt{3\pi}\,\mathrm{erf}\left(\frac{\sqrt{3}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}} - \frac{b^{5/2}e^{a-\frac{bc}{d}}\sqrt{\pi}\,\mathrm{erfi}(}{5d^{7/2}}$$

Mathematica [B] time = 17.81, size = 3211, normalized size = 9.70

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[a + b*x]^3/(c + d*x)^(7/2),x]
```

```
[Out] (-3*(Cosh[a]*(-1/30*((-2*E^((b*(c + d*x))/d)*(3*d^2 + 2*b*d*(c + d*x) + 4*b
^2*(c + d*x)^2) + 8*d^2*(-((b*(c + d*x))/d))^(5/2)*Gamma[1/2, -((b*(c + d*x
))/d)] + (-6*d^2 + 4*b*d*(c + d*x) - 8*b^2*(c + d*x)^2 + 8*b*d*E^((b*(c + d
*x))/d)*(c + d*x)*((b*(c + d*x))/d)^(3/2)*Gamma[1/2, (b*(c + d*x))/d])/E^((
b*(c + d*x))/d))*Sinh[(b*c)/d])/(d^3*(c + d*x)^(5/2)) + (2*Cosh[(b*c)/d]*(-
1/2*(b*(c + d*x)*(2*E^((b*(c + d*x))/d)*(d + 2*b*(c + d*x)) + 4*d*(-((b*(c
+ d*x))/d))^(3/2)*Gamma[1/2, -((b*(c + d*x))/d)] + (2*(d - 2*b*(c + d*x) +
2*d*E^((b*(c + d*x))/d)*((b*(c + d*x))/d)^(3/2)*Gamma[1/2, (b*(c + d*x))/d]
))/E^((b*(c + d*x))/d))) - 3*d^2*Sinh[(b*(c + d*x))/d]))/(15*d^3*(c + d*x)^
(5/2))) + Sinh[a]*((Cosh[(b*c)/d]*(-2*E^((b*(c + d*x))/d)*(3*d^2 + 2*b*d*(c
 + d*x) + 4*b^2*(c + d*x)^2) + 8*d^2*(-((b*(c + d*x))/d))^(5/2)*Gamma[1/2,
-((b*(c + d*x))/d)] + (-6*d^2 + 4*b*d*(c + d*x) - 8*b^2*(c + d*x)^2 + 8*b*d
*E^((b*(c + d*x))/d)*(c + d*x)*((b*(c + d*x))/d)^(3/2)*Gamma[1/2, (b*(c + d
```

```
*x))/d])/E^((b*(c + d*x))/d)))/(30*d^3*(c + d*x)^(5/2)) - (2*Sinh[(b*c)/d]*
(-1/2*(b*(c + d*x)*(2*E^((b*(c + d*x))/d)*(d + 2*b*(c + d*x)) + 4*d*(-((b*(
c + d*x))/d))^(3/2)*Gamma[1/2, -((b*(c + d*x))/d)] + (2*(d - 2*b*(c + d*x)
+ 2*d*E^((b*(c + d*x))/d)*((b*(c + d*x))/d)^(3/2)*Gamma[1/2, (b*(c + d*x))/
d]))/E^((b*(c + d*x))/d))) - 3*d^2*Sinh[(b*(c + d*x))/d]))/(15*d^3*(c + d*x
)^(5/2)))))/4 + (-(Sinh[3*a]*(-1/10*((1 + 2*Cosh[(2*b*c)/d])*(-2*E^((3*b*(c
 + d*x))/d)*(d^2 + 2*b*d*(c + d*x) + 12*b^2*(c + d*x)^2) + 24*Sqrt[3]*d^2*(
-((b*(c + d*x))/d))^(5/2)*Gamma[1/2, (-3*b*(c + d*x))/d] + (-2*d^2 + 4*b*d*
(c + d*x) - 24*b^2*(c + d*x)^2 + 24*Sqrt[3]*d^2*E^((3*b*(c + d*x))/d)*((b*(
c + d*x))/d)^(5/2)*Gamma[1/2, (3*b*(c + d*x))/d])/E^((3*b*(c + d*x))/d))*Si
nh[(b*c)/d])/(d^3*(c + d*x)^(5/2)) - (2*Cosh[(b*c)/d]*(-1 + 2*Cosh[(2*b*c)/
d])*(-6*b^(5/2)*Sqrt[3*Pi]*(c + d*x)^(5/2)*Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*
x])/Sqrt[d]] - 6*b^(5/2)*Sqrt[3*Pi]*(c + d*x)^(5/2)*Erfi[(Sqrt[3]*Sqrt[b]*S
qrt[c + d*x])/Sqrt[d]] + Sqrt[d]*(2*b*d*(c + d*x)*Cosh[(3*b*(c + d*x))/d] +
 (d^2 + 12*b^2*(c + d*x)^2)*Sinh[(3*b*(c + d*x))/d])))/(5*d^(7/2)*(c + d*x)
^(5/2)))) - Cosh[3*a]*((Cosh[(b*c)/d]*(-1 + 2*Cosh[(2*b*c)/d])*(-2*E^((3*b*
(c + d*x))/d)*(d^2 + 2*b*d*(c + d*x) + 12*b^2*(c + d*x)^2) + 24*Sqrt[3]*d^2
*(-((b*(c + d*x))/d))^(5/2)*Gamma[1/2, (-3*b*(c + d*x))/d] + (-2*d^2 + 4*b*
d*(c + d*x) - 24*b^2*(c + d*x)^2 + 24*Sqrt[3]*d^2*E^((3*b*(c + d*x))/d)*((b
*(c + d*x))/d)^(5/2)*Gamma[1/2, (3*b*(c + d*x))/d])/E^((3*b*(c + d*x))/d)))
/(10*d^3*(c + d*x)^(5/2)) + (2*(1 + 2*Cosh[(2*b*c)/d])*Sinh[(b*c)/d]*(-6*b^
(5/2)*Sqrt[3*Pi]*(c + d*x)^(5/2)*Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d
]] - 6*b^(5/2)*Sqrt[3*Pi]*(c + d*x)^(5/2)*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*
x])/Sqrt[d]] + Sqrt[d]*(2*b*d*(c + d*x)*Cosh[(3*b*(c + d*x))/d] + (d^2 + 12
*b^2*(c + d*x)^2)*Sinh[(3*b*(c + d*x))/d])))/(5*d^(7/2)*(c + d*x)^(5/2))))/
8 + (Sinh[3*a]*(-1/10*((1 + 2*Cosh[(2*b*c)/d])*(-2*E^((3*b*(c + d*x))/d)*(d
^2 + 2*b*d*(c + d*x) + 12*b^2*(c + d*x)^2) + 24*Sqrt[3]*d^2*(-((b*(c + d*x)
)/d))^(5/2)*Gamma[1/2, (-3*b*(c + d*x))/d] + (-2*d^2 + 4*b*d*(c + d*x) - 24
*b^2*(c + d*x)^2 + 24*Sqrt[3]*d^2*E^((3*b*(c + d*x))/d)*((b*(c + d*x))/d)^(
5/2)*Gamma[1/2, (3*b*(c + d*x))/d])/E^((3*b*(c + d*x))/d))*Sinh[(b*c)/d])/(
d^3*(c + d*x)^(5/2)) - (2*Cosh[(b*c)/d]*(-1 + 2*Cosh[(2*b*c)/d])*(-6*b^(5/2
)*Sqrt[3*Pi]*(c + d*x)^(5/2)*Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] -
 6*b^(5/2)*Sqrt[3*Pi]*(c + d*x)^(5/2)*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/
Sqrt[d]] + Sqrt[d]*(2*b*d*(c + d*x)*Cosh[(3*b*(c + d*x))/d] + (d^2 + 12*b^2
*(c + d*x)^2)*Sinh[(3*b*(c + d*x))/d])))/(5*d^(7/2)*(c + d*x)^(5/2))) + Cos
h[3*a]*((Cosh[(b*c)/d]*(-1 + 2*Cosh[(2*b*c)/d])*(-2*E^((3*b*(c + d*x))/d)*(
d^2 + 2*b*d*(c + d*x) + 12*b^2*(c + d*x)^2) + 24*Sqrt[3]*d^2*(-((b*(c + d*x
))/d))^(5/2)*Gamma[1/2, (-3*b*(c + d*x))/d] + (-2*d^2 + 4*b*d*(c + d*x) - 2
4*b^2*(c + d*x)^2 + 24*Sqrt[3]*d^2*E^((3*b*(c + d*x))/d)*((b*(c + d*x))/d)^
(5/2)*Gamma[1/2, (3*b*(c + d*x))/d])/E^((3*b*(c + d*x))/d)))/(10*d^3*(c + d
*x)^(5/2)) + (2*(1 + 2*Cosh[(2*b*c)/d])*Sinh[(b*c)/d]*(-6*b^(5/2)*Sqrt[3*Pi
]*(c + d*x)^(5/2)*Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] - 6*b^(5/2)*
Sqrt[3*Pi]*(c + d*x)^(5/2)*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] +
Sqrt[d]*(2*b*d*(c + d*x)*Cosh[(3*b*(c + d*x))/d] + (d^2 + 12*b^2*(c + d*x)^
2)*Sinh[(3*b*(c + d*x))/d])))/(5*d^(7/2)*(c + d*x)^(5/2))))/8 + (Cosh[3*a]*
```

```
(-1/10*((1 + 2*Cosh[(2*b*c)/d])*(-2*E^((3*b*(c + d*x))/d)*(d^2 + 2*b*d*(c +
 d*x) + 12*b^2*(c + d*x)^2) + 24*Sqrt[3]*d^2*(-((b*(c + d*x))/d))^(5/2)*Gam
ma[1/2, (-3*b*(c + d*x))/d] + (-2*d^2 + 4*b*d*(c + d*x) - 24*b^2*(c + d*x)^
2 + 24*Sqrt[3]*d^2*E^((3*b*(c + d*x))/d)*((b*(c + d*x))/d)^(5/2)*Gamma[1/2,
 (3*b*(c + d*x))/d])/E^((3*b*(c + d*x))/d))*Sinh[(b*c)/d])/(d^3*(c + d*x)^(
5/2)) - (2*Cosh[(b*c)/d]*(-1 + 2*Cosh[(2*b*c)/d])*(-6*b^(5/2)*Sqrt[3*Pi]*(c
 + d*x)^(5/2)*Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] - 6*b^(5/2)*Sqrt
[3*Pi]*(c + d*x)^(5/2)*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] + Sqrt
[d]*(2*b*d*(c + d*x)*Cosh[(3*b*(c + d*x))/d] + (d^2 + 12*b^2*(c + d*x)^2)*S
inh[(3*b*(c + d*x))/d])))/(5*d^(7/2)*(c + d*x)^(5/2))) + Sinh[3*a]*((Cosh[(
b*c)/d]*(-1 + 2*Cosh[(2*b*c)/d])*(-2*E^((3*b*(c + d*x))/d)*(d^2 + 2*b*d*(c
+ d*x) + 12*b^2*(c + d*x)^2) + 24*Sqrt[3]*d^2*(-((b*(c + d*x))/d))^(5/2)*Ga
mma[1/2, (-3*b*(c + d*x))/d] + (-2*d^2 + 4*b*d*(c + d*x) - 24*b^2*(c + d*x)
^2 + 24*Sqrt[3]*d^2*E^((3*b*(c + d*x))/d)*((b*(c + d*x))/d)^(5/2)*Gamma[1/2
, (3*b*(c + d*x))/d])/E^((3*b*(c + d*x))/d)))/(10*d^3*(c + d*x)^(5/2)) + (2
*(1 + 2*Cosh[(2*b*c)/d])*Sinh[(b*c)/d]*(-6*b^(5/2)*Sqrt[3*Pi]*(c + d*x)^(5/
2)*Erf[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] - 6*b^(5/2)*Sqrt[3*Pi]*(c +
 d*x)^(5/2)*Erfi[(Sqrt[3]*Sqrt[b]*Sqrt[c + d*x])/Sqrt[d]] + Sqrt[d]*(2*b*d*
(c + d*x)*Cosh[(3*b*(c + d*x))/d] + (d^2 + 12*b^2*(c + d*x)^2)*Sinh[(3*b*(c
 + d*x))/d])))/(5*d^(7/2)*(c + d*x)^(5/2))))/4
```

fricas [B] time = 0.71, size = 3286, normalized size = 9.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3/(d*x+c)^(7/2),x, algorithm="fricas")
```

```
[Out] 1/20*(12*sqrt(3)*sqrt(pi)*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x +
 b^2*c^3)*cosh(b*x + a)^3*cosh(-3*(b*c - a*d)/d) - (b^2*d^3*x^3 + 3*b^2*c*d
^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)^3*sinh(-3*(b*c - a*d)/d) +
((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(-3*(b*c - a
*d)/d) - (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sinh(-3*
(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2
*c^2*d*x + b^2*c^3)*cosh(b*x + a)*cosh(-3*(b*c - a*d)/d) - (b^2*d^3*x^3 + 3
*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)*sinh(-3*(b*c - a*d)
/d))*sinh(b*x + a)^2 + 3*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x +
b^2*c^3)*cosh(b*x + a)^2*cosh(-3*(b*c - a*d)/d) - (b^2*d^3*x^3 + 3*b^2*c*d^
2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)^2*sinh(-3*(b*c - a*d)/d))*si
nh(b*x + a))*sqrt(b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(b/d)) - 12*sqrt(3)*sq
rt(pi)*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x
+ a)^3*cosh(-3*(b*c - a*d)/d) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*
d*x + b^2*c^3)*cosh(b*x + a)^3*sinh(-3*(b*c - a*d)/d) + ((b^2*d^3*x^3 + 3*b
^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(-3*(b*c - a*d)/d) + (b^2*d^3*x
^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sinh(-3*(b*c - a*d)/d))*sin
```

```
h(b*x + a)^3 + 3*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)
*cosh(b*x + a)*cosh(-3*(b*c - a*d)/d) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*
b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a)^
2 + 3*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x +
 a)^2*cosh(-3*(b*c - a*d)/d) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d
*x + b^2*c^3)*cosh(b*x + a)^2*sinh(-3*(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-
b/d)*erf(sqrt(3)*sqrt(d*x + c)*sqrt(-b/d)) - 4*sqrt(pi)*((b^2*d^3*x^3 + 3*b
^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)^3*cosh(-(b*c - a*d)/d
) - (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)
^3*sinh(-(b*c - a*d)/d) + ((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x +
 b^2*c^3)*cosh(-(b*c - a*d)/d) - (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2
*d*x + b^2*c^3)*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^3 + 3*((b^2*d^3*x^3 + 3
*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)*cosh(-(b*c - a*d)/d
) - (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)
*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2
 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)^2*cosh(-(b*c - a*d)/d) - (b^2*d^3*
x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)^2*sinh(-(b*c
 - a*d)/d))*sinh(b*x + a))*sqrt(b/d)*erf(sqrt(d*x + c)*sqrt(b/d)) + 4*sqrt(
pi)*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a
)^3*cosh(-(b*c - a*d)/d) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x +
 b^2*c^3)*cosh(b*x + a)^3*sinh(-(b*c - a*d)/d) + ((b^2*d^3*x^3 + 3*b^2*c*d^
2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(-(b*c - a*d)/d) + (b^2*d^3*x^3 + 3*b^
2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^
3 + 3*((b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x +
 a)*cosh(-(b*c - a*d)/d) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x +
 b^2*c^3)*cosh(b*x + a)*sinh(-(b*c - a*d)/d))*sinh(b*x + a)^2 + 3*((b^2*d^3
*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cosh(b*x + a)^2*cosh(-(b*
c - a*d)/d) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos
h(b*x + a)^2*sinh(-(b*c - a*d)/d))*sinh(b*x + a))*sqrt(-b/d)*erf(sqrt(d*x +
 c)*sqrt(-b/d)) - ((12*b^2*d^2*x^2 + 12*b^2*c^2 + 2*b*c*d + d^2 + 2*(12*b^2
*c*d + b*d^2)*x)*cosh(b*x + a)^6 + 6*(12*b^2*d^2*x^2 + 12*b^2*c^2 + 2*b*c*d
 + d^2 + 2*(12*b^2*c*d + b*d^2)*x)*cosh(b*x + a)*sinh(b*x + a)^5 + (12*b^2*
d^2*x^2 + 12*b^2*c^2 + 2*b*c*d + d^2 + 2*(12*b^2*c*d + b*d^2)*x)*sinh(b*x +
 a)^6 - 12*b^2*d^2*x^2 - (4*b^2*d^2*x^2 + 4*b^2*c^2 + 2*b*c*d + 3*d^2 + 2*(
4*b^2*c*d + b*d^2)*x)*cosh(b*x + a)^4 - (4*b^2*d^2*x^2 + 4*b^2*c^2 + 2*b*c*
d - 15*(12*b^2*d^2*x^2 + 12*b^2*c^2 + 2*b*c*d + d^2 + 2*(12*b^2*c*d + b*d^2
)*x)*cosh(b*x + a)^2 + 3*d^2 + 2*(4*b^2*c*d + b*d^2)*x)*sinh(b*x + a)^4 - 1
2*b^2*c^2 + 4*(5*(12*b^2*d^2*x^2 + 12*b^2*c^2 + 2*b*c*d + d^2 + 2*(12*b^2*c
*d + b*d^2)*x)*cosh(b*x + a)^3 - (4*b^2*d^2*x^2 + 4*b^2*c^2 + 2*b*c*d + 3*d
^2 + 2*(4*b^2*c*d + b*d^2)*x)*cosh(b*x + a))*sinh(b*x + a)^3 + 2*b*c*d + (4
*b^2*d^2*x^2 + 4*b^2*c^2 - 2*b*c*d + 3*d^2 + 2*(4*b^2*c*d - b*d^2)*x)*cosh(
b*x + a)^2 + (4*b^2*d^2*x^2 + 15*(12*b^2*d^2*x^2 + 12*b^2*c^2 + 2*b*c*d + d
^2 + 2*(12*b^2*c*d + b*d^2)*x)*cosh(b*x + a)^4 + 4*b^2*c^2 - 2*b*c*d - 6*(4
*b^2*d^2*x^2 + 4*b^2*c^2 + 2*b*c*d + 3*d^2 + 2*(4*b^2*c*d + b*d^2)*x)*cosh(
b*x + a)^2 + 3*d^2 + 2*(4*b^2*c*d - b*d^2)*x)*sinh(b*x + a)^2 - d^2 - 2*(12
```

```
*b^2*c*d - b*d^2)*x + 2*(3*(12*b^2*d^2*x^2 + 12*b^2*c^2 + 2*b*c*d + d^2 + 2
*(12*b^2*c*d + b*d^2)*x)*cosh(b*x + a)^5 - 2*(4*b^2*d^2*x^2 + 4*b^2*c^2 + 2
*b*c*d + 3*d^2 + 2*(4*b^2*c*d + b*d^2)*x)*cosh(b*x + a)^3 + (4*b^2*d^2*x^2
+ 4*b^2*c^2 - 2*b*c*d + 3*d^2 + 2*(4*b^2*c*d - b*d^2)*x)*cosh(b*x + a))*sin
h(b*x + a))*sqrt(d*x + c))/((d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4*x + c^3*d^3)
*cosh(b*x + a)^3 + 3*(d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4*x + c^3*d^3)*cosh(b
*x + a)^2*sinh(b*x + a) + 3*(d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4*x + c^3*d^3)
*cosh(b*x + a)*sinh(b*x + a)^2 + (d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4*x + c^3
*d^3)*sinh(b*x + a)^3)
```

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

$$\int \frac{\sinh\left(bx+a\right)^{3}}{\left(dx+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3/(d*x+c)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sinh(b*x + a)^3/(d*x + c)^(7/2), x)
```

maple [F] time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{\sinh^{3}\left(bx+a\right)}{\left(dx+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(b*x+a)^3/(d*x+c)^(7/2),x)
```

```
[Out] int(sinh(b*x+a)^3/(d*x+c)^(7/2),x)
```

maxima [A] time = 0.53, size = 197, normalized size = 0.60

$$\frac{3\left(\frac{3\sqrt{3}\left(\frac{(dx+c)b}{d}\right)^{\frac{5}{2}}e^{\left(\frac{3(bc-ad)}{d}\right)}\Gamma\left(-\frac{5}{2},\frac{3(dx+c)b}{d}\right)}{(dx+c)^{\frac{5}{2}}}-\frac{3\sqrt{3}\left(-\frac{(dx+c)b}{d}\right)^{\frac{5}{2}}e^{\left(-\frac{3(bc-ad)}{d}\right)}\Gamma\left(-\frac{5}{2},-\frac{3(dx+c)b}{d}\right)}{(dx+c)^{\frac{5}{2}}}-\frac{\left(\frac{(dx+c)b}{d}\right)^{\frac{5}{2}}e^{\left(-a+\frac{bc}{d}\right)}\Gamma\left(-\frac{5}{2},\frac{(dx+c)b}{d}\right)}{(dx+c)^{\frac{5}{2}}}+\frac{\left(-\frac{(dx+c)}{d}\cdots\right.}{}\cdots\right)}{8d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)^3/(d*x+c)^(7/2),x, algorithm="maxima")
```

```
[Out] 3/8*(3*sqrt(3)*((d*x + c)*b/d)^(5/2)*e^(3*(b*c - a*d)/d)*gamma(-5/2, 3*(d*x
 + c)*b/d)/(d*x + c)^(5/2) - 3*sqrt(3)*(-(d*x + c)*b/d)^(5/2)*e^(-3*(b*c -
```

```
a*d)/d)*gamma(-5/2, -3*(d*x + c)*b/d)/(d*x + c)^(5/2) - ((d*x + c)*b/d)^(5/
2)*e^(-a + b*c/d)*gamma(-5/2, (d*x + c)*b/d)/(d*x + c)^(5/2) + (-(d*x + c)*
b/d)^(5/2)*e^(a - b*c/d)*gamma(-5/2, -(d*x + c)*b/d)/(d*x + c)^(5/2))/d
```

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

$$\int \frac{\sinh(a+b\,x)^3}{(c+d\,x)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^3/(c + d*x)^(7/2),x)
```

```
[Out] int(sinh(a + b*x)^3/(c + d*x)^(7/2), x)
```

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

$$\int \frac{\sinh^3(a+bx)}{(c+dx)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(b*x+a)**3/(d*x+c)**(7/2),x)
```

```
[Out] Integral(sinh(a + b*x)**3/(c + d*x)**(7/2), x)
```

3.60 $\int (dx)^{3/2} \sinh(fx)\, dx$

Optimal. Leaf size=111

$$-\frac{3\sqrt{\pi}\, d^{3/2}\text{erf}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{8f^{5/2}}+\frac{3\sqrt{\pi}\, d^{3/2}\text{erfi}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{8f^{5/2}}-\frac{3d\sqrt{dx}\,\sinh(fx)}{2f^2}+\frac{(dx)^{3/2}\cosh(fx)}{f}$$

```
[Out] (d*x)^(3/2)*cosh(f*x)/f-3/8*d^(3/2)*erf(f^(1/2)*(d*x)^(1/2)/d^(1/2))*Pi^(1/
2)/f^(5/2)+3/8*d^(3/2)*erfi(f^(1/2)*(d*x)^(1/2)/d^(1/2))*Pi^(1/2)/f^(5/2)-3
/2*d*sinh(f*x)*(d*x)^(1/2)/f^2
```

Rubi [A] time = 0.16, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {3296, 3308, 2180, 2204, 2205}

$$-\frac{3\sqrt{\pi}\, d^{3/2}\text{Erf}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{8f^{5/2}}+\frac{3\sqrt{\pi}\, d^{3/2}\text{Erfi}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{8f^{5/2}}-\frac{3d\sqrt{dx}\,\sinh(fx)}{2f^2}+\frac{(dx)^{3/2}\cosh(fx)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*x)^(3/2)*Sinh[f*x],x]
```

```
[Out] ((d*x)^(3/2)*Cosh[f*x])/f - (3*d^(3/2)*Sqrt[Pi]*Erf[(Sqrt[f]*Sqrt[d*x])/Sqr
t[d]])/(8*f^(5/2)) + (3*d^(3/2)*Sqrt[Pi]*Erfi[(Sqrt[f]*Sqrt[d*x])/Sqrt[d]])
/(8*f^(5/2)) - (3*d*Sqrt[d*x]*Sinh[f*x])/(2*f^2)
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3296

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

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}
\int (dx)^{3/2}\sinh(fx)\,dx &= \frac{(dx)^{3/2}\cosh(fx)}{f} - \frac{(3d)\int \sqrt{dx}\,\cosh(fx)\,dx}{2f}\\
&= \frac{(dx)^{3/2}\cosh(fx)}{f} - \frac{3d\sqrt{dx}\,\sinh(fx)}{2f^2} + \frac{\left(3d^2\right)\int \frac{\sinh(fx)}{\sqrt{dx}}\,dx}{4f^2}\\
&= \frac{(dx)^{3/2}\cosh(fx)}{f} - \frac{3d\sqrt{dx}\,\sinh(fx)}{2f^2} - \frac{\left(3d^2\right)\int \frac{e^{-fx}}{\sqrt{dx}}\,dx}{8f^2} + \frac{\left(3d^2\right)\int \frac{e^{fx}}{\sqrt{dx}}\,dx}{8f^2}\\
&= \frac{(dx)^{3/2}\cosh(fx)}{f} - \frac{3d\sqrt{dx}\,\sinh(fx)}{2f^2} - \frac{(3d)\,\text{Subst}\left(\int e^{-\frac{fx^2}{d}}\,dx, x, \sqrt{dx}\right)}{4f^2} + \frac{(3d)\,\text{Subst}\left(\int \right.}{4}\\
&= \frac{(dx)^{3/2}\cosh(fx)}{f} - \frac{3d^{3/2}\sqrt{\pi}\,\text{erf}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{8f^{5/2}} + \frac{3d^{3/2}\sqrt{\pi}\,\text{erfi}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{8f^{5/2}} - \frac{3d\sqrt{dx}\,\sinh(fx)}{2f^2}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 50, normalized size = 0.45

$$\frac{d^2\left(\sqrt{-fx}\,\Gamma\left(\frac{5}{2},-fx\right)+\sqrt{fx}\,\Gamma\left(\frac{5}{2},fx\right)\right)}{2f^3\sqrt{dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*x)^(3/2)*Sinh[f*x],x]
```

```
[Out] (d^2*(Sqrt[-(f*x)]*Gamma[5/2, -(f*x)] + Sqrt[f*x]*Gamma[5/2, f*x]))/(2*f^3*
Sqrt[d*x])
```

fricas [B] time = 0.68, size = 189, normalized size = 1.70

$$-\frac{3\sqrt{\pi}\left(d^2\cosh\left(fx\right)+d^2\sinh\left(fx\right)\right)\sqrt{\frac{f}{d}}\operatorname{erf}\left(\sqrt{dx}\sqrt{\frac{f}{d}}\right)+3\sqrt{\pi}\left(d^2\cosh\left(fx\right)+d^2\sinh\left(fx\right)\right)\sqrt{-\frac{f}{d}}\operatorname{erf}\left(\sqrt{dx}\right.}{8\left(f^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)^(3/2)*sinh(f*x),x, algorithm="fricas")
```

```
[Out] -1/8*(3*sqrt(pi)*(d^2*cosh(f*x) + d^2*sinh(f*x))*sqrt(f/d)*erf(sqrt(d*x)*sq
rt(f/d)) + 3*sqrt(pi)*(d^2*cosh(f*x) + d^2*sinh(f*x))*sqrt(-f/d)*erf(sqrt(d
*x)*sqrt(-f/d)) - 2*(2*d*f^2*x + (2*d*f^2*x - 3*d*f)*cosh(f*x)^2 + 2*(2*d*f
^2*x - 3*d*f)*cosh(f*x)*sinh(f*x) + (2*d*f^2*x - 3*d*f)*sinh(f*x)^2 + 3*d*f
)*sqrt(d*x))/(f^3*cosh(f*x) + f^3*sinh(f*x))
```

giac [A] time = 0.18, size = 146, normalized size = 1.32

$$\frac{1}{8}d\left(\frac{\frac{3\sqrt{\pi}d^3\operatorname{erf}\left(-\frac{\sqrt{df}\sqrt{dx}}{d}\right)}{\sqrt{df}f^2}+\frac{2\left(2\sqrt{dx}d^2fx+3\sqrt{dx}d^2\right)e^{\left(-fx\right)}}{f^2}}{d^2}-\frac{\frac{3\sqrt{\pi}d^3\operatorname{erf}\left(-\frac{\sqrt{-df}\sqrt{dx}}{d}\right)}{\sqrt{-df}f^2}-\frac{2\left(2\sqrt{dx}d^2fx-3\sqrt{dx}d^2\right)e^{\left(fx\right)}}{f^2}}{d^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)^(3/2)*sinh(f*x),x, algorithm="giac")
```

```
[Out] 1/8*d*((3*sqrt(pi)*d^3*erf(-sqrt(d*f)*sqrt(d*x)/d)/(sqrt(d*f)*f^2) + 2*(2*s
qrt(d*x)*d^2*f*x + 3*sqrt(d*x)*d^2)*e^(-f*x)/f^2)/d^2 - (3*sqrt(pi)*d^3*erf
(-sqrt(-d*f)*sqrt(d*x)/d)/(sqrt(-d*f)*f^2) - 2*(2*sqrt(d*x)*d^2*f*x - 3*sqr
t(d*x)*d^2)*e^(f*x)/f^2)/d^2)
```

maple [C] time = 0.08, size = 132, normalized size = 1.19

$$-\frac{2\left(dx\right)^{\frac{3}{2}}\sqrt{2}\sqrt{\pi}\left(-\frac{\sqrt{x}\sqrt{2}\left(if\right)^{\frac{7}{2}}\left(-14fx+21\right)e^{fx}}{112\sqrt{\pi}f^3}+\frac{\sqrt{x}\sqrt{2}\left(if\right)^{\frac{7}{2}}\left(14fx+21\right)e^{-fx}}{112\sqrt{\pi}f^3}-\frac{3\left(if\right)^{\frac{7}{2}}\sqrt{2}\operatorname{erf}\left(\sqrt{x}\sqrt{f}\right)}{32f^{\frac{7}{2}}}+\frac{3\left(if\right)^{\frac{7}{2}}\sqrt{2}\operatorname{erfi}\left(\sqrt{x}\sqrt{f}\right)}{32f^{\frac{7}{2}}}\right.}{x^{\frac{3}{2}}\left(if\right)^{\frac{3}{2}}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x)^(3/2)*sinh(f*x),x)
```

```
[Out] -2*(d*x)^(3/2)/x^(3/2)*2^(1/2)/(I*f)^(3/2)*Pi^(1/2)/f*(-1/112/Pi^(1/2)*x^(1
/2)*2^(1/2)*(I*f)^(7/2)*(-14*f*x+21)/f^3*exp(f*x)+1/112/Pi^(1/2)*x^(1/2)*2^
```

```
(1/2)*(I*f)^(7/2)*(14*f*x+21)/f^3*exp(-f*x)-3/32*(I*f)^(7/2)*2^(1/2)/f^(7/2
)*erf(x^(1/2)*f^(1/2))+3/32*(I*f)^(7/2)*2^(1/2)/f^(7/2)*erfi(x^(1/2)*f^(1/2
)))
```

maxima [B] time = 0.34, size = 175, normalized size = 1.58

$$\frac{16\,(dx)^{\frac{5}{2}}\sinh\left(fx\right)-\frac{f\left(\frac{15\sqrt{\pi}\,d^{3}\operatorname{erf}\left(\sqrt{dx}\,\sqrt{\frac{f}{d}}\right)}{f^{3}\sqrt{\frac{f}{d}}}-\frac{15\sqrt{\pi}\,d^{3}\operatorname{erf}\left(\sqrt{dx}\,\sqrt{-\frac{f}{d}}\right)}{f^{3}\sqrt{-\frac{f}{d}}}+\frac{2\left(4\,(dx)^{\frac{5}{2}}df^{2}-10\,(dx)^{\frac{3}{2}}d^{2}f+15\sqrt{dx}\,d^{3}\right)e^{(fx)}}{f^{3}}-\frac{2\left(4\,(dx)^{\frac{5}{2}}df^{2}+10\,(dx)^{\frac{3}{2}}d^{2}f+15\sqrt{d}\cdots\right.}{f^{3}}\cdots}{d}}{40\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)^(3/2)*sinh(f*x),x, algorithm="maxima")
```

```
[Out] 1/40*(16*(d*x)^(5/2)*sinh(f*x) - f*(15*sqrt(pi)*d^3*erf(sqrt(d*x)*sqrt(f/d)
)/(f^3*sqrt(f/d)) - 15*sqrt(pi)*d^3*erf(sqrt(d*x)*sqrt(-f/d))/(f^3*sqrt(-f/
d)) + 2*(4*(d*x)^(5/2)*d*f^2 - 10*(d*x)^(3/2)*d^2*f + 15*sqrt(d*x)*d^3)*e^(
f*x)/f^3 - 2*(4*(d*x)^(5/2)*d*f^2 + 10*(d*x)^(3/2)*d^2*f + 15*sqrt(d*x)*d^3
)*e^(-f*x)/f^3)/d)/d
```

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

$$\int \sinh\left(f\,x\right)\,(d\,x)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(f*x)*(d*x)^(3/2),x)
```

```
[Out] int(sinh(f*x)*(d*x)^(3/2), x)
```

sympy [C] time = 17.77, size = 133, normalized size = 1.20

$$\frac{7d^{\frac{3}{2}}x^{\frac{3}{2}}\cosh\left(fx\right)\Gamma\left(\frac{7}{4}\right)}{4f\Gamma\left(\frac{11}{4}\right)}-\frac{21d^{\frac{3}{2}}\sqrt{x}\,\sinh\left(fx\right)\Gamma\left(\frac{7}{4}\right)}{8f^{2}\Gamma\left(\frac{11}{4}\right)}+\frac{21\sqrt{2}\,\sqrt{\pi}\,d^{\frac{3}{2}}e^{-\frac{3i\pi}{4}}S\left(\frac{\sqrt{2}\,\sqrt{f}\,\sqrt{x}\,e^{\frac{i\pi}{4}}}{\sqrt{\pi}}\right)\Gamma\left(\frac{7}{4}\right)}{16f^{\frac{5}{2}}\Gamma\left(\frac{11}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)**(3/2)*sinh(f*x),x)
```

```
[Out] 7*d**(3/2)*x**(3/2)*cosh(f*x)*gamma(7/4)/(4*f*gamma(11/4)) - 21*d**(3/2)*sq
rt(x)*sinh(f*x)*gamma(7/4)/(8*f**2*gamma(11/4)) + 21*sqrt(2)*sqrt(pi)*d**(3
/2)*exp(-3*I*pi/4)*fresnels(sqrt(2)*sqrt(f)*sqrt(x)*exp(I*pi/4)/sqrt(pi))*g
amma(7/4)/(16*f**(5/2)*gamma(11/4))
```

3.61 $\int \sqrt{dx} \sinh(fx)\,dx$

Optimal. Leaf size=92

$$-\frac{\sqrt{\pi}\sqrt{d}\,\mathrm{erf}\left(\frac{\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{4f^{3/2}}-\frac{\sqrt{\pi}\sqrt{d}\,\mathrm{erfi}\left(\frac{\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{4f^{3/2}}+\frac{\sqrt{dx}\cosh(fx)}{f}$$

```
[Out] -1/4*erf(f^(1/2)*(d*x)^(1/2)/d^(1/2))*d^(1/2)*Pi^(1/2)/f^(3/2)-1/4*erfi(f^(
1/2)*(d*x)^(1/2)/d^(1/2))*d^(1/2)*Pi^(1/2)/f^(3/2)+cosh(f*x)*(d*x)^(1/2)/f
```

Rubi [A] time = 0.11, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {3296, 3307, 2180, 2204, 2205}

$$-\frac{\sqrt{\pi}\sqrt{d}\,\mathrm{Erf}\left(\frac{\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{4f^{3/2}}-\frac{\sqrt{\pi}\sqrt{d}\,\mathrm{Erfi}\left(\frac{\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{4f^{3/2}}+\frac{\sqrt{dx}\cosh(fx)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*x]*Sinh[f*x],x]
```

```
[Out] (Sqrt[d*x]*Cosh[f*x])/f - (Sqrt[d]*Sqrt[Pi]*Erf[(Sqrt[f]*Sqrt[d*x])/Sqrt[d]
])/(4*f^(3/2)) - (Sqrt[d]*Sqrt[Pi]*Erfi[(Sqrt[f]*Sqrt[d*x])/Sqrt[d]])/(4*f^
(3/2))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3296

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

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rubi steps

$$\begin{aligned}
\int \sqrt{dx}\sinh(fx)\,dx &= \frac{\sqrt{dx}\cosh(fx)}{f} - \frac{d\int \frac{\cosh(fx)}{\sqrt{dx}}\,dx}{2f}\\
&= \frac{\sqrt{dx}\cosh(fx)}{f} - \frac{d\int \frac{e^{-fx}}{\sqrt{dx}}\,dx}{4f} - \frac{d\int \frac{e^{fx}}{\sqrt{dx}}\,dx}{4f}\\
&= \frac{\sqrt{dx}\cosh(fx)}{f} - \frac{\text{Subst}\left(\int e^{-\frac{fx^2}{d}}\,dx, x, \sqrt{dx}\right)}{2f} - \frac{\text{Subst}\left(\int e^{\frac{fx^2}{d}}\,dx, x, \sqrt{dx}\right)}{2f}\\
&= \frac{\sqrt{dx}\cosh(fx)}{f} - \frac{\sqrt{d}\sqrt{\pi}\,\text{erf}\left(\frac{\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{4f^{3/2}} - \frac{\sqrt{d}\sqrt{\pi}\,\text{erfi}\left(\frac{\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{4f^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 49, normalized size = 0.53

$$\frac{d\left(\sqrt{fx}\,\Gamma\left(\frac{3}{2}, fx\right) - \sqrt{-fx}\,\Gamma\left(\frac{3}{2}, -fx\right)\right)}{2f^2\sqrt{dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*x]*Sinh[f*x],x]
```

```
[Out] (d*(-(Sqrt[-(f*x)]*Gamma[3/2, -(f*x)]) + Sqrt[f*x]*Gamma[3/2, f*x]))/(2*f^2
*Sqrt[d*x])
```

fricas [B] time = 0.62, size = 137, normalized size = 1.49

$$-\frac{\sqrt{\pi}\left(d\cosh\left(fx\right)+d\sinh\left(fx\right)\right)\sqrt{\frac{f}{d}}\,\operatorname{erf}\left(\sqrt{dx}\sqrt{\frac{f}{d}}\right)-\sqrt{\pi}\left(d\cosh\left(fx\right)+d\sinh\left(fx\right)\right)\sqrt{-\frac{f}{d}}\,\operatorname{erf}\left(\sqrt{dx}\sqrt{-\frac{f}{d}}\right)-}{4\left(f^{2}\cosh\left(fx\right)+f^{2}\sinh\left(fx\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)*(d*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/4*(sqrt(pi)*(d*cosh(f*x) + d*sinh(f*x))*sqrt(f/d)*erf(sqrt(d*x)*sqrt(f/d
)) - sqrt(pi)*(d*cosh(f*x) + d*sinh(f*x))*sqrt(-f/d)*erf(sqrt(d*x)*sqrt(-f/
d)) - 2*(f*cosh(f*x)^2 + 2*f*cosh(f*x)*sinh(f*x) + f*sinh(f*x)^2 + f)*sqrt(
d*x))/(f^2*cosh(f*x) + f^2*sinh(f*x))
```

giac [A] time = 0.23, size = 108, normalized size = 1.17

$$\frac{\frac{\sqrt{\pi}d^{2}\operatorname{erf}\left(-\frac{\sqrt{df}\sqrt{dx}}{d}\right)}{\sqrt{df}f}+\frac{2\sqrt{dx}de^{\left(-fx\right)}}{f}}{4d}+\frac{\frac{\sqrt{\pi}d^{2}\operatorname{erf}\left(-\frac{\sqrt{-df}\sqrt{dx}}{d}\right)}{\sqrt{-df}f}+\frac{2\sqrt{dx}de^{\left(fx\right)}}{f}}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)*(d*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(sqrt(pi)*d^2*erf(-sqrt(d*f)*sqrt(d*x)/d)/(sqrt(d*f)*f) + 2*sqrt(d*x)*d
*e^(-f*x)/f)/d + 1/4*(sqrt(pi)*d^2*erf(-sqrt(-d*f)*sqrt(d*x)/d)/(sqrt(-d*f)
*f) + 2*sqrt(d*x)*d*e^(f*x)/f)/d
```

maple [C] time = 0.03, size = 120, normalized size = 1.30

$$-\frac{\sqrt{\pi}\,\sqrt{dx}\,\sqrt{2}\left(\frac{\sqrt{x}\,\sqrt{2}\,\left(if\right)^{\frac{5}{2}}\mathrm{e}^{-fx}}{4\sqrt{\pi}\,f^{2}}+\frac{\sqrt{x}\,\sqrt{2}\,\left(if\right)^{\frac{5}{2}}\mathrm{e}^{fx}}{4\sqrt{\pi}\,f^{2}}-\frac{\left(if\right)^{\frac{5}{2}}\sqrt{2}\,\operatorname{erf}\left(\sqrt{x}\,\sqrt{f}\right)}{8f^{\frac{5}{2}}}-\frac{\left(if\right)^{\frac{5}{2}}\sqrt{2}\,\operatorname{erfi}\left(\sqrt{x}\,\sqrt{f}\right)}{8f^{\frac{5}{2}}}\right)}{\sqrt{x}\,\sqrt{if}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(f*x)*(d*x)^(1/2),x)
```

```
[Out] -Pi^(1/2)*(d*x)^(1/2)/x^(1/2)*2^(1/2)/(I*f)^(1/2)/f*(1/4/Pi^(1/2)*x^(1/2)*2
^(1/2)*(I*f)^(5/2)/f^2*exp(-f*x)+1/4/Pi^(1/2)*x^(1/2)*2^(1/2)*(I*f)^(5/2)/f
^2*exp(f*x)-1/8*(I*f)^(5/2)*2^(1/2)/f^(5/2)*erf(x^(1/2)*f^(1/2))-1/8*(I*f)^
(5/2)*2^(1/2)/f^(5/2)*erfi(x^(1/2)*f^(1/2)))
```

maxima [B] time = 0.62, size = 149, normalized size = 1.62

$$\frac{8\,(dx)^{\frac{3}{2}}\sinh\left(fx\right)-\frac{f\left(\frac{3\sqrt{\pi}d^2\operatorname{erf}\left(\sqrt{dx}\sqrt{\frac{f}{d}}\right)}{f^2\sqrt{\frac{f}{d}}}+\frac{3\sqrt{\pi}d^2\operatorname{erf}\left(\sqrt{dx}\sqrt{-\frac{f}{d}}\right)}{f^2\sqrt{-\frac{f}{d}}}+\frac{2\left(2\,(dx)^{\frac{3}{2}}df-3\sqrt{dx}d^2\right)e^{(fx)}}{f^2}-\frac{2\left(2\,(dx)^{\frac{3}{2}}df+3\sqrt{dx}d^2\right)e^{(-fx)}}{f^2}\right)}{d}}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)*(d*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/12*(8*(d*x)^(3/2)*sinh(f*x) - f*(3*sqrt(pi)*d^2*erf(sqrt(d*x)*sqrt(f/d))/
(f^2*sqrt(f/d)) + 3*sqrt(pi)*d^2*erf(sqrt(d*x)*sqrt(-f/d))/(f^2*sqrt(-f/d))
 + 2*(2*(d*x)^(3/2)*d*f - 3*sqrt(d*x)*d^2)*e^(f*x)/f^2 - 2*(2*(d*x)^(3/2)*d
*f + 3*sqrt(d*x)*d^2)*e^(-f*x)/f^2)/d)/d
```

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

$$\int \sinh\left(f\,x\right)\,\sqrt{d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(f*x)*(d*x)^(1/2),x)
```

```
[Out] int(sinh(f*x)*(d*x)^(1/2), x)
```

sympy [C] time = 1.68, size = 99, normalized size = 1.08

$$\frac{5\sqrt{d}\,\sqrt{x}\,\cosh\left(fx\right)\Gamma\left(\frac{5}{4}\right)}{4f\Gamma\left(\frac{9}{4}\right)}-\frac{5\sqrt{2}\,\sqrt{\pi}\,\sqrt{d}\,e^{-\frac{i\pi}{4}}C\left(\frac{\sqrt{2}\,\sqrt{f}\,\sqrt{x}\,e^{\frac{i\pi}{4}}}{\sqrt{\pi}}\right)\Gamma\left(\frac{5}{4}\right)}{8f^{\frac{3}{2}}\Gamma\left(\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)*(d*x)**(1/2),x)
```

```
[Out] 5*sqrt(d)*sqrt(x)*cosh(f*x)*gamma(5/4)/(4*f*gamma(9/4)) - 5*sqrt(2)*sqrt(pi
)*sqrt(d)*exp(-I*pi/4)*fresnelc(sqrt(2)*sqrt(f)*sqrt(x)*exp(I*pi/4)/sqrt(pi
))*gamma(5/4)/(8*f**(3/2)*gamma(9/4))
```

3.62 $\int \frac{\sinh(fx)}{\sqrt{dx}}\,dx$

Optimal. Leaf size=77

$$\frac{\sqrt{\pi}\,\text{erfi}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{2\sqrt{d}\,\sqrt{f}}-\frac{\sqrt{\pi}\,\text{erf}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{2\sqrt{d}\,\sqrt{f}}$$

```
[Out] -1/2*erf(f^(1/2)*(d*x)^(1/2)/d^(1/2))*Pi^(1/2)/d^(1/2)/f^(1/2)+1/2*erfi(f^(
1/2)*(d*x)^(1/2)/d^(1/2))*Pi^(1/2)/d^(1/2)/f^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3308, 2180, 2204, 2205}

$$\frac{\sqrt{\pi}\,\text{Erfi}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{2\sqrt{d}\,\sqrt{f}}-\frac{\sqrt{\pi}\,\text{Erf}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{2\sqrt{d}\,\sqrt{f}}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[f*x]/Sqrt[d*x],x]
```

```
[Out] -(Sqrt[Pi]*Erf[(Sqrt[f]*Sqrt[d*x])/Sqrt[d]])/(2*Sqrt[d]*Sqrt[f]) + (Sqrt[Pi
]*Erfi[(Sqrt[f]*Sqrt[d*x])/Sqrt[d]])/(2*Sqrt[d]*Sqrt[f])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sinh(fx)}{\sqrt{dx}}\,dx &= -\left(\frac{1}{2}\int \frac{e^{-fx}}{\sqrt{dx}}\,dx\right)+\frac{1}{2}\int \frac{e^{fx}}{\sqrt{dx}}\,dx\\ &= -\frac{\operatorname{Subst}\left(\int e^{-\frac{fx^2}{d}}\,dx,x,\sqrt{dx}\right)}{d}+\frac{\operatorname{Subst}\left(\int e^{\frac{fx^2}{d}}\,dx,x,\sqrt{dx}\right)}{d}\\ &= -\frac{\sqrt{\pi}\operatorname{erf}\left(\frac{\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{2\sqrt{d}\sqrt{f}}+\frac{\sqrt{\pi}\operatorname{erfi}\left(\frac{\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{2\sqrt{d}\sqrt{f}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 47, normalized size = 0.61

$$\frac{\sqrt{-fx}\,\Gamma\left(\frac{1}{2},-fx\right)+\sqrt{fx}\,\Gamma\left(\frac{1}{2},fx\right)}{2f\sqrt{dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[f*x]/Sqrt[d*x],x]
```

```
[Out] (Sqrt[-(f*x)]*Gamma[1/2, -(f*x)] + Sqrt[f*x]*Gamma[1/2, f*x])/(2*f*Sqrt[d*x
])
```

fricas [A] time = 0.67, size = 58, normalized size = 0.75

$$-\frac{\sqrt{\pi}\sqrt{\frac{f}{d}}\operatorname{erf}\left(\sqrt{dx}\sqrt{\frac{f}{d}}\right)+\sqrt{\pi}\sqrt{-\frac{f}{d}}\operatorname{erf}\left(\sqrt{dx}\sqrt{-\frac{f}{d}}\right)}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(pi)*sqrt(f/d)*erf(sqrt(d*x)*sqrt(f/d)) + sqrt(pi)*sqrt(-f/d)*erf
(sqrt(d*x)*sqrt(-f/d)))/f
```

giac [A] time = 0.18, size = 61, normalized size = 0.79

$$\frac{\frac{\sqrt{\pi}\, d\, \mathrm{erf}\left(-\frac{\sqrt{df}\,\sqrt{dx}}{d}\right)}{\sqrt{df}} - \frac{\sqrt{\pi}\, d\, \mathrm{erf}\left(-\frac{\sqrt{-df}\,\sqrt{dx}}{d}\right)}{\sqrt{-df}}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*(sqrt(pi)*d*erf(-sqrt(d*f)*sqrt(d*x)/d)/sqrt(d*f) - sqrt(pi)*d*erf(-sqr
t(-d*f)*sqrt(d*x)/d)/sqrt(-d*f))/d
```

maple [C] time = 0.03, size = 71, normalized size = 0.92

$$-\frac{\sqrt{\pi}\,\sqrt{x}\,\sqrt{2}\,\sqrt{if}\left(-\frac{(if)^{\frac{3}{2}}\sqrt{2}\,\mathrm{erf}\left(\sqrt{x}\,\sqrt{f}\right)}{2f^{\frac{3}{2}}}+\frac{(if)^{\frac{3}{2}}\sqrt{2}\,\mathrm{erfi}\left(\sqrt{x}\,\sqrt{f}\right)}{2f^{\frac{3}{2}}}\right)}{2\sqrt{dx}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(f*x)/(d*x)^(1/2),x)
```

```
[Out] -1/2*Pi^(1/2)/(d*x)^(1/2)*x^(1/2)*2^(1/2)*(I*f)^(1/2)/f*(-1/2*(I*f)^(3/2)*2
^(1/2)/f^(3/2)*erf(x^(1/2)*f^(1/2))+1/2*(I*f)^(3/2)*2^(1/2)/f^(3/2)*erfi(x^
(1/2)*f^(1/2)))
```

maxima [B] time = 0.33, size = 116, normalized size = 1.51

$$\frac{4\sqrt{dx}\,\sinh\left(fx\right)-\frac{\left(\frac{2\sqrt{dx}\,de^{(fx)}}{f}-\frac{2\sqrt{dx}\,de^{(-fx)}}{f}+\frac{\sqrt{\pi}\,d\,\mathrm{erf}\left(\sqrt{dx}\,\sqrt{\frac{f}{d}}\right)}{f\sqrt{\frac{f}{d}}}-\frac{\sqrt{\pi}\,d\,\mathrm{erf}\left(\sqrt{dx}\,\sqrt{-\frac{f}{d}}\right)}{f\sqrt{-\frac{f}{d}}}\right)f}{d}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*(4*sqrt(d*x)*sinh(f*x) - (2*sqrt(d*x)*d*e^(f*x)/f - 2*sqrt(d*x)*d*e^(-f
*x)/f + sqrt(pi)*d*erf(sqrt(d*x)*sqrt(f/d))/(f*sqrt(f/d)) - sqrt(pi)*d*erf(
sqrt(d*x)*sqrt(-f/d))/(f*sqrt(-f/d)))*f/d)/d
```

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

$$\int \frac{\sinh\left(f\,x\right)}{\sqrt{d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(f*x)/(d*x)^(1/2),x)
```

```
[Out] int(sinh(f*x)/(d*x)^(1/2), x)
```

sympy [C]   time = 0.96, size = 70, normalized size = 0.91

$$\frac{3\sqrt{2}\,\sqrt{\pi}\,e^{-\frac{3i\pi}{4}}S\left(\frac{\sqrt{2}\,\sqrt{f}\,\sqrt{x}\,e^{\frac{i\pi}{4}}}{\sqrt{\pi}}\right)\Gamma\left(\frac{3}{4}\right)}{4\sqrt{d}\,\sqrt{f}\,\Gamma\left(\frac{7}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)**(1/2),x)
```

```
[Out] 3*sqrt(2)*sqrt(pi)*exp(-3*I*pi/4)*fresnels(sqrt(2)*sqrt(f)*sqrt(x)*exp(I*pi
/4)/sqrt(pi))*gamma(3/4)/(4*sqrt(d)*sqrt(f)*gamma(7/4))
```

3.63 $\int \frac{\sinh(fx)}{(dx)^{3/2}}\,dx$

Optimal. Leaf size=87

$$\frac{\sqrt{\pi}\,\sqrt{f}\,\mathrm{erf}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{d^{3/2}}+\frac{\sqrt{\pi}\,\sqrt{f}\,\mathrm{erfi}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sinh(fx)}{d\sqrt{dx}}$$

```
[Out] erf(f^(1/2)*(d*x)^(1/2)/d^(1/2))*f^(1/2)*Pi^(1/2)/d^(3/2)+erfi(f^(1/2)*(d*x
)^(1/2)/d^(1/2))*f^(1/2)*Pi^(1/2)/d^(3/2)-2*sinh(f*x)/d/(d*x)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {3297, 3307, 2180, 2204, 2205}

$$\frac{\sqrt{\pi}\,\sqrt{f}\,\mathrm{Erf}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{d^{3/2}}+\frac{\sqrt{\pi}\,\sqrt{f}\,\mathrm{Erfi}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sinh(fx)}{d\sqrt{dx}}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[f*x]/(d*x)^(3/2),x]
```

```
[Out] (Sqrt[f]*Sqrt[Pi]*Erf[(Sqrt[f]*Sqrt[d*x])/Sqrt[d]])/d^(3/2) + (Sqrt[f]*Sqrt
[Pi]*Erfi[(Sqrt[f]*Sqrt[d*x])/Sqrt[d]])/d^(3/2) - (2*Sinh[f*x])/(d*Sqrt[d*x
])
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3297

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

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sinh(fx)}{(dx)^{3/2}}\,dx &= -\frac{2\sinh(fx)}{d\sqrt{dx}} + \frac{(2f)\int \frac{\cosh(fx)}{\sqrt{dx}}\,dx}{d} \\
&= -\frac{2\sinh(fx)}{d\sqrt{dx}} + \frac{f\int \frac{e^{-fx}}{\sqrt{dx}}\,dx}{d} + \frac{f\int \frac{e^{fx}}{\sqrt{dx}}\,dx}{d} \\
&= -\frac{2\sinh(fx)}{d\sqrt{dx}} + \frac{(2f)\,\text{Subst}\left(\int e^{-\frac{fx^2}{d}}\,dx, x, \sqrt{dx}\right)}{d^2} + \frac{(2f)\,\text{Subst}\left(\int e^{\frac{fx^2}{d}}\,dx, x, \sqrt{dx}\right)}{d^2} \\
&= \frac{\sqrt{f}\,\sqrt{\pi}\,\text{erf}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{d^{3/2}} + \frac{\sqrt{f}\,\sqrt{\pi}\,\text{erfi}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{d^{3/2}} - \frac{2\sinh(fx)}{d\sqrt{dx}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.56

$$\frac{x\left(-2\sinh(fx) + \sqrt{-fx}\,\Gamma\left(\frac{1}{2}, -fx\right) - \sqrt{fx}\,\Gamma\left(\frac{1}{2}, fx\right)\right)}{(dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[f*x]/(d*x)^(3/2),x]
```

```
[Out] (x*(Sqrt[-(f*x)]*Gamma[1/2, -(f*x)] - Sqrt[f*x]*Gamma[1/2, f*x] - 2*Sinh[f*
x]))/(d*x)^(3/2)
```

fricas [B] time = 0.57, size = 137, normalized size = 1.57

$$\frac{\sqrt{\pi}\left(dx\cosh\left(fx\right)+dx\sinh\left(fx\right)\right)\sqrt{\frac{f}{d}}\ \operatorname{erf}\left(\sqrt{dx}\sqrt{\frac{f}{d}}\right)-\sqrt{\pi}\left(dx\cosh\left(fx\right)+dx\sinh\left(fx\right)\right)\sqrt{-\frac{f}{d}}\ \operatorname{erf}\left(\sqrt{dx}\sqrt{-\frac{f}{d}}\right.}{d^2x\cosh\left(fx\right)+d^2x\sinh\left(fx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)^(3/2),x, algorithm="fricas")
```

```
[Out] (sqrt(pi)*(d*x*cosh(f*x) + d*x*sinh(f*x))*sqrt(f/d)*erf(sqrt(d*x)*sqrt(f/d)
) - sqrt(pi)*(d*x*cosh(f*x) + d*x*sinh(f*x))*sqrt(-f/d)*erf(sqrt(d*x)*sqrt(
-f/d)) - sqrt(d*x)*(cosh(f*x)^2 + 2*cosh(f*x)*sinh(f*x) + sinh(f*x)^2 - 1))
/(d^2*x*cosh(f*x) + d^2*x*sinh(f*x))
```

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

$$\int \frac{\sinh\left(fx\right)}{\left(dx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sinh(f*x)/(d*x)^(3/2), x)
```

maple [C] time = 0.03, size = 120, normalized size = 1.38

$$-\frac{\sqrt{\pi}\ x^{\frac{3}{2}}\sqrt{2}\ \left(if\right)^{\frac{3}{2}}\left(\frac{2\sqrt{2}\ \sqrt{if}\ \mathrm{e}^{-fx}}{\sqrt{\pi}\ \sqrt{x}\ f}-\frac{2\sqrt{2}\ \sqrt{if}\ \mathrm{e}^{fx}}{\sqrt{\pi}\ \sqrt{x}\ f}+\frac{2\sqrt{if}\ \sqrt{2}\ \operatorname{erf}\left(\sqrt{x}\ \sqrt{f}\right)}{\sqrt{f}}+\frac{2\sqrt{if}\ \sqrt{2}\ \operatorname{erfi}\left(\sqrt{x}\ \sqrt{f}\right)}{\sqrt{f}}\right)}{4\left(dx\right)^{\frac{3}{2}}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(f*x)/(d*x)^(3/2),x)
```

```
[Out] -1/4*Pi^(1/2)/(d*x)^(3/2)*x^(3/2)*2^(1/2)*(I*f)^(3/2)/f*(2/Pi^(1/2)/x^(1/2)
*2^(1/2)*(I*f)^(1/2)/f*exp(-f*x)-2/Pi^(1/2)/x^(1/2)*2^(1/2)*(I*f)^(1/2)/f*e
xp(f*x)+2*(I*f)^(1/2)*2^(1/2)/f^(1/2)*erf(x^(1/2)*f^(1/2))+2*(I*f)^(1/2)*2^
(1/2)/f^(1/2)*erfi(x^(1/2)*f^(1/2)))
```

maxima [A] time = 0.64, size = 74, normalized size = 0.85

$$\frac{\frac{f\left(\frac{\sqrt{\pi}\operatorname{erf}\left(\sqrt{dx}\sqrt{\frac{f}{d}}\right)}{\sqrt{\frac{f}{d}}}+\frac{\sqrt{\pi}\operatorname{erf}\left(\sqrt{dx}\sqrt{-\frac{f}{d}}\right)}{\sqrt{-\frac{f}{d}}}\right)}{d}-\frac{2\sinh\left(fx\right)}{\sqrt{dx}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)^(3/2),x, algorithm="maxima")
```

```
[Out] (f*(sqrt(pi)*erf(sqrt(d*x)*sqrt(f/d))/sqrt(f/d) + sqrt(pi)*erf(sqrt(d*x)*sq
rt(-f/d))/sqrt(-f/d))/d - 2*sinh(f*x)/sqrt(d*x))/d
```

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

$$\int \frac{\sinh\left(f\,x\right)}{\left(d\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(f*x)/(d*x)^(3/2),x)
```

```
[Out] int(sinh(f*x)/(d*x)^(3/2), x)
```

sympy [C] time = 2.79, size = 94, normalized size = 1.08

$$\frac{\sqrt{2}\,\sqrt{\pi}\,\sqrt{f}\,e^{-\frac{i\pi}{4}}C\left(\frac{\sqrt{2}\,\sqrt{f}\,\sqrt{x}\,e^{\frac{i\pi}{4}}}{\sqrt{\pi}}\right)\Gamma\left(\frac{1}{4}\right)}{2d^{\frac{3}{2}}\Gamma\left(\frac{5}{4}\right)} - \frac{\sinh\left(fx\right)\Gamma\left(\frac{1}{4}\right)}{2d^{\frac{3}{2}}\sqrt{x}\,\Gamma\left(\frac{5}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)**(3/2),x)
```

```
[Out] sqrt(2)*sqrt(pi)*sqrt(f)*exp(-I*pi/4)*fresnelc(sqrt(2)*sqrt(f)*sqrt(x)*exp(
I*pi/4)/sqrt(pi))*gamma(1/4)/(2*d**(3/2)*gamma(5/4)) - sinh(f*x)*gamma(1/4)
/(2*d**(3/2)*sqrt(x)*gamma(5/4))
```

3.64 $\int \frac{\sinh(fx)}{(dx)^{5/2}}\,dx$

Optimal. Leaf size=114

$$-\frac{2\sqrt{\pi}\,f^{3/2}\operatorname{erf}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{3d^{5/2}}+\frac{2\sqrt{\pi}\,f^{3/2}\operatorname{erfi}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{4f\cosh(fx)}{3d^2\sqrt{dx}}-\frac{2\sinh(fx)}{3d(dx)^{3/2}}$$

```
[Out] -2/3*sinh(f*x)/d/(d*x)^(3/2)-2/3*f^(3/2)*erf(f^(1/2)*(d*x)^(1/2)/d^(1/2))*P
i^(1/2)/d^(5/2)+2/3*f^(3/2)*erfi(f^(1/2)*(d*x)^(1/2)/d^(1/2))*Pi^(1/2)/d^(5
/2)-4/3*f*cosh(f*x)/d^2/(d*x)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {3297, 3308, 2180, 2204, 2205}

$$-\frac{2\sqrt{\pi}\,f^{3/2}\operatorname{Erf}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{3d^{5/2}}+\frac{2\sqrt{\pi}\,f^{3/2}\operatorname{Erfi}\left(\frac{\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{4f\cosh(fx)}{3d^2\sqrt{dx}}-\frac{2\sinh(fx)}{3d(dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[f*x]/(d*x)^(5/2),x]
```

```
[Out] (-4*f*Cosh[f*x])/(3*d^2*Sqrt[d*x]) - (2*f^(3/2)*Sqrt[Pi]*Erf[(Sqrt[f]*Sqrt[
d*x])/Sqrt[d]])/(3*d^(5/2)) + (2*f^(3/2)*Sqrt[Pi]*Erfi[(Sqrt[f]*Sqrt[d*x])/
Sqrt[d]])/(3*d^(5/2)) - (2*Sinh[f*x])/(3*d*(d*x)^(3/2))
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2205

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erf[(c + d*x)*Rt[-(b*Log[F]), 2]])/(2*d*Rt[-(b*Log[F]), 2]), x] /; Fr
```

```
eeQ[{F, a, b, c, d}, x] && NegQ[b]
```

Rule 3297

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

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sinh(fx)}{(dx)^{5/2}}\,dx &= -\frac{2\sinh(fx)}{3d(dx)^{3/2}} + \frac{(2f)\int \frac{\cosh(fx)}{(dx)^{3/2}}\,dx}{3d} \\
&= -\frac{4f\cosh(fx)}{3d^2\sqrt{dx}} - \frac{2\sinh(fx)}{3d(dx)^{3/2}} + \frac{\left(4f^2\right)\int \frac{\sinh(fx)}{\sqrt{dx}}\,dx}{3d^2} \\
&= -\frac{4f\cosh(fx)}{3d^2\sqrt{dx}} - \frac{2\sinh(fx)}{3d(dx)^{3/2}} - \frac{\left(2f^2\right)\int \frac{e^{-fx}}{\sqrt{dx}}\,dx}{3d^2} + \frac{\left(2f^2\right)\int \frac{e^{fx}}{\sqrt{dx}}\,dx}{3d^2} \\
&= -\frac{4f\cosh(fx)}{3d^2\sqrt{dx}} - \frac{2\sinh(fx)}{3d(dx)^{3/2}} - \frac{\left(4f^2\right)\mathrm{Subst}\left(\int e^{-\frac{fx^2}{d}}\,dx, x, \sqrt{dx}\right)}{3d^3} + \frac{\left(4f^2\right)\mathrm{Subst}\left(\int e^{\frac{fx^2}{d}}\,dx, x, \ldots\right.}{3d^3} \\
&= -\frac{4f\cosh(fx)}{3d^2\sqrt{dx}} - \frac{2f^{3/2}\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{3d^{5/2}} + \frac{2f^{3/2}\sqrt{\pi}\,\mathrm{erfi}\left(\frac{\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{3d^{5/2}} - \frac{2\sinh(fx)}{3d(dx)^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 84, normalized size = 0.74

$$
-\frac{xe^{-fx}\left(e^{2fx}+2fxe^{2fx}+2fx+2e^{fx}(-fx)^{3/2}\Gamma\left(\frac{1}{2},-fx\right)-2e^{fx}(fx)^{3/2}\Gamma\left(\frac{1}{2},fx\right)-1\right)}{3(dx)^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[f*x]/(d*x)^(5/2),x]
```

```
[Out] -1/3*(x*(-1 + E^(2*f*x) + 2*f*x + 2*E^(2*f*x)*f*x + 2*E^(f*x)*(-(f*x))^(3/2
)*Gamma[1/2, -(f*x)] - 2*E^(f*x)*(f*x)^(3/2)*Gamma[1/2, f*x]))/(E^(f*x)*(d*
x)^(5/2))
```

fricas [B] time = 0.58, size = 178, normalized size = 1.56

$$-\frac{2\sqrt{\pi}\left(dfx^2\cosh\left(fx\right)+dfx^2\sinh\left(fx\right)\right)\sqrt{\frac{f}{d}}\operatorname{erf}\left(\sqrt{dx}\sqrt{\frac{f}{d}}\right)+2\sqrt{\pi}\left(dfx^2\cosh\left(fx\right)+dfx^2\sinh\left(fx\right)\right)\sqrt{-\frac{f}{d}}}{3\left(d^3x^2\cosh\left(\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/3*(2*sqrt(pi)*(d*f*x^2*cosh(f*x) + d*f*x^2*sinh(f*x))*sqrt(f/d)*erf(sqrt
(d*x)*sqrt(f/d)) + 2*sqrt(pi)*(d*f*x^2*cosh(f*x) + d*f*x^2*sinh(f*x))*sqrt(
-f/d)*erf(sqrt(d*x)*sqrt(-f/d)) + ((2*f*x + 1)*cosh(f*x)^2 + 2*(2*f*x + 1)*
cosh(f*x)*sinh(f*x) + (2*f*x + 1)*sinh(f*x)^2 + 2*f*x - 1)*sqrt(d*x))/(d^3*
x^2*cosh(f*x) + d^3*x^2*sinh(f*x))
```

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

$$\int \frac{\sinh\left(fx\right)}{\left(dx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sinh(f*x)/(d*x)^(5/2), x)
```

maple [C] time = 0.03, size = 132, normalized size = 1.16

$$-\frac{\sqrt{\pi}\,x^{\frac{5}{2}}\sqrt{2}\,\left(if\right)^{\frac{5}{2}}\left(-\frac{4\sqrt{2}\,\left(2fx+1\right)\mathrm{e}^{fx}}{3\sqrt{\pi}\,x^{\frac{3}{2}}\sqrt{if}\,f}+\frac{4\sqrt{2}\,\left(-2fx+1\right)\mathrm{e}^{-fx}}{3\sqrt{\pi}\,x^{\frac{3}{2}}\sqrt{if}\,f}-\frac{8\sqrt{2}\,\sqrt{f}\,\operatorname{erf}\left(\sqrt{x}\,\sqrt{f}\right)}{3\sqrt{if}}+\frac{8\sqrt{2}\,\sqrt{f}\,\operatorname{erfi}\left(\sqrt{x}\,\sqrt{f}\right)}{3\sqrt{if}}\right)}{8\left(dx\right)^{\frac{5}{2}}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(f*x)/(d*x)^(5/2),x)
```

```
[Out] -1/8*Pi^(1/2)/(d*x)^(5/2)*x^(5/2)*2^(1/2)*(I*f)^(5/2)/f*(-4/3/Pi^(1/2)/x^(3
/2)*2^(1/2)/(I*f)^(1/2)*(2*f*x+1)/f*exp(f*x)+4/3/Pi^(1/2)/x^(3/2)*2^(1/2)/(
```

```
I*f)^(1/2)*(-2*f*x+1)/f*exp(-f*x)-8/3/(I*f)^(1/2)*2^(1/2)*f^(1/2)*erf(x^(1/
2)*f^(1/2))+8/3/(I*f)^(1/2)*2^(1/2)*f^(1/2)*erfi(x^(1/2)*f^(1/2)))
```

maxima [A] time = 0.58, size = 57, normalized size = 0.50

$$-\frac{\frac{f\left(\frac{\sqrt{fx}\,\Gamma\left(-\frac{1}{2},fx\right)}{\sqrt{dx}}+\frac{\sqrt{-fx}\,\Gamma\left(-\frac{1}{2},-fx\right)}{\sqrt{dx}}\right)}{d}+\frac{2\sinh\left(fx\right)}{(dx)^{\frac{3}{2}}}}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*(f*(sqrt(f*x)*gamma(-1/2, f*x)/sqrt(d*x) + sqrt(-f*x)*gamma(-1/2, -f*x
)/sqrt(d*x))/d + 2*sinh(f*x)/(d*x)^(3/2))/d
```

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

$$\int \frac{\sinh\left(f\,x\right)}{(d\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(f*x)/(d*x)^(5/2),x)
```

```
[Out] int(sinh(f*x)/(d*x)^(5/2), x)
```

sympy [C] time = 19.63, size = 129, normalized size = 1.13

$$-\frac{\sqrt{2}\sqrt{\pi}\,f^{\frac{3}{2}}e^{-\frac{3i\pi}{4}}S\left(\frac{\sqrt{2}\sqrt{f}\sqrt{x}e^{\frac{i\pi}{4}}}{\sqrt{\pi}}\right)\Gamma\left(-\frac{1}{4}\right)}{3d^{\frac{5}{2}}\Gamma\left(\frac{3}{4}\right)}+\frac{f\cosh\left(fx\right)\Gamma\left(-\frac{1}{4}\right)}{3d^{\frac{5}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}+\frac{\sinh\left(fx\right)\Gamma\left(-\frac{1}{4}\right)}{6d^{\frac{5}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(f*x)/(d*x)**(5/2),x)
```

```
[Out] -sqrt(2)*sqrt(pi)*f**(3/2)*exp(-3*I*pi/4)*fresnels(sqrt(2)*sqrt(f)*sqrt(x)*
exp(I*pi/4)/sqrt(pi))*gamma(-1/4)/(3*d**(5/2)*gamma(3/4)) + f*cosh(f*x)*gam
ma(-1/4)/(3*d**(5/2)*sqrt(x)*gamma(3/4)) + sinh(f*x)*gamma(-1/4)/(6*d**(5/2
)*x**(3/2)*gamma(3/4))
```

3.65 $\int \sqrt{c+dx}\,\mathrm{csch}(a+bx)\,dx$

Optimal. Leaf size=19

$$\mathrm{Int}\left(\sqrt{c+dx}\,\mathrm{csch}(a+bx),x\right)$$

```
[Out] Unintegrable(csch(b*x+a)*(d*x+c)^(1/2),x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \sqrt{c+dx}\,\mathrm{csch}(a+bx)\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[c + d*x]*Csch[a + b*x],x]
```

```
[Out] Defer[Int][Sqrt[c + d*x]*Csch[a + b*x], x]
```

Rubi steps

$$\int \sqrt{c+dx}\,\mathrm{csch}(a+bx)\,dx = \int \sqrt{c+dx}\,\mathrm{csch}(a+bx)\,dx$$

Mathematica [A] time = 22.66, size = 0, normalized size = 0.00

$$\int \sqrt{c+dx}\,\mathrm{csch}(a+bx)\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[c + d*x]*Csch[a + b*x],x]
```

```
[Out] Integrate[Sqrt[c + d*x]*Csch[a + b*x], x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{dx+c}\,\mathrm{csch}\left(bx+a\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(b*x+a)*(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*x + c)*csch(b*x + a), x)
```

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

$$\int \sqrt{dx + c}\,\operatorname{csch}\left(bx + a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(b*x+a)*(d*x+c)^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(d*x + c)*csch(b*x + a), x)
```

maple [A] time = 0.08, size = 0, normalized size = 0.00

$$\int \operatorname{csch}\left(bx + a\right)\sqrt{dx + c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(b*x+a)*(d*x+c)^(1/2),x)
[Out] int(csch(b*x+a)*(d*x+c)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{dx + c}\,\operatorname{csch}\left(bx + a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(b*x+a)*(d*x+c)^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(d*x + c)*csch(b*x + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^(1/2)/sinh(a + b*x),x)
[Out] int((c + d*x)^(1/2)/sinh(a + b*x), x)
```

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

$$\int \sqrt{c + dx}\,\operatorname{csch}\left(a + bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(b*x+a)*(d*x+c)**(1/2),x)
[Out] Integral(sqrt(c + d*x)*csch(a + b*x), x)
```

3.66 $\int \frac{\operatorname{csch}(a+bx)}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=19

$$\operatorname{Int}\left(\frac{\operatorname{csch}(a+bx)}{\sqrt{c+dx}},x\right)$$

```
[Out] Unintegrable(csch(b*x+a)/(d*x+c)^(1/2),x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}(a+bx)}{\sqrt{c+dx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csch[a + b*x]/Sqrt[c + d*x],x]
[Out] Defer[Int][Csch[a + b*x]/Sqrt[c + d*x], x]
```

Rubi steps

$$\int \frac{\operatorname{csch}(a+bx)}{\sqrt{c+dx}}\,dx = \int \frac{\operatorname{csch}(a+bx)}{\sqrt{c+dx}}\,dx$$

Mathematica [A] time = 21.03, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(a+bx)}{\sqrt{c+dx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csch[a + b*x]/Sqrt[c + d*x],x]
[Out] Integrate[Csch[a + b*x]/Sqrt[c + d*x], x]
```

fricas [A] time = 0.56, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(bx+a)}{\sqrt{dx+c}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(b*x+a)/(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(csch(b*x + a)/sqrt(d*x + c), x)
```

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

$$\int \frac{\operatorname{csch}(bx+a)}{\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(b*x+a)/(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(csch(b*x + a)/sqrt(d*x + c), x)
```

maple [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(bx+a)}{\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(b*x+a)/(d*x+c)^(1/2),x)
```

```
[Out] int(csch(b*x+a)/(d*x+c)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(bx+a)}{\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(b*x+a)/(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(csch(b*x + a)/sqrt(d*x + c), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{\sinh(a+b\,x)\,\sqrt{c+d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(a + b*x)*(c + d*x)^(1/2)),x)
```

```
[Out] int(1/(sinh(a + b*x)*(c + d*x)^(1/2)), x)
```

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

$$\int \frac{\operatorname{csch}(a+bx)}{\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(b*x+a)/(d*x+c)**(1/2),x)
[Out] Integral(csch(a + b*x)/sqrt(c + d*x), x)
```

3.67 $\int \frac{\sinh^{\frac{3}{2}}(x)}{x^3}\,dx$

Optimal. Leaf size=63

$$\frac{9}{8}\text{Int}\left(\frac{\sinh^{\frac{3}{2}}(x)}{x},x\right)+\frac{3}{8}\text{Int}\left(\frac{1}{x\sqrt{\sinh(x)}},x\right)-\frac{\sinh^{\frac{3}{2}}(x)}{2x^2}-\frac{3\sqrt{\sinh(x)}\,\cosh(x)}{4x}$$

```
[Out] -1/2*sinh(x)^(3/2)/x^2-3/4*cosh(x)*sinh(x)^(1/2)/x+9/8*Unintegrable(sinh(x)
^(3/2)/x,x)+3/8*Unintegrable(1/x/sinh(x)^(1/2),x)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh^{\frac{3}{2}}(x)}{x^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sinh[x]^(3/2)/x^3,x]
```

```
[Out] (-3*Cosh[x]*Sqrt[Sinh[x]])/(4*x) - Sinh[x]^(3/2)/(2*x^2) + (3*Defer[Int][1/
(x*Sqrt[Sinh[x]]), x])/8 + (9*Defer[Int][Sinh[x]^(3/2)/x, x])/8
```

Rubi steps

$$\int \frac{\sinh^{\frac{3}{2}}(x)}{x^3}\,dx=-\frac{3\cosh(x)\sqrt{\sinh(x)}}{4x}-\frac{\sinh^{\frac{3}{2}}(x)}{2x^2}+\frac{3}{8}\int \frac{1}{x\sqrt{\sinh(x)}}\,dx+\frac{9}{8}\int \frac{\sinh^{\frac{3}{2}}(x)}{x}\,dx$$

Mathematica [A] time = 6.04, size = 0, normalized size = 0.00

$$\int \frac{\sinh^{\frac{3}{2}}(x)}{x^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sinh[x]^(3/2)/x^3,x]
```

```
[Out] Integrate[Sinh[x]^(3/2)/x^3, x]
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(x)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int \frac{\sinh(x)^{\frac{3}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(x)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] integrate(sinh(x)^(3/2)/x^3, x)
```

maple [F(-2)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh^{\frac{3}{2}}(x)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(x)^(3/2)/x^3,x)
```

```
[Out] int(sinh(x)^(3/2)/x^3,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh(x)^{\frac{3}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(x)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] integrate(sinh(x)^(3/2)/x^3, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sinh(x)^{3/2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(x)^(3/2)/x^3,x)
```

```
[Out] int(sinh(x)^(3/2)/x^3, x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh^{\frac{3}{2}}(x)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(x)**(3/2)/x**3,x)
```

```
[Out] Integral(sinh(x)**(3/2)/x**3, x)
```

3.68 $\int \left(\frac{x}{\sinh^{\frac{3}{2}}(x)} - x\sqrt{\sinh(x)}\right) dx$

Optimal. Leaf size=20

$$4\sqrt{\sinh(x)} - \frac{2x\cosh(x)}{\sqrt{\sinh(x)}}$$

```
[Out] -2*x*cosh(x)/sinh(x)^(1/2)+4*sinh(x)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {3315}

$$4\sqrt{\sinh(x)} - \frac{2x\cosh(x)}{\sqrt{\sinh(x)}}$$

Antiderivative was successfully verified.

```
[In] Int[x/Sinh[x]^(3/2) - x*Sqrt[Sinh[x]],x]
```

```
[Out] (-2*x*Cosh[x])/Sqrt[Sinh[x]] + 4*Sqrt[Sinh[x]]
```

Rule 3315

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[((c + d*x)*Cos[e + f*x]*(b*Sin[e + f*x])^(n + 1))/(b*f*(n + 1)), x] +
 (Dist[(n + 2)/(b^2*(n + 1)), Int[(c + d*x)*(b*Sin[e + f*x])^(n + 2), x], x
] - Simp[(d*(b*Sin[e + f*x])^(n + 2))/(b^2*f^2*(n + 1)*(n + 2)), x]) /; Fre
eQ[{b, c, d, e, f}, x] && LtQ[n, -1] && NeQ[n, -2]
```

Rubi steps

$$\begin{aligned}
\int \left(\frac{x}{\sinh^{\frac{3}{2}}(x)} - x\sqrt{\sinh(x)}\right) dx &= \int \frac{x}{\sinh^{\frac{3}{2}}(x)}\, dx - \int x\sqrt{\sinh(x)}\, dx \\
&= -\frac{2x\cosh(x)}{\sqrt{\sinh(x)}} + 4\sqrt{\sinh(x)}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 17, normalized size = 0.85

$$\frac{4\sinh(x) - 2x\cosh(x)}{\sqrt{\sinh(x)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Sinh[x]^(3/2) - x*Sqrt[Sinh[x]],x]
```

```
[Out] (-2*x*Cosh[x] + 4*Sinh[x])/Sqrt[Sinh[x]]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)^(3/2)-x*sinh(x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -x\sqrt{\sinh(x)} + \frac{x}{\sinh(x)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)^(3/2)-x*sinh(x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-x*sqrt(sinh(x)) + x/sinh(x)^(3/2), x)
```

maple [F(-2)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sinh(x)^{\frac{3}{2}}} - x\left(\sqrt{\sinh}\,(x)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/sinh(x)^(3/2)-x*sinh(x)^(1/2),x)
```

```
[Out] int(x/sinh(x)^(3/2)-x*sinh(x)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -x\sqrt{\sinh(x)} + \frac{x}{\sinh(x)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)^(3/2)-x*sinh(x)^(1/2),x, algorithm="maxima")
```

[Out] integrate(-x*sqrt(sinh(x)) + x/sinh(x)^(3/2), x)

mupad [B] time = 0.17, size = 38, normalized size = 1.90

$$-\frac{2\sqrt{\frac{e^x}{2}-\frac{e^{-x}}{2}}\,\left(x-2\,e^{2\,x}+x\,e^{2\,x}+2\right)}{e^{2\,x}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x/sinh(x)^(3/2) - x*sinh(x)^(1/2),x)

[Out] -(2*(exp(x)/2 - exp(-x)/2)^(1/2)*(x - 2*exp(2*x) + x*exp(2*x) + 2))/(exp(2*x) - 1)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{x}{\sinh^{\frac{3}{2}}(x)}\right)dx-\int x\sqrt{\sinh(x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x/sinh(x)**(3/2)-x*sinh(x)**(1/2),x)

[Out] -Integral(-x/sinh(x)**(3/2), x) - Integral(x*sqrt(sinh(x)), x)

3.69 $\int \left(\frac{x}{\sinh^{\frac{5}{2}}(x)}+\frac{x}{3\sqrt{\sinh(x)}}\right)dx$

Optimal. Leaf size=24

$$-\frac{4}{3\sqrt{\sinh(x)}}-\frac{2x\cosh(x)}{3\sinh^{\frac{3}{2}}(x)}$$

[Out] -2/3*x*cosh(x)/sinh(x)^(3/2)-4/3/sinh(x)^(1/2)

Rubi [A] time = 0.06, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {3315}

$$-\frac{4}{3\sqrt{\sinh(x)}}-\frac{2x\cosh(x)}{3\sinh^{\frac{3}{2}}(x)}$$

Antiderivative was successfully verified.

[In] Int[x/Sinh[x]^(5/2) + x/(3*Sqrt[Sinh[x]]),x]

[Out] (-2*x*Cosh[x])/(3*Sinh[x]^(3/2)) - 4/(3*Sqrt[Sinh[x]])

Rule 3315

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[((c + d*x)*Cos[e + f*x]*(b*Sin[e + f*x])^(n + 1))/(b*f*(n + 1)), x] +
 (Dist[(n + 2)/(b^2*(n + 1)), Int[(c + d*x)*(b*Sin[e + f*x])^(n + 2), x], x
] - Simp[(d*(b*Sin[e + f*x])^(n + 2))/(b^2*f^2*(n + 1)*(n + 2)), x]) /; Fre
eQ[{b, c, d, e, f}, x] && LtQ[n, -1] && NeQ[n, -2]
```

Rubi steps

$$\begin{aligned}\int \left(\frac{x}{\sinh^{\frac{5}{2}}(x)}+\frac{x}{3\sqrt{\sinh(x)}}\right)dx &= \frac{1}{3}\int \frac{x}{\sqrt{\sinh(x)}}\,dx+\int \frac{x}{\sinh^{\frac{5}{2}}(x)}\,dx\\ &= -\frac{2x\cosh(x)}{3\sinh^{\frac{3}{2}}(x)}-\frac{4}{3\sqrt{\sinh(x)}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 22, normalized size = 0.92

$$\frac{1}{6}\sqrt{\sinh(x)}\,(-8\text{csch}(x)-4x\coth(x)\text{csch}(x))$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Sinh[x]^(5/2) + x/(3*Sqrt[Sinh[x]]),x]
```

```
[Out] ((-8*Csch[x] - 4*x*Coth[x]*Csch[x])*Sqrt[Sinh[x]])/6
```

fricas [B] time = 0.55, size = 108, normalized size = 4.50

$$-\frac{4\left((x+2)\cosh(x)^{3}+3\,(x+2)\cosh(x)\sinh(x)^{2}+(x+2)\sinh(x)^{3}+(x-2)\cosh(x)+\left(3\,(x+2)\cosh(x)^{2}+x\right.\right.}{3\left(\cosh(x)^{4}+4\,\cosh(x)\sinh(x)^{3}+\sinh(x)^{4}+2\left(3\,\cosh(x)^{2}-1\right)\sinh(x)^{2}-2\,\cosh(x)^{2}+4\left(\cosh(x)^{3}-c\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)^(5/2)+1/3*x/sinh(x)^(1/2),x, algorithm="fricas")
```

```
[Out] -4/3*((x + 2)*cosh(x)^3 + 3*(x + 2)*cosh(x)*sinh(x)^2 + (x + 2)*sinh(x)^3 +
 (x - 2)*cosh(x) + (3*(x + 2)*cosh(x)^2 + x - 2)*sinh(x))*sqrt(sinh(x))/(co
sh(x)^4 + 4*cosh(x)*sinh(x)^3 + sinh(x)^4 + 2*(3*cosh(x)^2 - 1)*sinh(x)^2 -
 2*cosh(x)^2 + 4*(cosh(x)^3 - cosh(x))*sinh(x) + 1)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{3\,\sqrt{\sinh(x)}}+\frac{x}{\sinh(x)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)^(5/2)+1/3*x/sinh(x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/3*x/sqrt(sinh(x)) + x/sinh(x)^(5/2), x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{x}{\sinh(x)^{\frac{5}{2}}}+\frac{x}{3\sqrt{\sinh(x)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/sinh(x)^(5/2)+1/3*x/sinh(x)^(1/2),x)
```

```
[Out] int(x/sinh(x)^(5/2)+1/3*x/sinh(x)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{3\,\sqrt{\sinh(x)}}+\frac{x}{\sinh(x)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)^(5/2)+1/3*x/sinh(x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/3*x/sqrt(sinh(x)) + x/sinh(x)^(5/2), x)
```

mupad [B] time = 0.15, size = 40, normalized size = 1.67

$$-\frac{4\,e^{x}\,\sqrt{\frac{e^{x}}{2}-\frac{e^{-x}}{2}}\,\left(x+2\,e^{2\,x}+x\,e^{2\,x}-2\right)}{3\,{\left(e^{2\,x}-1\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(3*sinh(x)^(1/2)) + x/sinh(x)^(5/2),x)
```

```
[Out] -(4*exp(x)*(exp(x)/2 - exp(-x)/2)^(1/2)*(x + 2*exp(2*x) + x*exp(2*x) - 2))/
(3*(exp(2*x) - 1)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{3x}{\sinh^{\frac{5}{2}}(x)}\,dx+\int \frac{x}{\sqrt{\sinh(x)}}\,dx}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)**(5/2)+1/3*x/sinh(x)**(1/2),x)
```

```
[Out] (Integral(3*x/sinh(x)**(5/2), x) + Integral(x/sqrt(sinh(x)), x))/3
```

3.70 $\int \left(\frac{x}{\sinh^{\frac{7}{2}}(x)} + \frac{3}{5} x \sqrt{\sinh(x)} \right) dx$

Optimal. Leaf size=47

$$-\frac{4}{15 \sinh^{\frac{3}{2}}(x)} - \frac{12\sqrt{\sinh(x)}}{5} - \frac{2x \cosh(x)}{5 \sinh^{\frac{5}{2}}(x)} + \frac{6x \cosh(x)}{5\sqrt{\sinh(x)}}$$

```
[Out] -2/5*x*cosh(x)/sinh(x)^(5/2)-4/15/sinh(x)^(3/2)+6/5*x*cosh(x)/sinh(x)^(1/2)
-12/5*sinh(x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {3315}

$$-\frac{4}{15 \sinh^{\frac{3}{2}}(x)} - \frac{12\sqrt{\sinh(x)}}{5} - \frac{2x \cosh(x)}{5 \sinh^{\frac{5}{2}}(x)} + \frac{6x \cosh(x)}{5\sqrt{\sinh(x)}}$$

Antiderivative was successfully verified.

```
[In] Int[x/Sinh[x]^(7/2) + (3*x*Sqrt[Sinh[x]])/5,x]
```

```
[Out] (-2*x*Cosh[x])/(5*Sinh[x]^(5/2)) - 4/(15*Sinh[x]^(3/2)) + (6*x*Cosh[x])/(5*
Sqrt[Sinh[x]]) - (12*Sqrt[Sinh[x]])/5
```

Rule 3315

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[((c + d*x)*Cos[e + f*x]*(b*Sin[e + f*x])^(n + 1))/(b*f*(n + 1)), x] +
 (Dist[(n + 2)/(b^2*(n + 1)), Int[(c + d*x)*(b*Sin[e + f*x])^(n + 2), x], x
] - Simp[(d*(b*Sin[e + f*x])^(n + 2))/(b^2*f^2*(n + 1)*(n + 2)), x]) /; Fre
eQ[{b, c, d, e, f}, x] && LtQ[n, -1] && NeQ[n, -2]
```

Rubi steps

$$\int \left(\frac{x}{\sinh^{\frac{7}{2}}(x)}+\frac{3}{5}x\sqrt{\sinh(x)}\right)dx=\frac{3}{5}\int x\sqrt{\sinh(x)}\,dx+\int \frac{x}{\sinh^{\frac{7}{2}}(x)}\,dx$$

$$=-\frac{2x\cosh(x)}{5\sinh^{\frac{5}{2}}(x)}-\frac{4}{15\sinh^{\frac{3}{2}}(x)}-\frac{3}{5}\int \frac{x}{\sinh^{\frac{3}{2}}(x)}\,dx+\frac{3}{5}\int x\sqrt{\sinh(x)}\,dx$$

$$=-\frac{2x\cosh(x)}{5\sinh^{\frac{5}{2}}(x)}-\frac{4}{15\sinh^{\frac{3}{2}}(x)}+\frac{6x\cosh(x)}{5\sqrt{\sinh(x)}}-\frac{12\sqrt{\sinh(x)}}{5}$$

Mathematica [A] time = 0.12, size = 33, normalized size = 0.70

$$\frac{46\sinh(x)-18\sinh(3x)-21x\cosh(x)+9x\cosh(3x)}{30\sinh^{\frac{5}{2}}(x)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Sinh[x]^(7/2) + (3*x*Sqrt[Sinh[x]])/5,x]
```

```
[Out] (-21*x*Cosh[x] + 9*x*Cosh[3*x] + 46*Sinh[x] - 18*Sinh[3*x])/(30*Sinh[x]^(5/
2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)^(7/2)+3/5*x*sinh(x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{3}{5}x\sqrt{\sinh(x)}+\frac{x}{\sinh(x)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)^(7/2)+3/5*x*sinh(x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(3/5*x*sqrt(sinh(x)) + x/sinh(x)^(7/2), x)
```

maple [F(-2)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sinh(x)^{\frac{7}{2}}} + \frac{3x\left(\sqrt{\sinh}\,(x)\right)}{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/sinh(x)^(7/2)+3/5*x*sinh(x)^(1/2),x)
```

```
[Out] int(x/sinh(x)^(7/2)+3/5*x*sinh(x)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{3}{5}\,x\sqrt{\sinh(x)} + \frac{x}{\sinh(x)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)^(7/2)+3/5*x*sinh(x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(3/5*x*sqrt(sinh(x)) + x/sinh(x)^(7/2), x)
```

mupad [B] time = 0.29, size = 111, normalized size = 2.36

$$\frac{12\,x\,e^{2\,x}\,\sqrt{\frac{e^{x}}{2}-\frac{e^{-x}}{2}}}{5\,\left(e^{2\,x}-1\right)}-\frac{e^{2\,x}\,\left(\frac{8\,x}{5}+\frac{16}{15}\right)\,\sqrt{\frac{e^{x}}{2}-\frac{e^{-x}}{2}}}{{\left(e^{2\,x}-1\right)}^2}-\left(\frac{6\,x}{5}+\frac{12}{5}\right)\,\sqrt{\frac{e^{x}}{2}-\frac{e^{-x}}{2}}-\frac{16\,x\,e^{2\,x}\,\sqrt{\frac{e^{x}}{2}-\frac{e^{-x}}{2}}}{5\,{\left(e^{2\,x}-1\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x*sinh(x)^(1/2))/5 + x/sinh(x)^(7/2),x)
```

```
[Out] (12*x*exp(2*x)*(exp(x)/2 - exp(-x)/2)^(1/2))/(5*(exp(2*x) - 1)) - (exp(2*x)
*((8*x)/5 + 16/15)*(exp(x)/2 - exp(-x)/2)^(1/2))/(exp(2*x) - 1)^2 - ((6*x)/
5 + 12/5)*(exp(x)/2 - exp(-x)/2)^(1/2) - (16*x*exp(2*x)*(exp(x)/2 - exp(-x)
/2)^(1/2))/(5*(exp(2*x) - 1)^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{5x}{\sinh^{\frac{7}{2}}(x)}\,dx + \int 3x\sqrt{\sinh(x)}\,dx}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sinh(x)**(7/2)+3/5*x*sinh(x)**(1/2),x)
```

```
[Out] (Integral(5*x/sinh(x)**(7/2), x) + Integral(3*x*sqrt(sinh(x)), x))/5
```

3.71 $\int \left(\frac{x^2}{\sinh^{\frac{3}{2}}(x)} - x^2\sqrt{\sinh(x)} \right) dx$

Optimal. Leaf size=58

$$-\frac{2x^2\cosh(x)}{\sqrt{\sinh(x)}} + 8x\sqrt{\sinh(x)} - \frac{16i\sqrt{\sinh(x)}\,E\left(\frac{\pi}{4} - \frac{ix}{2}\middle|2\right)}{\sqrt{i\sinh(x)}}$$

```
[Out] -2*x^2*cosh(x)/sinh(x)^(1/2)+8*x*sinh(x)^(1/2)-16*I*(sin(1/4*Pi+1/2*I*x)^2)
^(1/2)/sin(1/4*Pi+1/2*I*x)*EllipticE(cos(1/4*Pi+1/2*I*x),2^(1/2))*sinh(x)^(
1/2)/(I*sinh(x))^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 58, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {3316, 2640, 2639}

$$-\frac{2x^2\cosh(x)}{\sqrt{\sinh(x)}} + 8x\sqrt{\sinh(x)} - \frac{16i\sqrt{\sinh(x)}\,E\left(\frac{\pi}{4} - \frac{ix}{2}\middle|2\right)}{\sqrt{i\sinh(x)}}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/Sinh[x]^(3/2) - x^2*Sqrt[Sinh[x]],x]
```

```
[Out] (-2*x^2*Cosh[x])/Sqrt[Sinh[x]] + 8*x*Sqrt[Sinh[x]] - ((16*I)*EllipticE[Pi/4
 - (I/2)*x, 2]*Sqrt[Sinh[x]])/Sqrt[I*Sinh[x]]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rule 3316

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[((c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n + 1))/(b*f*(n + 1
)), x] + (Dist[(n + 2)/(b^2*(n + 1)), Int[(c + d*x)^m*(b*Sin[e + f*x])^(n +
 2), x], x] + Dist[(d^2*m*(m - 1))/(b^2*f^2*(n + 1)*(n + 2)), Int[(c + d*x)
```

```
^(m - 2)*(b*Sin[e + f*x])^(n + 2), x], x] - Simp[(d*m*(c + d*x)^(m - 1)*(b*
Sin[e + f*x])^(n + 2))/(b^2*f^2*(n + 1)*(n + 2)), x]) /; FreeQ[{b, c, d, e,
 f}, x] && LtQ[n, -1] && NeQ[n, -2] && GtQ[m, 1]
```

Rubi steps

$$\begin{aligned}\int\left(\frac{x^2}{\sinh^{\frac{3}{2}}(x)}-x^2\sqrt{\sinh(x)}\right)dx &= \int\frac{x^2}{\sinh^{\frac{3}{2}}(x)}\,dx-\int x^2\sqrt{\sinh(x)}\,dx\\ &= -\frac{2x^2\cosh(x)}{\sqrt{\sinh(x)}}+8x\sqrt{\sinh(x)}-8\int\sqrt{\sinh(x)}\,dx\\ &= -\frac{2x^2\cosh(x)}{\sqrt{\sinh(x)}}+8x\sqrt{\sinh(x)}-\frac{\left(8\sqrt{\sinh(x)}\right)\int\sqrt{i\sinh(x)}\,dx}{\sqrt{i\sinh(x)}}\\ &= -\frac{2x^2\cosh(x)}{\sqrt{\sinh(x)}}+8x\sqrt{\sinh(x)}-\frac{16iE\left(\frac{\pi}{4}-\frac{ix}{2}\middle|2\right)\sqrt{\sinh(x)}}{\sqrt{i\sinh(x)}}\end{aligned}$$

Mathematica [C] time = 1.23, size = 68, normalized size = 1.17

$$-\frac{2\left(-8\sqrt{2}\,(\sinh(x)-\cosh(x))\sqrt{-\sinh(x)(\sinh(x)+\cosh(x))}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};\cosh(2x)+\sinh(2x)\right)+x^2\cosh(x)\right.}{\sqrt{\sinh(x)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/Sinh[x]^(3/2) - x^2*Sqrt[Sinh[x]],x]
```

```
[Out] (-2*(x^2*Cosh[x] - 4*(-2 + x)*Sinh[x] - 8*Sqrt[2]*Hypergeometric2F1[-1/4, 1
/2, 3/4, Cosh[2*x] + Sinh[2*x]]*(-Cosh[x] + Sinh[x])*Sqrt[-(Sinh[x]*(Cosh[x
] + Sinh[x]))]))/Sqrt[Sinh[x]]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/sinh(x)^(3/2)-x^2*sinh(x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -x^2\sqrt{\sinh(x)} + \frac{x^2}{\sinh(x)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/sinh(x)^(3/2)-x^2*sinh(x)^(1/2),x, algorithm="giac")
[Out] integrate(-x^2*sqrt(sinh(x)) + x^2/sinh(x)^(3/2), x)
```

maple [F(-2)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sinh(x)^{\frac{3}{2}}} - x^2\left(\sqrt{\sinh}\,(x)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/sinh(x)^(3/2)-x^2*sinh(x)^(1/2),x)
[Out] int(x^2/sinh(x)^(3/2)-x^2*sinh(x)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -x^2\sqrt{\sinh(x)} + \frac{x^2}{\sinh(x)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/sinh(x)^(3/2)-x^2*sinh(x)^(1/2),x, algorithm="maxima")
[Out] integrate(-x^2*sqrt(sinh(x)) + x^2/sinh(x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$-\int x^2\,\sqrt{\sinh(x)} - \frac{x^2}{\sinh(x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/sinh(x)^(3/2) - x^2*sinh(x)^(1/2),x)
[Out] -int(x^2*sinh(x)^(1/2) - x^2/sinh(x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{x^2}{\sinh^{\frac{3}{2}}(x)}\right) dx - \int x^2\sqrt{\sinh(x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/sinh(x)**(3/2)-x**2*sinh(x)**(1/2),x)
```

```
[Out] -Integral(-x**2/sinh(x)**(3/2), x) - Integral(x**2*sqrt(sinh(x)), x)
```

3.72 $\int (c+dx)^m(b\sinh(e+fx))^n\,dx$

Optimal. Leaf size=21

$$\text{Int}\left((c+dx)^m(b\sinh(e+fx))^n,x\right)$$

```
[Out] Unintegrable((d*x+c)^m*(b*sinh(f*x+e))^n,x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (c+dx)^m(b\sinh(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m*(b*Sinh[e + f*x])^n,x]
```

```
[Out] Defer[Int][(c + d*x)^m*(b*Sinh[e + f*x])^n, x]
```

Rubi steps

$$\int (c+dx)^m(b\sinh(e+fx))^n\,dx=\int (c+dx)^m(b\sinh(e+fx))^n\,dx$$

Mathematica [A] time = 3.07, size = 0, normalized size = 0.00

$$\int (c+dx)^m(b\sinh(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m*(b*Sinh[e + f*x])^n,x]
```

```
[Out] Integrate[(c + d*x)^m*(b*Sinh[e + f*x])^n, x]
```

fricas [A] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left((dx+c)^m\left(b\sinh\left(fx+e\right)\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(b*sinh(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m*(b*sinh(f*x + e))^n, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx + c)^m \left(b \sinh\left(fx + e\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(b*sinh(f*x+e))^n,x, algorithm="giac")
[Out] integrate((d*x + c)^m*(b*sinh(f*x + e))^n, x)
```

maple [A] time = 0.08, size = 0, normalized size = 0.00

$$\int (dx + c)^m \left(b \sinh\left(fx + e\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(b*sinh(f*x+e))^n,x)
[Out] int((d*x+c)^m*(b*sinh(f*x+e))^n,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx + c)^m \left(b \sinh\left(fx + e\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(b*sinh(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((d*x + c)^m*(b*sinh(f*x + e))^n, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \left(b \sinh\left(e + f\,x\right)\right)^n \,(c + d\,x)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sinh(e + f*x))^n*(c + d*x)^m,x)
[Out] int((b*sinh(e + f*x))^n*(c + d*x)^m, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \sinh\left(e + fx\right)\right)^n (c + dx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(b*sinh(f*x+e))**n,x)
[Out] Integral((b*sinh(e + f*x))**n*(c + d*x)**m, x)
```

3.73 $\int (c+dx)^m \sinh^3(a+bx)\, dx$

Optimal. Leaf size=237

$$\frac{3^{-m-1}e^{3a-\frac{3bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{3b(c+dx)}{d}\right)}{8b}-\frac{3e^{a-\frac{bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{b(c+dx)}{d}\right)}{8b}-\frac{3e^{\frac{bc}{d}-a}$$

```
[Out] 1/8*3^(-1-m)*exp(3*a-3*b*c/d)*(d*x+c)^m*GAMMA(1+m,-3*b*(d*x+c)/d)/b/((-b*(d
*x+c)/d)^m)-3/8*exp(a-b*c/d)*(d*x+c)^m*GAMMA(1+m,-b*(d*x+c)/d)/b/((-b*(d*x+
c)/d)^m)-3/8*exp(-a+b*c/d)*(d*x+c)^m*GAMMA(1+m,b*(d*x+c)/d)/b/((b*(d*x+c)/d
)^m)+1/8*3^(-1-m)*exp(-3*a+3*b*c/d)*(d*x+c)^m*GAMMA(1+m,3*b*(d*x+c)/d)/b/((
b*(d*x+c)/d)^m)
```

Rubi [A] time = 0.32, antiderivative size = 237, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {3312, 3308, 2181}

$$\frac{3^{-m-1}e^{3a-\frac{3bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{3b(c+dx)}{d}\right)}{8b}-\frac{3e^{a-\frac{bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\right.}{8b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*Sinh[a + b*x]^3,x]
```

```
[Out] (3^(-1 - m)*E^(3*a - (3*b*c)/d)*(c + d*x)^m*Gamma[1 + m, (-3*b*(c + d*x))/d
])/(8*b*(-((b*(c + d*x))/d))^m) - (3*E^(a - (b*c)/d)*(c + d*x)^m*Gamma[1 +
m, -((b*(c + d*x))/d)])/(8*b*(-((b*(c + d*x))/d))^m) - (3*E^(-a + (b*c)/d)*
(c + d*x)^m*Gamma[1 + m, (b*(c + d*x))/d])/(8*b*((b*(c + d*x))/d)^m) + (3^(
-1 - m)*E^(-3*a + (3*b*c)/d)*(c + d*x)^m*Gamma[1 + m, (3*b*(c + d*x))/d])/(
8*b*((b*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int (c+dx)^m \sinh^3(a+bx)\,dx = i\int \left(\frac{3}{4}i(c+dx)^m \sinh(a+bx) - \frac{1}{4}i(c+dx)^m \sinh(3a+3bx)\right)dx$$
$$= \frac{1}{4}\int (c+dx)^m \sinh(3a+3bx)\,dx - \frac{3}{4}\int (c+dx)^m \sinh(a+bx)\,dx$$
$$= \frac{1}{8}\int e^{-i(3ia+3ibx)}(c+dx)^m\,dx - \frac{1}{8}\int e^{i(3ia+3ibx)}(c+dx)^m\,dx - \frac{3}{8}\int e^{-i(ia+ibx)}(c+$$
$$= \frac{3^{-1-m}e^{3a-\frac{3bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{3b(c+dx)}{d}\right)}{8b} - \frac{3e^{a-\frac{bc}{d}}(c+dx)^m\left(-\frac{b(c}{}\right.}{}$$

Mathematica [A] time = 0.19, size = 206, normalized size = 0.87

$$\frac{3^{-m-1}e^{-3\left(a+\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{b^2(c+dx)^2}{d^2}\right)^{-m}\left(e^{6a}\left(b\left(\frac{c}{d}+x\right)\right)^m\Gamma\left(m+1,-\frac{3b(c+dx)}{d}\right) - 3^{m+2}e^{4a+\frac{2bc}{d}}\left(b\left(\frac{c}{d}+x\right)\right)^m\Gamma\left(m+\right.\right.}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*Sinh[a + b*x]^3,x]
```

```
[Out] (3^(-1 - m)*(c + d*x)^m*(E^(6*a)*(b*(c/d + x))^m*Gamma[1 + m, (-3*b*(c + d*
x))/d] - 3^(2 + m)*E^(4*a + (2*b*c)/d)*(b*(c/d + x))^m*Gamma[1 + m, -((b*(c
 + d*x))/d)] + E^((4*b*c)/d)*(-((b*(c + d*x))/d))^m*(-(3^(2 + m)*E^(2*a)*Ga
mma[1 + m, (b*(c + d*x))/d]) + E^((2*b*c)/d)*Gamma[1 + m, (3*b*(c + d*x))/d
])))/(8*b*E^(3*(a + (b*c)/d))*(-((b^2*(c + d*x)^2)/d^2))^m)
```

fricas [A] time = 0.51, size = 340, normalized size = 1.43

$$\frac{\cosh\left(\frac{dm\log\left(\frac{3b}{d}\right)-3bc+3ad}{d}\right)\Gamma\left(m+1,\frac{3(bdx+bc)}{d}\right) - 9\cosh\left(\frac{dm\log\left(\frac{b}{d}\right)-bc+ad}{d}\right)\Gamma\left(m+1,\frac{bdx+bc}{d}\right) - 9\cosh\left(\frac{dm\log\left(-\frac{b}{d}\right)+bc}{d}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sinh(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/24*(cosh((d*m*log(3*b/d) - 3*b*c + 3*a*d)/d)*gamma(m + 1, 3*(b*d*x + b*c)
/d) - 9*cosh((d*m*log(b/d) - b*c + a*d)/d)*gamma(m + 1, (b*d*x + b*c)/d) -
9*cosh((d*m*log(-b/d) + b*c - a*d)/d)*gamma(m + 1, -(b*d*x + b*c)/d) + cosh
((d*m*log(-3*b/d) + 3*b*c - 3*a*d)/d)*gamma(m + 1, -3*(b*d*x + b*c)/d) - ga
mma(m + 1, 3*(b*d*x + b*c)/d)*sinh((d*m*log(3*b/d) - 3*b*c + 3*a*d)/d) + 9*
gamma(m + 1, (b*d*x + b*c)/d)*sinh((d*m*log(b/d) - b*c + a*d)/d) + 9*gamma(
m + 1, -(b*d*x + b*c)/d)*sinh((d*m*log(-b/d) + b*c - a*d)/d) - gamma(m + 1,
 -3*(b*d*x + b*c)/d)*sinh((d*m*log(-3*b/d) + 3*b*c - 3*a*d)/d))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \sinh (bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sinh(b*x+a)^3,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*sinh(b*x + a)^3, x)
```

maple [F] time = 0.15, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(\sinh^3 (bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*sinh(b*x+a)^3,x)
```

```
[Out] int((d*x+c)^m*sinh(b*x+a)^3,x)
```

maxima [A] time = 0.48, size = 161, normalized size = 0.68

$$\frac{(dx+c)^{m+1}e^{\left(-3\,a+\frac{3\,bc}{d}\right)}E_{-m}\left(\frac{3\,(dx+c)b}{d}\right)}{8\,d}-\frac{3\,(dx+c)^{m+1}e^{\left(-a+\frac{bc}{d}\right)}E_{-m}\left(\frac{(dx+c)b}{d}\right)}{8\,d}+\frac{3\,(dx+c)^{m+1}e^{\left(a-\frac{bc}{d}\right)}E_{-m}\left(-\frac{(dx+c)b}{d}\right)}{8\,d}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sinh(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*(d*x + c)^(m + 1)*e^(-3*a + 3*b*c/d)*exp_integral_e(-m, 3*(d*x + c)*b/d
)/d - 3/8*(d*x + c)^(m + 1)*e^(-a + b*c/d)*exp_integral_e(-m, (d*x + c)*b/d
)/d + 3/8*(d*x + c)^(m + 1)*e^(a - b*c/d)*exp_integral_e(-m, -(d*x + c)*b/d
)/d - 1/8*(d*x + c)^(m + 1)*e^(3*a - 3*b*c/d)*exp_integral_e(-m, -3*(d*x +
c)*b/d)/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sinh (a+b\,x)^3\,(c+d\,x)^m \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^3*(c + d*x)^m,x)
```

```
[Out] int(sinh(a + b*x)^3*(c + d*x)^m, x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int (c+dx)^m \sinh^3(a+bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*sinh(b*x+a)**3,x)
```

```
[Out] Integral((c + d*x)**m*sinh(a + b*x)**3, x)
```

3.74 $\int (c+dx)^m \sinh^2(a+bx)\,dx$

Optimal. Leaf size=144

$$\frac{2^{-m-3}e^{2a-\frac{2bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{2b(c+dx)}{d}\right)}{b}-\frac{2^{-m-3}e^{\frac{2bc}{d}-2a}(c+dx)^m\left(\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{2b(c+dx)}{d}\right)}{b}-\frac{(c}{2}$$

```
[Out] -1/2*(d*x+c)^(1+m)/d/(1+m)+2^(-3-m)*exp(2*a-2*b*c/d)*(d*x+c)^m*GAMMA(1+m,-2
*b*(d*x+c)/d)/b/((-b*(d*x+c)/d)^m)-2^(-3-m)*exp(-2*a+2*b*c/d)*(d*x+c)^m*GAM
MA(1+m,2*b*(d*x+c)/d)/b/((b*(d*x+c)/d)^m)
```

Rubi [A] time = 0.20, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {3312, 3307, 2181}

$$\frac{2^{-m-3}e^{2a-\frac{2bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{2b(c+dx)}{d}\right)}{b}-\frac{2^{-m-3}e^{\frac{2bc}{d}-2a}(c+dx)^m\left(\frac{b(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+\right.}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*Sinh[a + b*x]^2,x]
```

```
[Out] -(c + d*x)^(1 + m)/(2*d*(1 + m)) + (2^(-3 - m)*E^(2*a - (2*b*c)/d)*(c + d*x
)^m*Gamma[1 + m, (-2*b*(c + d*x))/d])/(b*(-((b*(c + d*x))/d))^m) - (2^(-3 -
 m)*E^(-2*a + (2*b*c)/d)*(c + d*x)^m*Gamma[1 + m, (2*b*(c + d*x))/d])/(b*((
b*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}\int (c+dx)^m \sinh^2(a+bx)\,dx &= -\int \left(\frac{1}{2}(c+dx)^m - \frac{1}{2}(c+dx)^m \cosh(2a+2bx)\right) dx\\ &= -\frac{(c+dx)^{1+m}}{2d(1+m)} + \frac{1}{2}\int (c+dx)^m \cosh(2a+2bx)\,dx\\ &= -\frac{(c+dx)^{1+m}}{2d(1+m)} + \frac{1}{4}\int e^{-i(2ia+2ibx)}(c+dx)^m\,dx + \frac{1}{4}\int e^{i(2ia+2ibx)}(c+dx)^m\,dx\\ &= -\frac{(c+dx)^{1+m}}{2d(1+m)} + \frac{2^{-3-m}e^{2a-\frac{2bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{2b(c+dx)}{d}\right)}{b} - \frac{2^{-3-}}{}\end{aligned}$$

Mathematica [A] time = 0.16, size = 131, normalized size = 0.91

$$\frac{1}{8}(c+dx)^m\left(\frac{2^{-m}e^{2a-\frac{2bc}{d}}\left(-\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{2b(c+dx)}{d}\right)}{b} - \frac{2^{-m}e^{\frac{2bc}{d}-2a}\left(\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{2b(c+dx)}{d}\right)}{b} - \frac{4(c+dx)}{d(m+1)}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*Sinh[a + b*x]^2,x]
```

```
[Out] ((c + d*x)^m*((-4*(c + d*x))/(d*(1 + m)) + (E^(2*a - (2*b*c)/d)*Gamma[1 + m
, (-2*b*(c + d*x))/d])/(2^m*b*(-((b*(c + d*x))/d))^m) - (E^(-2*a + (2*b*c)/
d)*Gamma[1 + m, (2*b*(c + d*x))/d])/(2^m*b*((b*(c + d*x))/d)^m)))/8
```

fricas [A] time = 0.54, size = 241, normalized size = 1.67

$$-\frac{(dm+d)\cosh\left(\frac{dm\log\left(\frac{2b}{d}\right)-2bc+2ad}{d}\right)\Gamma\left(m+1,\frac{2(bdx+bc)}{d}\right) - (dm+d)\cosh\left(\frac{dm\log\left(-\frac{2b}{d}\right)+2bc-2ad}{d}\right)\Gamma\left(m+1,-\frac{2(bdx+}{d}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sinh(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*((d*m + d)*cosh((d*m*log(2*b/d) - 2*b*c + 2*a*d)/d)*gamma(m + 1, 2*(b*
d*x + b*c)/d) - (d*m + d)*cosh((d*m*log(-2*b/d) + 2*b*c - 2*a*d)/d)*gamma(m
 + 1, -2*(b*d*x + b*c)/d) - (d*m + d)*gamma(m + 1, 2*(b*d*x + b*c)/d)*sinh(
(d*m*log(2*b/d) - 2*b*c + 2*a*d)/d) + (d*m + d)*gamma(m + 1, -2*(b*d*x + b*
c)/d)*sinh((d*m*log(-2*b/d) + 2*b*c - 2*a*d)/d) + 4*(b*d*x + b*c)*cosh(m*lo
g(d*x + c)) + 4*(b*d*x + b*c)*sinh(m*log(d*x + c)))/(b*d*m + b*d)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \sinh(bx+a)^2\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sinh(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*sinh(b*x + a)^2, x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(\sinh^2(bx+a)\right)\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*sinh(b*x+a)^2,x)
```

```
[Out] int((d*x+c)^m*sinh(b*x+a)^2,x)
```

maxima [A] time = 0.39, size = 102, normalized size = 0.71

$$-\frac{(dx+c)^{m+1} e^{\left(-2\,a+\frac{2\,bc}{d}\right)} E_{-m}\left(\frac{2\,(dx+c)b}{d}\right)}{4\,d} - \frac{(dx+c)^{m+1} e^{\left(2\,a-\frac{2\,bc}{d}\right)} E_{-m}\left(-\frac{2\,(dx+c)b}{d}\right)}{4\,d} - \frac{(dx+c)^{m+1}}{2\,d(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sinh(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/4*(d*x + c)^(m + 1)*e^(-2*a + 2*b*c/d)*exp_integral_e(-m, 2*(d*x + c)*b/
d)/d - 1/4*(d*x + c)^(m + 1)*e^(2*a - 2*b*c/d)*exp_integral_e(-m, -2*(d*x +
 c)*b/d)/d - 1/2*(d*x + c)^(m + 1)/(d*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\mathrm{sinh}\left(a+b\,x\right)}^2\,{\left(c+d\,x\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)^2*(c + d*x)^m,x)
```

```
[Out] int(sinh(a + b*x)^2*(c + d*x)^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (c+dx)^m \sinh^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*sinh(b*x+a)**2,x)
```

```
[Out] Integral((c + d*x)**m*sinh(a + b*x)**2, x)
```

3.75 $\int (c+dx)^m \sinh(a+bx)\,dx$

Optimal. Leaf size=110

$$\frac{e^{a-\frac{bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{b(c+dx)}{d}\right)}{2b}+\frac{e^{\frac{bc}{d}-a}(c+dx)^m\left(\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{b(c+dx)}{d}\right)}{2b}$$

```
[Out] 1/2*exp(a-b*c/d)*(d*x+c)^m*GAMMA(1+m,-b*(d*x+c)/d)/b/((-b*(d*x+c)/d)^m)+1/2
*exp(-a+b*c/d)*(d*x+c)^m*GAMMA(1+m,b*(d*x+c)/d)/b/((b*(d*x+c)/d)^m)
```

Rubi [A] time = 0.09, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3308, 2181}

$$\frac{e^{a-\frac{bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{b(c+dx)}{d}\right)}{2b}+\frac{e^{\frac{bc}{d}-a}(c+dx)^m\left(\frac{b(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,\frac{b(c+dx)}{d}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*Sinh[a + b*x],x]
```

```
[Out] (E^(a - (b*c)/d)*(c + d*x)^m*Gamma[1 + m, -((b*(c + d*x))/d)])/(2*b*(-((b*(
c + d*x))/d))^m) + (E^(-a + (b*c)/d)*(c + d*x)^m*Gamma[1 + m, (b*(c + d*x))
/d])/(2*b*((b*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\int (c+dx)^m \sinh(a+bx)\,dx = \frac{1}{2}\int e^{-i(ia+ibx)}(c+dx)^m\,dx - \frac{1}{2}\int e^{i(ia+ibx)}(c+dx)^m\,dx$$
$$= \frac{e^{a-\frac{bc}{d}}(c+dx)^m\left(-\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{b(c+dx)}{d}\right)}{2b} + \frac{e^{-a+\frac{bc}{d}}(c+dx)^m\left(\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(\right.}{2b}$$

Mathematica [A] time = 0.05, size = 101, normalized size = 0.92

$$\frac{e^{-a-\frac{bc}{d}}(c+dx)^m\left(e^{2a}\left(-\frac{b(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{b(c+dx)}{d}\right)+e^{\frac{2bc}{d}}\left(b\left(\frac{c}{d}+x\right)\right)^{-m}\Gamma\left(m+1,\frac{b(c+dx)}{d}\right)\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*Sinh[a + b*x],x]
```

```
[Out] (E^(-a - (b*c)/d)*(c + d*x)^m*((E^(2*a)*Gamma[1 + m, -((b*(c + d*x))/d)])/(
-((b*(c + d*x))/d))^m + (E^((2*b*c)/d)*Gamma[1 + m, (b*(c + d*x))/d])/(b*(c
/d + x))^m))/(2*b)
```

fricas [A] time = 0.50, size = 168, normalized size = 1.53

$$\frac{\cosh\left(\frac{dm\log\left(\frac{b}{d}\right)-bc+ad}{d}\right)\Gamma\left(m+1,\frac{bdx+bc}{d}\right)+\cosh\left(\frac{dm\log\left(-\frac{b}{d}\right)+bc-ad}{d}\right)\Gamma\left(m+1,-\frac{bdx+bc}{d}\right)-\Gamma\left(m+1,\frac{bdx+bc}{d}\right)\sinh\left(\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sinh(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(cosh((d*m*log(b/d) - b*c + a*d)/d)*gamma(m + 1, (b*d*x + b*c)/d) + cos
h((d*m*log(-b/d) + b*c - a*d)/d)*gamma(m + 1, -(b*d*x + b*c)/d) - gamma(m +
 1, (b*d*x + b*c)/d)*sinh((d*m*log(b/d) - b*c + a*d)/d) - gamma(m + 1, -(b*
d*x + b*c)/d)*sinh((d*m*log(-b/d) + b*c - a*d)/d))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \sinh(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sinh(b*x+a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*sinh(b*x + a), x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int (dx+c)^m \sinh (bx+a) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*sinh(b*x+a),x)
```

```
[Out] int((d*x+c)^m*sinh(b*x+a),x)
```

maxima [A] time = 0.42, size = 79, normalized size = 0.72

$$\frac{(dx+c)^{m+1} e^{\left(-a+\frac{bc}{d}\right)} E_{-m}\left(\frac{(dx+c)b}{d}\right)}{2\,d} - \frac{(dx+c)^{m+1} e^{\left(a-\frac{bc}{d}\right)} E_{-m}\left(-\frac{(dx+c)b}{d}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sinh(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(d*x + c)^(m + 1)*e^(-a + b*c/d)*exp_integral_e(-m, (d*x + c)*b/d)/d -
1/2*(d*x + c)^(m + 1)*e^(a - b*c/d)*exp_integral_e(-m, -(d*x + c)*b/d)/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sinh (a+b\,x)\,{(c+d\,x)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(a + b*x)*(c + d*x)^m,x)
```

```
[Out] int(sinh(a + b*x)*(c + d*x)^m, x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*sinh(b*x+a),x)
```

```
[Out] Exception raised: TypeError
```

3.76 $\int (c+dx)^m \operatorname{csch}(a+bx)\,dx$

Optimal. Leaf size=17

$$\text{Int}\left(\operatorname{csch}(a+bx)(c+dx)^m,x\right)$$

```
[Out] Unintegrable((d*x+c)^m*csch(b*x+a),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (c+dx)^m \operatorname{csch}(a+bx)\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m*Csch[a + b*x],x]
[Out] Defer[Int][(c + d*x)^m*Csch[a + b*x], x]
```

Rubi steps

$$\int (c+dx)^m \operatorname{csch}(a+bx)\,dx=\int (c+dx)^m \operatorname{csch}(a+bx)\,dx$$

Mathematica [A] time = 6.37, size = 0, normalized size = 0.00

$$\int (c+dx)^m \operatorname{csch}(a+bx)\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m*Csch[a + b*x],x]
[Out] Integrate[(c + d*x)^m*Csch[a + b*x], x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left((dx+c)^m \operatorname{csch}(bx+a),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csch(b*x+a),x, algorithm="fricas")
[Out] integral((d*x + c)^m*csch(b*x + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx + c)^m \operatorname{csch}(bx + a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csch(b*x+a),x, algorithm="giac")
[Out] integrate((d*x + c)^m*csch(b*x + a), x)
```

maple [A] time = 0.09, size = 0, normalized size = 0.00

$$\int (dx + c)^m \operatorname{csch}(bx + a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*csch(b*x+a),x)
[Out] int((d*x+c)^m*csch(b*x+a),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx + c)^m \operatorname{csch}(bx + a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csch(b*x+a),x, algorithm="maxima")
[Out] integrate((d*x + c)^m*csch(b*x + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{(c + d\,x)^m}{\sinh(a + b\,x)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/sinh(a + b*x),x)
[Out] int((c + d*x)^m/sinh(a + b*x), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (c + dx)^m \operatorname{csch}(a + bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*csch(b*x+a),x)
[Out] Integral((c + d*x)**m*csch(a + b*x), x)
```

3.77 $\int (c + dx)^m \mathbf{csch}^2(a + bx)\, dx$

Optimal. Leaf size=19

$$\mathrm{Int}\left(\mathrm{csch}^2(a+bx)(c+dx)^m, x\right)$$

```
[Out] Unintegrable((d*x+c)^m*csch(b*x+a)^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (c+dx)^m \mathrm{csch}^2(a+bx)\, dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m*Csch[a + b*x]^2,x]
[Out] Defer[Int][(c + d*x)^m*Csch[a + b*x]^2, x]
```

Rubi steps

$$\int (c+dx)^m \mathrm{csch}^2(a+bx)\, dx = \int (c+dx)^m \mathrm{csch}^2(a+bx)\, dx$$

Mathematica [A] time = 3.67, size = 0, normalized size = 0.00

$$\int (c+dx)^m \mathrm{csch}^2(a+bx)\, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m*Csch[a + b*x]^2,x]
[Out] Integrate[(c + d*x)^m*Csch[a + b*x]^2, x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left((dx+c)^m \,\mathrm{csch}\,(bx+a)^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csch(b*x+a)^2,x, algorithm="fricas")
[Out] integral((d*x + c)^m*csch(b*x + a)^2, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \operatorname{csch}(bx+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csch(b*x+a)^2,x, algorithm="giac")
[Out] integrate((d*x + c)^m*csch(b*x + a)^2, x)
```

maple [A] time = 0.08, size = 0, normalized size = 0.00

$$\int (dx+c)^m \operatorname{csch}(bx+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*csch(b*x+a)^2,x)
[Out] int((d*x+c)^m*csch(b*x+a)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \operatorname{csch}(bx+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csch(b*x+a)^2,x, algorithm="maxima")
[Out] integrate((d*x + c)^m*csch(b*x + a)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{(c+d\,x)^m}{\sinh(a+b\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/sinh(a + b*x)^2,x)
[Out] int((c + d*x)^m/sinh(a + b*x)^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (c+dx)^m \operatorname{csch}^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*csch(b*x+a)**2,x)
[Out] Integral((c + d*x)**m*csch(a + b*x)**2, x)
```

3.78 $\int x^{3+m} \sinh(a+bx)\, dx$

Optimal. Leaf size=59

$$\frac{e^{-a}x^m(bx)^{-m}\Gamma(m+4,bx)}{2b^4}-\frac{e^a x^m(-bx)^{-m}\Gamma(m+4,-bx)}{2b^4}$$

```
[Out] -1/2*exp(a)*x^m*GAMMA(4+m,-b*x)/b^4/((-b*x)^m)+1/2*x^m*GAMMA(4+m,b*x)/b^4/e
xp(a)/((b*x)^m)
```

Rubi [A] time = 0.08, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{e^{-a}x^m(bx)^{-m}\text{Gamma}(m+4,bx)}{2b^4}-\frac{e^a x^m(-bx)^{-m}\text{Gamma}(m+4,-bx)}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3 + m)*Sinh[a + b*x],x]
```

```
[Out] -(E^a*x^m*Gamma[4 + m, -(b*x)])/(2*b^4*(-(b*x))^m) + (x^m*Gamma[4 + m, b*x]
)/(2*b^4*E^a*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{3+m}\sinh(a+bx)\,dx &= \frac{1}{2}\int e^{-i(ia+ibx)}x^{3+m}\,dx-\frac{1}{2}\int e^{i(ia+ibx)}x^{3+m}\,dx\\ &= -\frac{e^a x^m(-bx)^{-m}\Gamma(4+m,-bx)}{2b^4}+\frac{e^{-a}x^m(bx)^{-m}\Gamma(4+m,bx)}{2b^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 54, normalized size = 0.92

$$\frac{e^{-a}x^m\left((bx)^{-m}\Gamma(m+4,bx)-e^{2a}(-bx)^{-m}\Gamma(m+4,-bx)\right)}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3 + m)*Sinh[a + b*x],x]
```

```
[Out] (x^m*(-((E^(2*a)*Gamma[4 + m, -(b*x)])/(-(b*x))^m) + Gamma[4 + m, b*x]/(b*x
)^m))/(2*b^4*E^a)
```

fricas [A] time = 0.60, size = 86, normalized size = 1.46

$$\frac{\cosh\left((m+3)\log(b)+a\right)\Gamma\left(m+4,bx\right)+\cosh\left((m+3)\log\left(-b\right)-a\right)\Gamma\left(m+4,-bx\right)-\Gamma\left(m+4,-bx\right)\sinh\left((m+\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sinh(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(cosh((m + 3)*log(b) + a)*gamma(m + 4, b*x) + cosh((m + 3)*log(-b) - a)
*gamma(m + 4, -b*x) - gamma(m + 4, -b*x)*sinh((m + 3)*log(-b) - a) - gamma(
m + 4, b*x)*sinh((m + 3)*log(b) + a))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m+3}\sinh\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sinh(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m + 3)*sinh(b*x + a), x)
```

maple [C] time = 0.06, size = 73, normalized size = 1.24

$$\frac{x^{4+m}\,\mathrm{hypergeom}\left(\left[2+\frac{m}{2}\right],\left[\frac{1}{2},3+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\sinh(a)}{4+m}+\frac{b\,x^{5+m}\,\mathrm{hypergeom}\left(\left[\frac{5}{2}+\frac{m}{2}\right],\left[\frac{3}{2},\frac{7}{2}+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\cosh(a)}{5+m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3+m)*sinh(b*x+a),x)
```

```
[Out] 1/(4+m)*x^(4+m)*hypergeom([2+1/2*m],[1/2,3+1/2*m],1/4*x^2*b^2)*sinh(a)+b/(5
+m)*x^(5+m)*hypergeom([5/2+1/2*m],[3/2,7/2+1/2*m],1/4*x^2*b^2)*cosh(a)
```

maxima [A] time = 0.39, size = 55, normalized size = 0.93

$$\frac{1}{2}\,(bx)^{-m-4}\,x^{m+4}e^{(-a)}\Gamma\left(m+4,bx\right)-\frac{1}{2}\,(-bx)^{-m-4}\,x^{m+4}e^{a}\Gamma\left(m+4,-bx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sinh(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(b*x)^(-m - 4)*x^(m + 4)*e^(-a)*gamma(m + 4, b*x) - 1/2*(-b*x)^(-m - 4)
*x^(m + 4)*e^a*gamma(m + 4, -b*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int x^{m+3}\sinh\left(a+b\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 3)*sinh(a + b*x),x)
```

```
[Out] int(x^(m + 3)*sinh(a + b*x), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3+m)*sinh(b*x+a),x)
```

```
[Out] Exception raised: TypeError
```

3.79 $\int x^{2+m} \sinh(a+bx)\,dx$

Optimal. Leaf size=59

$$\frac{e^a x^m (-bx)^{-m} \Gamma(m+3,-bx)}{2b^3}+\frac{e^{-a} x^m (bx)^{-m} \Gamma(m+3,bx)}{2b^3}$$

```
[Out] 1/2*exp(a)*x^m*GAMMA(3+m,-b*x)/b^3/((-b*x)^m)+1/2*x^m*GAMMA(3+m,b*x)/b^3/ex
p(a)/((b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{e^a x^m (-bx)^{-m} \text{Gamma}(m+3,-bx)}{2b^3}+\frac{e^{-a} x^m (bx)^{-m} \text{Gamma}(m+3,bx)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^(2 + m)*Sinh[a + b*x],x]
```

```
[Out] (E^a*x^m*Gamma[3 + m, -(b*x)])/(2*b^3*(-(b*x))^m) + (x^m*Gamma[3 + m, b*x])
/(2*b^3*E^a*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{2+m} \sinh(a+bx)\,dx &= \frac{1}{2}\int e^{-i(ia+ibx)} x^{2+m}\,dx-\frac{1}{2}\int e^{i(ia+ibx)} x^{2+m}\,dx\\ &= \frac{e^a x^m (-bx)^{-m} \Gamma(3+m,-bx)}{2b^3}+\frac{e^{-a} x^m (bx)^{-m} \Gamma(3+m,bx)}{2b^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 53, normalized size = 0.90

$$\frac{e^{-a}x^m\left(e^{2a}(-bx)^{-m}\Gamma(m+3,-bx)+(bx)^{-m}\Gamma(m+3,bx)\right)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(2 + m)*Sinh[a + b*x],x]
```

```
[Out] (x^m*((E^(2*a)*Gamma[3 + m, -(b*x)])/(-(b*x))^m + Gamma[3 + m, b*x]/(b*x)^m
))/(2*b^3*E^a)
```

fricas [A] time = 0.49, size = 86, normalized size = 1.46

$$\frac{\cosh\left((m+2)\log(b)+a\right)\Gamma\left(m+3,bx\right)+\cosh\left((m+2)\log\left(-b\right)-a\right)\Gamma\left(m+3,-bx\right)-\Gamma\left(m+3,-bx\right)\sinh\left((m\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sinh(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(cosh((m + 2)*log(b) + a)*gamma(m + 3, b*x) + cosh((m + 2)*log(-b) - a)
*gamma(m + 3, -b*x) - gamma(m + 3, -b*x)*sinh((m + 2)*log(-b) - a) - gamma(
m + 3, b*x)*sinh((m + 2)*log(b) + a))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m+2}\sinh\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sinh(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m + 2)*sinh(b*x + a), x)
```

maple [C] time = 0.07, size = 73, normalized size = 1.24

$$\frac{x^{3+m}\,\mathrm{hypergeom}\left(\left[\frac{3}{2}+\frac{m}{2}\right],\left[\frac{1}{2},\frac{5}{2}+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\sinh(a)}{3+m}+\frac{b\,x^{4+m}\,\mathrm{hypergeom}\left(\left[2+\frac{m}{2}\right],\left[\frac{3}{2},3+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\cosh(a)}{4+m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(2+m)*sinh(b*x+a),x)
```

```
[Out] 1/(3+m)*x^(3+m)*hypergeom([3/2+1/2*m],[1/2,5/2+1/2*m],1/4*x^2*b^2)*sinh(a)+
b/(4+m)*x^(4+m)*hypergeom([2+1/2*m],[3/2,3+1/2*m],1/4*x^2*b^2)*cosh(a)
```

maxima [A] time = 0.72, size = 55, normalized size = 0.93

$$\frac{1}{2}\,(bx)^{-m-3}\,x^{m+3}e^{(-a)}\Gamma\left(m+3,bx\right)-\frac{1}{2}\,(-bx)^{-m-3}\,x^{m+3}e^{a}\Gamma\left(m+3,-bx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sinh(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(b*x)^(-m - 3)*x^(m + 3)*e^(-a)*gamma(m + 3, b*x) - 1/2*(-b*x)^(-m - 3)
*x^(m + 3)*e^a*gamma(m + 3, -b*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int x^{m+2}\sinh\left(a+b\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 2)*sinh(a + b*x),x)
```

```
[Out] int(x^(m + 2)*sinh(a + b*x), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(2+m)*sinh(b*x+a),x)
```

```
[Out] Exception raised: TypeError
```

3.80 $\int x^{1+m}\sinh(a+bx)\,dx$

Optimal. Leaf size=59

$$\frac{e^{-a}x^m(bx)^{-m}\Gamma(m+2,bx)}{2b^2}-\frac{e^ax^m(-bx)^{-m}\Gamma(m+2,-bx)}{2b^2}$$

```
[Out] -1/2*exp(a)*x^m*GAMMA(2+m,-b*x)/b^2/((-b*x)^m)+1/2*x^m*GAMMA(2+m,b*x)/b^2/e
xp(a)/((b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{e^{-a}x^m(bx)^{-m}\text{Gamma}(m+2,bx)}{2b^2}-\frac{e^ax^m(-bx)^{-m}\text{Gamma}(m+2,-bx)}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(1 + m)*Sinh[a + b*x],x]
```

```
[Out] -(E^a*x^m*Gamma[2 + m, -(b*x)])/(2*b^2*(-(b*x))^m) + (x^m*Gamma[2 + m, b*x]
)/(2*b^2*E^a*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{1+m}\sinh(a+bx)\,dx&=\frac{1}{2}\int e^{-i(ia+ibx)}x^{1+m}\,dx-\frac{1}{2}\int e^{i(ia+ibx)}x^{1+m}\,dx\\&=-\frac{e^ax^m(-bx)^{-m}\Gamma(2+m,-bx)}{2b^2}+\frac{e^{-a}x^m(bx)^{-m}\Gamma(2+m,bx)}{2b^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.92

$$\frac{e^{-a}x^m\left((bx)^{-m}\Gamma(m+2,bx)-e^{2a}(-bx)^{-m}\Gamma(m+2,-bx)\right)}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(1 + m)*Sinh[a + b*x],x]
```

```
[Out] (x^m*(-((E^(2*a)*Gamma[2 + m, -(b*x)])/(-(b*x))^m) + Gamma[2 + m, b*x]/(b*x
)^m))/(2*b^2*E^a)
```

fricas [A] time = 0.58, size = 86, normalized size = 1.46

$$\frac{\cosh\left((m+1)\log(b)+a\right)\Gamma\left(m+2,bx\right)+\cosh\left((m+1)\log\left(-b\right)-a\right)\Gamma\left(m+2,-bx\right)-\Gamma\left(m+2,-bx\right)\sinh\left((m+\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sinh(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(cosh((m + 1)*log(b) + a)*gamma(m + 2, b*x) + cosh((m + 1)*log(-b) - a)
*gamma(m + 2, -b*x) - gamma(m + 2, -b*x)*sinh((m + 1)*log(-b) - a) - gamma(
m + 2, b*x)*sinh((m + 1)*log(b) + a))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m+1}\sinh\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sinh(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m + 1)*sinh(b*x + a), x)
```

maple [C] time = 0.06, size = 73, normalized size = 1.24

$$\frac{x^{2+m}\,\mathrm{hypergeom}\left(\left[1+\frac{m}{2}\right],\left[\frac{1}{2},2+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\sinh(a)}{2+m}+\frac{b\,x^{3+m}\,\mathrm{hypergeom}\left(\left[\frac{3}{2}+\frac{m}{2}\right],\left[\frac{3}{2},\frac{5}{2}+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\cosh(a)}{3+m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1+m)*sinh(b*x+a),x)
```

```
[Out] 1/(2+m)*x^(2+m)*hypergeom([1+1/2*m],[1/2,2+1/2*m],1/4*x^2*b^2)*sinh(a)+b/(3
+m)*x^(3+m)*hypergeom([3/2+1/2*m],[3/2,5/2+1/2*m],1/4*x^2*b^2)*cosh(a)
```

maxima [A] time = 0.48, size = 55, normalized size = 0.93

$$\frac{1}{2}\,(bx)^{-m-2}\,x^{m+2}e^{(-a)}\Gamma\left(m+2,bx\right)-\frac{1}{2}\,(-bx)^{-m-2}\,x^{m+2}e^{a}\Gamma\left(m+2,-bx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sinh(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(b*x)^(-m - 2)*x^(m + 2)*e^(-a)*gamma(m + 2, b*x) - 1/2*(-b*x)^(-m - 2)
*x^(m + 2)*e^a*gamma(m + 2, -b*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int x^{m+1}\sinh\left(a+b\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 1)*sinh(a + b*x),x)
```

```
[Out] int(x^(m + 1)*sinh(a + b*x), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1+m)*sinh(b*x+a),x)
```

```
[Out] Exception raised: TypeError
```

3.81 $\int x^m \sinh(a+bx)\,dx$

Optimal. Leaf size=59

$$\frac{e^a x^m (-bx)^{-m}\Gamma(m+1,-bx)}{2b}+\frac{e^{-a}x^m(bx)^{-m}\Gamma(m+1,bx)}{2b}$$

```
[Out] 1/2*exp(a)*x^m*GAMMA(1+m,-b*x)/b/((-b*x)^m)+1/2*x^m*GAMMA(1+m,b*x)/b/exp(a)
/((b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {3308, 2181}

$$\frac{e^a x^m (-bx)^{-m}\text{Gamma}(m+1,-bx)}{2b}+\frac{e^{-a}x^m(bx)^{-m}\text{Gamma}(m+1,bx)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*Sinh[a + b*x],x]
```

```
[Out] (E^a*x^m*Gamma[1 + m, -(b*x)])/(2*b*(-(b*x))^m) + (x^m*Gamma[1 + m, b*x])/(
2*b*E^a*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^m \sinh(a+bx)\,dx &= \frac{1}{2}\int e^{-i(ia+ibx)}x^m\,dx-\frac{1}{2}\int e^{i(ia+ibx)}x^m\,dx\\ &= \frac{e^a x^m(-bx)^{-m}\Gamma(1+m,-bx)}{2b}+\frac{e^{-a}x^m(bx)^{-m}\Gamma(1+m,bx)}{2b}\end{aligned}$$

Mathematica [A] time = 0.02, size = 53, normalized size = 0.90

$$\frac{e^{-a}x^m\left(e^{2a}(-bx)^{-m}\Gamma(m+1,-bx)+(bx)^{-m}\Gamma(m+1,bx)\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*Sinh[a + b*x],x]
```

```
[Out] (x^m*((E^(2*a)*Gamma[1 + m, -(b*x)])/(-(b*x))^m + Gamma[1 + m, b*x]/(b*x)^m
))/(2*b*E^a)
```

fricas [A] time = 0.48, size = 78, normalized size = 1.32

$$\frac{\cosh\left(m\log(b)+a\right)\Gamma\left(m+1,bx\right)+\cosh\left(m\log\left(-b\right)-a\right)\Gamma\left(m+1,-bx\right)-\Gamma\left(m+1,-bx\right)\sinh\left(m\log\left(-b\right)-a\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sinh(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(cosh(m*log(b) + a)*gamma(m + 1, b*x) + cosh(m*log(-b) - a)*gamma(m + 1
, -b*x) - gamma(m + 1, -b*x)*sinh(m*log(-b) - a) - gamma(m + 1, b*x)*sinh(m
*log(b) + a))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^m \sinh\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sinh(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^m*sinh(b*x + a), x)
```

maple [C] time = 0.06, size = 73, normalized size = 1.24

$$\frac{x^{1+m}\,\mathrm{hypergeom}\left(\left[\frac{1}{2}+\frac{m}{2}\right],\left[\frac{1}{2},\frac{3}{2}+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\sinh(a)}{1+m}+\frac{b\,x^{2+m}\,\mathrm{hypergeom}\left(\left[1+\frac{m}{2}\right],\left[\frac{3}{2},2+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\cosh(a)}{2+m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*sinh(b*x+a),x)
```

```
[Out] 1/(1+m)*x^(1+m)*hypergeom([1/2+1/2*m],[1/2,3/2+1/2*m],1/4*x^2*b^2)*sinh(a)+
b/(2+m)*x^(2+m)*hypergeom([1+1/2*m],[3/2,2+1/2*m],1/4*x^2*b^2)*cosh(a)
```

maxima [A] time = 0.77, size = 55, normalized size = 0.93

$$\frac{1}{2} (bx)^{-m-1} x^{m+1} e^{(-a)} \Gamma(m+1, bx) - \frac{1}{2} (-bx)^{-m-1} x^{m+1} e^{a} \Gamma(m+1, -bx)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sinh(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(b*x)^(-m - 1)*x^(m + 1)*e^(-a)*gamma(m + 1, b*x) - 1/2*(-b*x)^(-m - 1)
*x^(m + 1)*e^a*gamma(m + 1, -b*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int x^m \sinh(a + b\,x) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*sinh(a + b*x),x)
```

```
[Out] int(x^m*sinh(a + b*x), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*sinh(b*x+a),x)
```

```
[Out] Exception raised: TypeError
```

3.82 $\int x^{-1+m}\sinh(a+bx)\,dx$

Optimal. Leaf size=49

$$\frac{1}{2}e^{-a}x^m(bx)^{-m}\Gamma(m,bx)-\frac{1}{2}e^a x^m(-bx)^{-m}\Gamma(m,-bx)$$

```
[Out] -1/2*exp(a)*x^m*GAMMA(m,-b*x)/((-b*x)^m)+1/2*x^m*GAMMA(m,b*x)/exp(a)/((b*x)
^m)
```

Rubi [A] time = 0.07, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{1}{2}e^{-a}x^m(bx)^{-m}\text{Gamma}(m,bx)-\frac{1}{2}e^a x^m(-bx)^{-m}\text{Gamma}(m,-bx)$$

Antiderivative was successfully verified.

```
[In] Int[x^(-1 + m)*Sinh[a + b*x],x]
```

```
[Out] -(E^a*x^m*Gamma[m, -(b*x)])/(2*(-(b*x))^m) + (x^m*Gamma[m, b*x])/(2*E^a*(b*
x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{-1+m}\sinh(a+bx)\,dx&=\frac{1}{2}\int e^{-i(ia+ibx)}x^{-1+m}\,dx-\frac{1}{2}\int e^{i(ia+ibx)}x^{-1+m}\,dx\\&=-\frac{1}{2}e^a x^m(-bx)^{-m}\Gamma(m,-bx)+\frac{1}{2}e^{-a}x^m(bx)^{-m}\Gamma(m,bx)\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 1.00

$$\frac{1}{2}e^{-a}x^m(bx)^{-m}\Gamma(m,bx)-\frac{1}{2}e^{a}x^m(-bx)^{-m}\Gamma(m,-bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-1 + m)*Sinh[a + b*x],x]
```

```
[Out] -1/2*(E^a*x^m*Gamma[m, -(b*x)])/(-(b*x))^m + (x^m*Gamma[m, b*x])/(2*E^a*(b*
x)^m)
```

fricas [A] time = 0.65, size = 78, normalized size = 1.59

$$\frac{\cosh\left((m-1)\log(b)+a\right)\Gamma\left(m,bx\right)+\cosh\left((m-1)\log\left(-b\right)-a\right)\Gamma\left(m,-bx\right)-\Gamma\left(m,-bx\right)\sinh\left((m-1)\log\left(-b\right)-\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sinh(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(cosh((m - 1)*log(b) + a)*gamma(m, b*x) + cosh((m - 1)*log(-b) - a)*gam
ma(m, -b*x) - gamma(m, -b*x)*sinh((m - 1)*log(-b) - a) - gamma(m, b*x)*sinh
((m - 1)*log(b) + a))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m-1}\sinh\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sinh(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m - 1)*sinh(b*x + a), x)
```

maple [C] time = 0.06, size = 67, normalized size = 1.37

$$\frac{x^m\,\mathrm{hypergeom}\left(\left[\frac{m}{2}\right],\left[\frac{1}{2},1+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\sinh(a)}{m}+\frac{b\,x^{1+m}\,\mathrm{hypergeom}\left(\left[\frac{1}{2}+\frac{m}{2}\right],\left[\frac{3}{2},\frac{3}{2}+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\cosh(a)}{1+m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(-1+m)*sinh(b*x+a),x)
```

```
[Out] 1/m*x^m*hypergeom([1/2*m],[1/2,1+1/2*m],1/4*x^2*b^2)*sinh(a)+b/(1+m)*x^(1+m
)*hypergeom([1/2+1/2*m],[3/2,3/2+1/2*m],1/4*x^2*b^2)*cosh(a)
```

maxima [A] time = 0.51, size = 43, normalized size = 0.88

$$\frac{x^{m}e^{(-a)}\Gamma\left(m,bx\right)}{2\,\left(bx\right)^{m}}-\frac{x^{m}e^{a}\Gamma\left(m,-bx\right)}{2\,\left(-bx\right)^{m}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sinh(b*x+a),x, algorithm="maxima")
[Out] 1/2*x^m*e^(-a)*gamma(m, b*x)/(b*x)^m - 1/2*x^m*e^a*gamma(m, -b*x)/(-b*x)^m
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int x^{m-1}\,\sinh\left(a+b\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 1)*sinh(a + b*x),x)
[Out] int(x^(m - 1)*sinh(a + b*x), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-1+m)*sinh(b*x+a),x)
[Out] Exception raised: TypeError
```

3.83 $\int x^{-2+m}\sinh(a+bx)\,dx$

Optimal. Leaf size=55

$$\frac{1}{2}e^a b x^m(-bx)^{-m}\Gamma(m-1,-bx)+\frac{1}{2}e^{-a}bx^m(bx)^{-m}\Gamma(m-1,bx)$$

```
[Out] 1/2*b*exp(a)*x^m*GAMMA(-1+m,-b*x)/((-b*x)^m)+1/2*b*x^m*GAMMA(-1+m,b*x)/exp(
a)/((b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{1}{2}e^a b x^m(-bx)^{-m}\text{Gamma}(m-1,-bx)+\frac{1}{2}e^{-a}bx^m(bx)^{-m}\text{Gamma}(m-1,bx)$$

Antiderivative was successfully verified.

```
[In] Int[x^(-2 + m)*Sinh[a + b*x],x]
```

```
[Out] (b*E^a*x^m*Gamma[-1 + m, -(b*x)])/(2*(-(b*x))^m) + (b*x^m*Gamma[-1 + m, b*x
])/(2*E^a*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{-2+m}\sinh(a+bx)\,dx &= \frac{1}{2}\int e^{-i(ia+ibx)}x^{-2+m}\,dx-\frac{1}{2}\int e^{i(ia+ibx)}x^{-2+m}\,dx\\ &= \frac{1}{2}be^a x^m(-bx)^{-m}\Gamma(-1+m,-bx)+\frac{1}{2}be^{-a}x^m(bx)^{-m}\Gamma(-1+m,bx)\end{aligned}$$

Mathematica [A] time = 0.02, size = 51, normalized size = 0.93

$$\frac{1}{2}e^{-a}bx^m\left(e^{2a}(-bx)^{-m}\Gamma(m-1,-bx)+(bx)^{-m}\Gamma(m-1,bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-2 + m)*Sinh[a + b*x],x]
```

```
[Out] (b*x^m*((E^(2*a)*Gamma[-1 + m, -(b*x)])/(-(b*x))^m + Gamma[-1 + m, b*x]/(b*
x)^m))/(2*E^a)
```

fricas [A] time = 0.51, size = 86, normalized size = 1.56

$$\frac{\cosh\left((m-2)\log(b)+a\right)\Gamma\left(m-1,bx\right)+\cosh\left((m-2)\log\left(-b\right)-a\right)\Gamma\left(m-1,-bx\right)-\Gamma\left(m-1,-bx\right)\sinh\left((m-\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sinh(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(cosh((m - 2)*log(b) + a)*gamma(m - 1, b*x) + cosh((m - 2)*log(-b) - a)
*gamma(m - 1, -b*x) - gamma(m - 1, -b*x)*sinh((m - 2)*log(-b) - a) - gamma(
m - 1, b*x)*sinh((m - 2)*log(b) + a))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m-2}\sinh\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sinh(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m - 2)*sinh(b*x + a), x)
```

maple [C] time = 0.07, size = 67, normalized size = 1.22

$$\frac{x^{-1+m}\,\mathrm{hypergeom}\left(\left[-\frac{1}{2}+\frac{m}{2}\right],\left[\frac{1}{2},\frac{1}{2}+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\sinh(a)}{-1+m}+\frac{b\,x^m\,\mathrm{hypergeom}\left(\left[\frac{m}{2}\right],\left[\frac{3}{2},1+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\cosh(a)}{m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(-2+m)*sinh(b*x+a),x)
```

```
[Out] 1/(-1+m)*x^(-1+m)*hypergeom([-1/2+1/2*m],[1/2,1/2+1/2*m],1/4*x^2*b^2)*sinh(
a)+b/m*x^m*hypergeom([1/2*m],[3/2,1+1/2*m],1/4*x^2*b^2)*cosh(a)
```

maxima [A] time = 0.47, size = 55, normalized size = 1.00

$$\frac{1}{2}\left(bx\right)^{-m+1}x^{m-1}e^{(-a)}\Gamma\left(m-1,bx\right)-\frac{1}{2}\left(-bx\right)^{-m+1}x^{m-1}e^{a}\Gamma\left(m-1,-bx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sinh(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(b*x)^(-m + 1)*x^(m - 1)*e^(-a)*gamma(m - 1, b*x) - 1/2*(-b*x)^(-m + 1)
*x^(m - 1)*e^a*gamma(m - 1, -b*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int x^{m-2}\sinh\left(a+b\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 2)*sinh(a + b*x),x)
```

```
[Out] int(x^(m - 2)*sinh(a + b*x), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-2+m)*sinh(b*x+a),x)
```

```
[Out] Exception raised: TypeError
```

3.84 $\int x^{-3+m} \sinh(a+bx)\,dx$

Optimal. Leaf size=59

$$\frac{1}{2}e^{-a}b^2x^m(bx)^{-m}\Gamma(m-2,bx)-\frac{1}{2}e^ab^2x^m(-bx)^{-m}\Gamma(m-2,-bx)$$

```
[Out] -1/2*b^2*exp(a)*x^m*GAMMA(-2+m,-b*x)/((-b*x)^m)+1/2*b^2*x^m*GAMMA(-2+m,b*x)
/exp(a)/((b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{1}{2}e^{-a}b^2x^m(bx)^{-m}\text{Gamma}(m-2,bx)-\frac{1}{2}e^ab^2x^m(-bx)^{-m}\text{Gamma}(m-2,-bx)$$

Antiderivative was successfully verified.

```
[In] Int[x^(-3 + m)*Sinh[a + b*x],x]
```

```
[Out] -(b^2*E^a*x^m*Gamma[-2 + m, -(b*x)])/(2*(-(b*x))^m) + (b^2*x^m*Gamma[-2 + m
, b*x])/(2*E^a*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{-3+m}\sinh(a+bx)\,dx&=\frac{1}{2}\int e^{-i(ia+ibx)}x^{-3+m}\,dx-\frac{1}{2}\int e^{i(ia+ibx)}x^{-3+m}\,dx\\&=-\frac{1}{2}b^2e^ax^m(-bx)^{-m}\Gamma(-2+m,-bx)+\frac{1}{2}b^2e^{-a}x^m(bx)^{-m}\Gamma(-2+m,bx)\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.92

$$\frac{1}{2}e^{-a}b^2x^m\left((bx)^{-m}\Gamma(m-2,bx)-e^{2a}(-bx)^{-m}\Gamma(m-2,-bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-3 + m)*Sinh[a + b*x],x]
```

```
[Out] (b^2*x^m*(-((E^(2*a)*Gamma[-2 + m, -(b*x)])/(-(b*x))^m) + Gamma[-2 + m, b*x
]/(b*x)^m))/(2*E^a)
```

fricas [A] time = 0.53, size = 86, normalized size = 1.46

$$\frac{\cosh\left((m-3)\log(b)+a\right)\Gamma\left(m-2,bx\right)+\cosh\left((m-3)\log\left(-b\right)-a\right)\Gamma\left(m-2,-bx\right)-\Gamma\left(m-2,-bx\right)\sinh\left((m-3\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sinh(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(cosh((m - 3)*log(b) + a)*gamma(m - 2, b*x) + cosh((m - 3)*log(-b) - a)
*gamma(m - 2, -b*x) - gamma(m - 2, -b*x)*sinh((m - 3)*log(-b) - a) - gamma(
m - 2, b*x)*sinh((m - 3)*log(b) + a))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m-3}\sinh\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sinh(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m - 3)*sinh(b*x + a), x)
```

maple [C] time = 0.05, size = 71, normalized size = 1.20

$$\frac{x^{-2+m}\,\mathrm{hypergeom}\left(\left[-1+\frac{m}{2}\right],\left[\frac{1}{2},\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\sinh(a)}{-2+m}+\frac{b\,x^{-1+m}\,\mathrm{hypergeom}\left(\left[-\frac{1}{2}+\frac{m}{2}\right],\left[\frac{3}{2},\frac{1}{2}+\frac{m}{2}\right],\frac{x^2b^2}{4}\right)\cosh(a)}{-1+m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(-3+m)*sinh(b*x+a),x)
```

```
[Out] 1/(-2+m)*x^(-2+m)*hypergeom([-1+1/2*m],[1/2,1/2*m],1/4*x^2*b^2)*sinh(a)+b/(
-1+m)*x^(-1+m)*hypergeom([-1/2+1/2*m],[3/2,1/2+1/2*m],1/4*x^2*b^2)*cosh(a)
```

maxima [A] time = 0.85, size = 55, normalized size = 0.93

$$\frac{1}{2}\,(bx)^{-m+2}\,x^{m-2}e^{(-a)}\Gamma\,(m-2,bx)-\frac{1}{2}\,(-bx)^{-m+2}\,x^{m-2}e^{a}\Gamma\,(m-2,-bx)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sinh(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(b*x)^(-m + 2)*x^(m - 2)*e^(-a)*gamma(m - 2, b*x) - 1/2*(-b*x)^(-m + 2)
*x^(m - 2)*e^a*gamma(m - 2, -b*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int x^{m-3}\sinh\left(a+b\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 3)*sinh(a + b*x),x)
```

```
[Out] int(x^(m - 3)*sinh(a + b*x), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-3+m)*sinh(b*x+a),x)
```

```
[Out] Exception raised: TypeError
```

3.85 $\int x^{3+m} \sinh^2(a+bx)\,dx$

Optimal. Leaf size=86

$$-\frac{e^{2a}2^{-m-6}x^m(-bx)^{-m}\Gamma(m+4,-2bx)}{b^4}-\frac{e^{-2a}2^{-m-6}x^m(bx)^{-m}\Gamma(m+4,2bx)}{b^4}-\frac{x^{m+4}}{2(m+4)}$$

```
[Out] -1/2*x^(4+m)/(4+m)-2^(-6-m)*exp(2*a)*x^m*GAMMA(4+m,-2*b*x)/b^4/((-b*x)^m)-2
^(-6-m)*x^m*GAMMA(4+m,2*b*x)/b^4/exp(2*a)/((b*x)^m)
```

Rubi [A] time = 0.16, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$-\frac{e^{2a}2^{-m-6}x^m(-bx)^{-m}\text{Gamma}(m+4,-2bx)}{b^4}-\frac{e^{-2a}2^{-m-6}x^m(bx)^{-m}\text{Gamma}(m+4,2bx)}{b^4}-\frac{x^{m+4}}{2(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] -x^(4 + m)/(2*(4 + m)) - (2^(-6 - m)*E^(2*a)*x^m*Gamma[4 + m, -2*b*x])/(b^4
*(-(b*x))^m) - (2^(-6 - m)*x^m*Gamma[4 + m, 2*b*x])/(b^4*E^(2*a)*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int x^{3+m}\sinh^2(a+bx)\,dx = -\int\left(\frac{x^{3+m}}{2}-\frac{1}{2}x^{3+m}\cosh(2a+2bx)\right)dx$$
$$= -\frac{x^{4+m}}{2(4+m)}+\frac{1}{2}\int x^{3+m}\cosh(2a+2bx)\,dx$$
$$= -\frac{x^{4+m}}{2(4+m)}+\frac{1}{4}\int e^{-i(2ia+2ibx)}x^{3+m}\,dx+\frac{1}{4}\int e^{i(2ia+2ibx)}x^{3+m}\,dx$$
$$= -\frac{x^{4+m}}{2(4+m)}-\frac{2^{-6-m}e^{2a}x^m(-bx)^{-m}\Gamma(4+m,-2bx)}{b^4}-\frac{2^{-6-m}e^{-2a}x^m(bx)^{-m}\Gamma(4+m,2bx}{b^4}$$

Mathematica [A] time = 0.12, size = 79, normalized size = 0.92

$$\frac{1}{64}x^m\left(-\frac{e^{2a}2^{-m}(-bx)^{-m}\Gamma(m+4,-2bx)}{b^4}-\frac{e^{-2a}2^{-m}(bx)^{-m}\Gamma(m+4,2bx)}{b^4}-\frac{32x^4}{m+4}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] (x^m*((-32*x^4)/(4 + m) - (E^(2*a)*Gamma[4 + m, -2*b*x])/(2^m*b^4*(-(b*x))^
m) - Gamma[4 + m, 2*b*x]/(2^m*b^4*E^(2*a)*(b*x)^m)))/64
```

fricas [A] time = 0.49, size = 136, normalized size = 1.58

$$-\frac{4\,bx\cosh\left((m+3)\log(x)\right)+(m+4)\cosh\left((m+3)\log\left(2\,b\right)+2\,a\right)\Gamma\left(m+4,2\,bx\right)-(m+4)\cosh\left((m+3)\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sinh(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*(4*b*x*cosh((m + 3)*log(x)) + (m + 4)*cosh((m + 3)*log(2*b) + 2*a)*gam
ma(m + 4, 2*b*x) - (m + 4)*cosh((m + 3)*log(-2*b) - 2*a)*gamma(m + 4, -2*b*
x) - (m + 4)*gamma(m + 4, 2*b*x)*sinh((m + 3)*log(2*b) + 2*a) + (m + 4)*gam
ma(m + 4, -2*b*x)*sinh((m + 3)*log(-2*b) - 2*a) + 4*b*x*sinh((m + 3)*log(x)
))/(b*m + 4*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m+3}\sinh\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sinh(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^(m + 3)*sinh(b*x + a)^2, x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int x^{3+m} \left(\sinh^2 (bx + a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3+m)*sinh(b*x+a)^2,x)
```

```
[Out] int(x^(3+m)*sinh(b*x+a)^2,x)
```

maxima [A] time = 0.74, size = 71, normalized size = 0.83

$$-\frac{1}{4} (2\,bx)^{-m-4}\, x^{m+4} e^{(-2\,a)} \Gamma\left(m + 4, 2\,bx\right) - \frac{1}{4} (-2\,bx)^{-m-4}\, x^{m+4} e^{(2\,a)} \Gamma\left(m + 4, -2\,bx\right) - \frac{x^{m+4}}{2\,(m + 4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sinh(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/4*(2*b*x)^(-m - 4)*x^(m + 4)*e^(-2*a)*gamma(m + 4, 2*b*x) - 1/4*(-2*b*x)
^(-m - 4)*x^(m + 4)*e^(2*a)*gamma(m + 4, -2*b*x) - 1/2*x^(m + 4)/(m + 4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{m+3}\,{\sinh\left(a+b\,x\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 3)*sinh(a + b*x)^2,x)
```

```
[Out] int(x^(m + 3)*sinh(a + b*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m+3} \sinh^2 (a + bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3+m)*sinh(b*x+a)**2,x)
```

```
[Out] Integral(x**(m + 3)*sinh(a + b*x)**2, x)
```

3.86 $\int x^{2+m}\sinh^2(a+bx)\,dx$

Optimal. Leaf size=85

$$\frac{e^{2a}2^{-m-5}x^m(-bx)^{-m}\Gamma(m+3,-2bx)}{b^3}-\frac{e^{-2a}2^{-m-5}x^m(bx)^{-m}\Gamma(m+3,2bx)}{b^3}-\frac{x^{m+3}}{2(m+3)}$$

```
[Out] -1/2*x^(3+m)/(3+m)+2^(-5-m)*exp(2*a)*x^m*GAMMA(3+m,-2*b*x)/b^3/((-b*x)^m)-2
^(-5-m)*x^m*GAMMA(3+m,2*b*x)/b^3/exp(2*a)/((b*x)^m)
```

Rubi [A] time = 0.14, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$\frac{e^{2a}2^{-m-5}x^m(-bx)^{-m}\text{Gamma}(m+3,-2bx)}{b^3}-\frac{e^{-2a}2^{-m-5}x^m(bx)^{-m}\text{Gamma}(m+3,2bx)}{b^3}-\frac{x^{m+3}}{2(m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(2 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] -x^(3 + m)/(2*(3 + m)) + (2^(-5 - m)*E^(2*a)*x^m*Gamma[3 + m, -2*b*x])/(b^3
*(-(b*x))^m) - (2^(-5 - m)*x^m*Gamma[3 + m, 2*b*x])/(b^3*E^(2*a)*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int x^{2+m}\sinh^2(a+bx)\,dx = -\int\left(\frac{x^{2+m}}{2}-\frac{1}{2}x^{2+m}\cosh(2a+2bx)\right)dx$$
$$= -\frac{x^{3+m}}{2(3+m)}+\frac{1}{2}\int x^{2+m}\cosh(2a+2bx)\,dx$$
$$= -\frac{x^{3+m}}{2(3+m)}+\frac{1}{4}\int e^{-i(2ia+2ibx)}x^{2+m}\,dx+\frac{1}{4}\int e^{i(2ia+2ibx)}x^{2+m}\,dx$$
$$= -\frac{x^{3+m}}{2(3+m)}+\frac{2^{-5-m}e^{2a}x^m(-bx)^{-m}\Gamma(3+m,-2bx)}{b^3}-\frac{2^{-5-m}e^{-2a}x^m(bx)^{-m}\Gamma(3+m,2bx)}{b^3}$$

Mathematica [A] time = 0.12, size = 78, normalized size = 0.92

$$\frac{1}{32}x^m\left(\frac{e^{2a}2^{-m}(-bx)^{-m}\Gamma(m+3,-2bx)}{b^3}-\frac{e^{-2a}2^{-m}(bx)^{-m}\Gamma(m+3,2bx)}{b^3}-\frac{16x^3}{m+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(2 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] (x^m*((-16*x^3)/(3 + m) + (E^(2*a)*Gamma[3 + m, -2*b*x])/(2^m*b^3*(-(b*x))^
m) - Gamma[3 + m, 2*b*x]/(2^m*b^3*E^(2*a)*(b*x)^m)))/32
```

fricas [A] time = 0.59, size = 136, normalized size = 1.60

$$-\frac{4\,bx\cosh\left((m+2)\log(x)\right)+(m+3)\cosh\left((m+2)\log\left(2\,b\right)+2\,a\right)\Gamma\left(m+3,2\,bx\right)-(m+3)\cosh\left((m+2)\log\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sinh(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*(4*b*x*cosh((m + 2)*log(x)) + (m + 3)*cosh((m + 2)*log(2*b) + 2*a)*gam
ma(m + 3, 2*b*x) - (m + 3)*cosh((m + 2)*log(-2*b) - 2*a)*gamma(m + 3, -2*b*
x) - (m + 3)*gamma(m + 3, 2*b*x)*sinh((m + 2)*log(2*b) + 2*a) + (m + 3)*gam
ma(m + 3, -2*b*x)*sinh((m + 2)*log(-2*b) - 2*a) + 4*b*x*sinh((m + 2)*log(x)
))/(b*m + 3*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m+2}\sinh\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sinh(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^(m + 2)*sinh(b*x + a)^2, x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int x^{2+m}\left(\sinh^2(bx+a)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(2+m)*sinh(b*x+a)^2,x)
```

```
[Out] int(x^(2+m)*sinh(b*x+a)^2,x)
```

maxima [A] time = 0.44, size = 71, normalized size = 0.84

$$-\frac{1}{4}(2\,bx)^{-m-3}x^{m+3}e^{(-2\,a)}\Gamma(m+3,2\,bx)-\frac{1}{4}(-2\,bx)^{-m-3}x^{m+3}e^{(2\,a)}\Gamma(m+3,-2\,bx)-\frac{x^{m+3}}{2\,(m+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sinh(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/4*(2*b*x)^(-m - 3)*x^(m + 3)*e^(-2*a)*gamma(m + 3, 2*b*x) - 1/4*(-2*b*x)
^(-m - 3)*x^(m + 3)*e^(2*a)*gamma(m + 3, -2*b*x) - 1/2*x^(m + 3)/(m + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{m+2}\,\sinh(a+b\,x)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 2)*sinh(a + b*x)^2,x)
```

```
[Out] int(x^(m + 2)*sinh(a + b*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m+2}\sinh^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(2+m)*sinh(b*x+a)**2,x)
```

```
[Out] Integral(x**(m + 2)*sinh(a + b*x)**2, x)
```

3.87 $\int x^{1+m} \sinh^2(a+bx)\,dx$

Optimal. Leaf size=86

$$-\frac{e^{2a}2^{-m-4}x^m(-bx)^{-m}\Gamma(m+2,-2bx)}{b^2}-\frac{e^{-2a}2^{-m-4}x^m(bx)^{-m}\Gamma(m+2,2bx)}{b^2}-\frac{x^{m+2}}{2(m+2)}$$

```
[Out] -1/2*x^(2+m)/(2+m)-2^(-4-m)*exp(2*a)*x^m*GAMMA(2+m,-2*b*x)/b^2/((-b*x)^m)-2
^(-4-m)*x^m*GAMMA(2+m,2*b*x)/b^2/exp(2*a)/((b*x)^m)
```

Rubi [A] time = 0.14, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$-\frac{e^{2a}2^{-m-4}x^m(-bx)^{-m}\text{Gamma}(m+2,-2bx)}{b^2}-\frac{e^{-2a}2^{-m-4}x^m(bx)^{-m}\text{Gamma}(m+2,2bx)}{b^2}-\frac{x^{m+2}}{2(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(1 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] -x^(2 + m)/(2*(2 + m)) - (2^(-4 - m)*E^(2*a)*x^m*Gamma[2 + m, -2*b*x])/(b^2
*(-(b*x))^m) - (2^(-4 - m)*x^m*Gamma[2 + m, 2*b*x])/(b^2*E^(2*a)*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int x^{1+m}\sinh^2(a+bx)\,dx = -\int \left(\frac{x^{1+m}}{2}-\frac{1}{2}x^{1+m}\cosh(2a+2bx)\right)dx$$
$$= -\frac{x^{2+m}}{2(2+m)}+\frac{1}{2}\int x^{1+m}\cosh(2a+2bx)\,dx$$
$$= -\frac{x^{2+m}}{2(2+m)}+\frac{1}{4}\int e^{-i(2ia+2ibx)}x^{1+m}\,dx+\frac{1}{4}\int e^{i(2ia+2ibx)}x^{1+m}\,dx$$
$$= -\frac{x^{2+m}}{2(2+m)}-\frac{2^{-4-m}e^{2a}x^m(-bx)^{-m}\Gamma(2+m,-2bx)}{b^2}-\frac{2^{-4-m}e^{-2a}x^m(bx)^{-m}\Gamma(2+m,2bx}{b^2}$$

Mathematica [A] time = 0.13, size = 79, normalized size = 0.92

$$\frac{1}{16}x^m\left(-\frac{e^{2a}2^{-m}(-bx)^{-m}\Gamma(m+2,-2bx)}{b^2}-\frac{e^{-2a}2^{-m}(bx)^{-m}\Gamma(m+2,2bx)}{b^2}-\frac{8x^2}{m+2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(1 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] (x^m*((-8*x^2)/(2 + m) - (E^(2*a)*Gamma[2 + m, -2*b*x])/(2^m*b^2*(-(b*x))^m
) - Gamma[2 + m, 2*b*x]/(2^m*b^2*E^(2*a)*(b*x)^m)))/16
```

fricas [A] time = 0.54, size = 136, normalized size = 1.58

$$-\frac{4\,bx\cosh\left((m+1)\log(x)\right)+(m+2)\cosh\left((m+1)\log\left(2\,b\right)+2\,a\right)\Gamma\left(m+2,2\,bx\right)-(m+2)\cosh\left((m+1)\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sinh(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*(4*b*x*cosh((m + 1)*log(x)) + (m + 2)*cosh((m + 1)*log(2*b) + 2*a)*gam
ma(m + 2, 2*b*x) - (m + 2)*cosh((m + 1)*log(-2*b) - 2*a)*gamma(m + 2, -2*b*
x) - (m + 2)*gamma(m + 2, 2*b*x)*sinh((m + 1)*log(2*b) + 2*a) + (m + 2)*gam
ma(m + 2, -2*b*x)*sinh((m + 1)*log(-2*b) - 2*a) + 4*b*x*sinh((m + 1)*log(x)
))/(b*m + 2*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m+1}\sinh\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sinh(b*x+a)^2,x, algorithm="giac")
[Out] integrate(x^(m + 1)*sinh(b*x + a)^2, x)
```

maple [F] time = 0.13, size = 0, normalized size = 0.00

$$\int x^{1+m} \left(\sinh^2(bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1+m)*sinh(b*x+a)^2,x)
[Out] int(x^(1+m)*sinh(b*x+a)^2,x)
```

maxima [A] time = 0.70, size = 71, normalized size = 0.83

$$-\frac{1}{4}(2bx)^{-m-2}x^{m+2}e^{(-2a)}\Gamma(m+2,2bx) - \frac{1}{4}(-2bx)^{-m-2}x^{m+2}e^{(2a)}\Gamma(m+2,-2bx) - \frac{x^{m+2}}{2(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sinh(b*x+a)^2,x, algorithm="maxima")
[Out] -1/4*(2*b*x)^(-m - 2)*x^(m + 2)*e^(-2*a)*gamma(m + 2, 2*b*x) - 1/4*(-2*b*x)
^(-m - 2)*x^(m + 2)*e^(2*a)*gamma(m + 2, -2*b*x) - 1/2*x^(m + 2)/(m + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{m+1}\sinh(a+b\,x)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 1)*sinh(a + b*x)^2,x)
[Out] int(x^(m + 1)*sinh(a + b*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m+1}\sinh^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1+m)*sinh(b*x+a)**2,x)
[Out] Integral(x**(m + 1)*sinh(a + b*x)**2, x)
```

3.88 $\int x^m \sinh^2(a + bx)\,dx$

Optimal. Leaf size=85

$$\frac{e^{2a}2^{-m-3}x^m(-bx)^{-m}\Gamma(m+1,-2bx)}{b}-\frac{e^{-2a}2^{-m-3}x^m(bx)^{-m}\Gamma(m+1,2bx)}{b}-\frac{x^{m+1}}{2(m+1)}$$

```
[Out] -1/2*x^(1+m)/(1+m)+2^(-3-m)*exp(2*a)*x^m*GAMMA(1+m,-2*b*x)/b/((-b*x)^m)-2^(
-3-m)*x^m*GAMMA(1+m,2*b*x)/b/exp(2*a)/((b*x)^m)
```

Rubi [A] time = 0.13, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3312, 3307, 2181}

$$\frac{e^{2a}2^{-m-3}x^m(-bx)^{-m}\text{Gamma}(m+1,-2bx)}{b}-\frac{e^{-2a}2^{-m-3}x^m(bx)^{-m}\text{Gamma}(m+1,2bx)}{b}-\frac{x^{m+1}}{2(m+1)}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*Sinh[a + b*x]^2,x]
```

```
[Out] -x^(1 + m)/(2*(1 + m)) + (2^(-3 - m)*E^(2*a)*x^m*Gamma[1 + m, -2*b*x])/(b*(
-(b*x))^m) - (2^(-3 - m)*x^m*Gamma[1 + m, 2*b*x])/(b*E^(2*a)*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}\int x^m \sinh^2(a+bx)\,dx &= -\int\left(\frac{x^m}{2}-\frac{1}{2}x^m\cosh(2a+2bx)\right)dx\\ &= -\frac{x^{1+m}}{2(1+m)}+\frac{1}{2}\int x^m\cosh(2a+2bx)\,dx\\ &= -\frac{x^{1+m}}{2(1+m)}+\frac{1}{4}\int e^{-i(2ia+2ibx)}x^m\,dx+\frac{1}{4}\int e^{i(2ia+2ibx)}x^m\,dx\\ &= -\frac{x^{1+m}}{2(1+m)}+\frac{2^{-3-m}e^{2a}x^m(-bx)^{-m}\Gamma(1+m,-2bx)}{b}-\frac{2^{-3-m}e^{-2a}x^m(bx)^{-m}\Gamma(1+m,2bx)}{b}\end{aligned}$$

Mathematica [A] time = 0.11, size = 76, normalized size = 0.89

$$\frac{1}{8}x^m\left(\frac{e^{2a}2^{-m}(-bx)^{-m}\Gamma(m+1,-2bx)}{b}-\frac{e^{-2a}2^{-m}(bx)^{-m}\Gamma(m+1,2bx)}{b}-\frac{4x}{m+1}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*Sinh[a + b*x]^2,x]
```

```
[Out] (x^m*((-4*x)/(1 + m) + (E^(2*a)*Gamma[1 + m, -2*b*x])/(2^m*b*(-(b*x))^m) -
Gamma[1 + m, 2*b*x]/(2^m*b*E^(2*a)*(b*x)^m)))/8
```

fricas [A] time = 0.79, size = 122, normalized size = 1.44

$$-\frac{4\,bx\cosh\left(m\log(x)\right)+(m+1)\cosh\left(m\log\left(2\,b\right)+2\,a\right)\Gamma\left(m+1,2\,bx\right)-(m+1)\cosh\left(m\log\left(-2\,b\right)-2\,a\right)\Gamma\left(m\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sinh(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*(4*b*x*cosh(m*log(x)) + (m + 1)*cosh(m*log(2*b) + 2*a)*gamma(m + 1, 2*
b*x) - (m + 1)*cosh(m*log(-2*b) - 2*a)*gamma(m + 1, -2*b*x) - (m + 1)*gamma
(m + 1, 2*b*x)*sinh(m*log(2*b) + 2*a) + (m + 1)*gamma(m + 1, -2*b*x)*sinh(m
*log(-2*b) - 2*a) + 4*b*x*sinh(m*log(x)))/(b*m + b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^m\sinh\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sinh(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^m*sinh(b*x + a)^2, x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int x^m \left(\sinh^2(bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*sinh(b*x+a)^2,x)
```

```
[Out] int(x^m*sinh(b*x+a)^2,x)
```

maxima [A] time = 0.83, size = 71, normalized size = 0.84

$$-\frac{1}{4}\,(2\,bx)^{-m-1}\,x^{m+1}e^{(-2\,a)}\Gamma\left(m+1,2\,bx\right)-\frac{1}{4}\,(-2\,bx)^{-m-1}\,x^{m+1}e^{(2\,a)}\Gamma\left(m+1,-2\,bx\right)-\frac{x^{m+1}}{2\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sinh(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/4*(2*b*x)^(-m - 1)*x^(m + 1)*e^(-2*a)*gamma(m + 1, 2*b*x) - 1/4*(-2*b*x)
^(-m - 1)*x^(m + 1)*e^(2*a)*gamma(m + 1, -2*b*x) - 1/2*x^(m + 1)/(m + 1)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^m\,{\sinh\left(a+b\,x\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*sinh(a + b*x)^2,x)
```

```
[Out] int(x^m*sinh(a + b*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m} \sinh^{2}{\left (a + bx \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*sinh(b*x+a)**2,x)
```

```
[Out] Integral(x**m*sinh(a + b*x)**2, x)
```

3.89 $\int x^{-1+m} \sinh^2(a+bx)\,dx$

Optimal. Leaf size=72

$$e^{2a}\left(-2^{-m-2}\right)x^m(-bx)^{-m}\Gamma(m,-2bx)-e^{-2a}2^{-m-2}x^m(bx)^{-m}\Gamma(m,2bx)-\frac{x^m}{2m}$$

```
[Out] -1/2*x^m/m-2^(-2-m)*exp(2*a)*x^m*GAMMA(m,-2*b*x)/((-b*x)^m)-2^(-2-m)*x^m*GA
MMA(m,2*b*x)/exp(2*a)/((b*x)^m)
```

Rubi [A] time = 0.13, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$e^{2a}\left(-2^{-m-2}\right)x^m(-bx)^{-m}\text{Gamma}(m,-2bx)-e^{-2a}2^{-m-2}x^m(bx)^{-m}\text{Gamma}(m,2bx)-\frac{x^m}{2m}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-1 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] -x^m/(2*m) - (2^(-2 - m)*E^(2*a)*x^m*Gamma[m, -2*b*x])/(-(b*x))^m - (2^(-2
- m)*x^m*Gamma[m, 2*b*x])/(E^(2*a)*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int x^{-1+m}\sinh^2(a+bx)\,dx = -\int\left(\frac{x^{-1+m}}{2}-\frac{1}{2}x^{-1+m}\cosh(2a+2bx)\right)dx$$
$$= -\frac{x^m}{2m}+\frac{1}{2}\int x^{-1+m}\cosh(2a+2bx)\,dx$$
$$= -\frac{x^m}{2m}+\frac{1}{4}\int e^{-i(2ia+2ibx)}x^{-1+m}\,dx+\frac{1}{4}\int e^{i(2ia+2ibx)}x^{-1+m}\,dx$$
$$= -\frac{x^m}{2m}-2^{-2-m}e^{2a}x^m(-bx)^{-m}\Gamma(m,-2bx)-2^{-2-m}e^{-2a}x^m(bx)^{-m}\Gamma(m,2bx)$$

Mathematica [A] time = 0.07, size = 63, normalized size = 0.88

$$-\frac{x^m\left(e^{2a}2^{-m}m(-bx)^{-m}\Gamma(m,-2bx)+e^{-2a}2^{-m}m(bx)^{-m}\Gamma(m,2bx)+2\right)}{4m}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-1 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] -1/4*(x^m*(2 + (E^(2*a)*m*Gamma[m, -2*b*x])/(2^m*(-(b*x))^m) + (m*Gamma[m,
2*b*x])/(2^m*E^(2*a)*(b*x)^m)))/m
```

fricas [A] time = 0.55, size = 117, normalized size = 1.62

$$-\frac{4\,bx\cosh\left((m-1)\log(x)\right)+m\cosh\left((m-1)\log\left(2\,b\right)+2\,a\right)\Gamma\left(m,2\,bx\right)-m\cosh\left((m-1)\log\left(-2\,b\right)-2\,a\right)\Gamma(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sinh(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*(4*b*x*cosh((m - 1)*log(x)) + m*cosh((m - 1)*log(2*b) + 2*a)*gamma(m,
2*b*x) - m*cosh((m - 1)*log(-2*b) - 2*a)*gamma(m, -2*b*x) - m*gamma(m, 2*b*
x)*sinh((m - 1)*log(2*b) + 2*a) + m*gamma(m, -2*b*x)*sinh((m - 1)*log(-2*b)
 - 2*a) + 4*b*x*sinh((m - 1)*log(x)))/(b*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m-1}\sinh\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sinh(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^(m - 1)*sinh(b*x + a)^2, x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int x^{-1+m} \left(\sinh^2(bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(-1+m)*sinh(b*x+a)^2,x)
```

```
[Out] int(x^(-1+m)*sinh(b*x+a)^2,x)
```

maxima [A] time = 0.79, size = 55, normalized size = 0.76

$$-\frac{x^m e^{(-2a)}\Gamma(m, 2bx)}{4(2bx)^m} - \frac{x^m e^{(2a)}\Gamma(m, -2bx)}{4(-2bx)^m} - \frac{x^m}{2m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sinh(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/4*x^m*e^(-2*a)*gamma(m, 2*b*x)/(2*b*x)^m - 1/4*x^m*e^(2*a)*gamma(m, -2*b
*x)/(-2*b*x)^m - 1/2*x^m/m
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{m-1}\sinh(a+bx)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 1)*sinh(a + b*x)^2,x)
```

```
[Out] int(x^(m - 1)*sinh(a + b*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m-1}\sinh^2(a+bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-1+m)*sinh(b*x+a)**2,x)
```

```
[Out] Integral(x**(m - 1)*sinh(a + b*x)**2, x)
```

3.90 $\int x^{-2+m}\sinh^2(a+bx)\,dx$

Optimal. Leaf size=83

$$e^{2a}b2^{-m-1}x^m(-bx)^{-m}\Gamma(m-1,-2bx)-e^{-2a}b2^{-m-1}x^m(bx)^{-m}\Gamma(m-1,2bx)+\frac{x^{m-1}}{2(1-m)}$$

```
[Out] 1/2*x^(-1+m)/(1-m)+2^(-1-m)*b*exp(2*a)*x^m*GAMMA(-1+m,-2*b*x)/((-b*x)^m)-2^
(-1-m)*b*x^m*GAMMA(-1+m,2*b*x)/exp(2*a)/((b*x)^m)
```

Rubi [A] time = 0.14, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$e^{2a}b2^{-m-1}x^m(-bx)^{-m}\text{Gamma}(m-1,-2bx)-e^{-2a}b2^{-m-1}x^m(bx)^{-m}\text{Gamma}(m-1,2bx)+\frac{x^{m-1}}{2(1-m)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-2 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] x^(-1 + m)/(2*(1 - m)) + (2^(-1 - m)*b*E^(2*a)*x^m*Gamma[-1 + m, -2*b*x])/(
-(b*x))^m - (2^(-1 - m)*b*x^m*Gamma[-1 + m, 2*b*x])/(E^(2*a)*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}\int x^{-2+m}\sinh^2(a+bx)\,dx &= -\int\left(\frac{x^{-2+m}}{2}-\frac{1}{2}x^{-2+m}\cosh(2a+2bx)\right)dx\\ &= \frac{x^{-1+m}}{2(1-m)}+\frac{1}{2}\int x^{-2+m}\cosh(2a+2bx)\,dx\\ &= \frac{x^{-1+m}}{2(1-m)}+\frac{1}{4}\int e^{-i(2ia+2ibx)}x^{-2+m}\,dx+\frac{1}{4}\int e^{i(2ia+2ibx)}x^{-2+m}\,dx\\ &= \frac{x^{-1+m}}{2(1-m)}+2^{-1-m}be^{2a}x^m(-bx)^{-m}\Gamma(-1+m,-2bx)-2^{-1-m}be^{-2a}x^m(bx)^{-m}\Gamma(-1+m,2\end{aligned}$$

Mathematica [A] time = 0.10, size = 72, normalized size = 0.87

$$\frac{1}{2}x^m\left(e^{2a}b2^{-m}(-bx)^{-m}\Gamma(m-1,-2bx)-e^{-2a}b2^{-m}(bx)^{-m}\Gamma(m-1,2bx)+\frac{1}{x-mx}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-2 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] (x^m*((x - m*x)^(-1) + (b*E^(2*a)*Gamma[-1 + m, -2*b*x])/(2^m*(-(b*x))^m) -
 (b*Gamma[-1 + m, 2*b*x])/(2^m*E^(2*a)*(b*x)^m)))/2
```

fricas [A] time = 0.50, size = 136, normalized size = 1.64

$$-\frac{4\,bx\cosh\left((m-2)\log(x)\right)+(m-1)\cosh\left((m-2)\log(2\,b)+2\,a\right)\Gamma\left(m-1,2\,bx\right)-(m-1)\cosh\left((m-2)\log(-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sinh(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*(4*b*x*cosh((m - 2)*log(x)) + (m - 1)*cosh((m - 2)*log(2*b) + 2*a)*gam
ma(m - 1, 2*b*x) - (m - 1)*cosh((m - 2)*log(-2*b) - 2*a)*gamma(m - 1, -2*b*
x) - (m - 1)*gamma(m - 1, 2*b*x)*sinh((m - 2)*log(2*b) + 2*a) + (m - 1)*gam
ma(m - 1, -2*b*x)*sinh((m - 2)*log(-2*b) - 2*a) + 4*b*x*sinh((m - 2)*log(x)
))/(b*m - b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m-2}\sinh\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sinh(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^(m - 2)*sinh(b*x + a)^2, x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int x^{-2+m} \left(\sinh^2 (bx + a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(-2+m)*sinh(b*x+a)^2,x)
```

```
[Out] int(x^(-2+m)*sinh(b*x+a)^2,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sinh(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(m-2>0)', see `assume?` for more det
ails)Is m-2 equal to -1?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{m-2} \sinh(a + b\,x)^2 \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 2)*sinh(a + b*x)^2,x)
```

```
[Out] int(x^(m - 2)*sinh(a + b*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m-2} \sinh^2 (a + bx) \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-2+m)*sinh(b*x+a)**2,x)
```

```
[Out] Integral(x**(m - 2)*sinh(a + b*x)**2, x)
```

3.91 $\int x^{-3+m}\sinh^2(a+bx)\,dx$

Optimal. Leaf size=84

$$-e^{2a}b^2 2^{-m}x^m(-bx)^{-m}\Gamma(m-2,-2bx)-e^{-2a}b^2 2^{-m}x^m(bx)^{-m}\Gamma(m-2,2bx)+\frac{x^{m-2}}{2(2-m)}$$

```
[Out] 1/2*x^(-2+m)/(2-m)-b^2*exp(2*a)*x^m*GAMMA(-2+m,-2*b*x)/(2^m)/((-b*x)^m)-b^2
*x^m*GAMMA(-2+m,2*b*x)/(2^m)/exp(2*a)/((b*x)^m)
```

Rubi [A] time = 0.14, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$-e^{2a}b^2 2^{-m}x^m(-bx)^{-m}\text{Gamma}(m-2,-2bx)-e^{-2a}b^2 2^{-m}x^m(bx)^{-m}\text{Gamma}(m-2,2bx)+\frac{x^{m-2}}{2(2-m)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-3 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] x^(-2 + m)/(2*(2 - m)) - (b^2*E^(2*a)*x^m*Gamma[-2 + m, -2*b*x])/(2^m*(-(b*
x))^m) - (b^2*x^m*Gamma[-2 + m, 2*b*x])/(2^m*E^(2*a)*(b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int x^{-3+m}\sinh^2(a+bx)\,dx = -\int \left(\frac{x^{-3+m}}{2}-\frac{1}{2}x^{-3+m}\cosh(2a+2bx)\right)dx$$
$$= \frac{x^{-2+m}}{2(2-m)}+\frac{1}{2}\int x^{-3+m}\cosh(2a+2bx)\,dx$$
$$= \frac{x^{-2+m}}{2(2-m)}+\frac{1}{4}\int e^{-i(2ia+2ibx)}x^{-3+m}\,dx+\frac{1}{4}\int e^{i(2ia+2ibx)}x^{-3+m}\,dx$$
$$= \frac{x^{-2+m}}{2(2-m)}-2^{-m}b^2e^{2a}x^m(-bx)^{-m}\Gamma(-2+m,-2bx)-2^{-m}b^2e^{-2a}x^m(bx)^{-m}\Gamma(-2+m,2$$

Mathematica [A] time = 0.11, size = 77, normalized size = 0.92

$$x^m\left(e^{2a}b^2\left(-2^{-m}\right)(-bx)^{-m}\Gamma(m-2,-2bx)-e^{-2a}b^22^{-m}(bx)^{-m}\Gamma(m-2,2bx)+\frac{1}{(4-2m)x^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-3 + m)*Sinh[a + b*x]^2,x]
```

```
[Out] x^m*(1/((4 - 2*m)*x^2) - (b^2*E^(2*a)*Gamma[-2 + m, -2*b*x])/(2^m*(-(b*x))^
m) - (b^2*Gamma[-2 + m, 2*b*x])/(2^m*E^(2*a)*(b*x)^m))
```

fricas [A] time = 0.71, size = 136, normalized size = 1.62

$$-\frac{4\,bx\cosh\left((m-3)\log(x)\right)+(m-2)\cosh\left((m-3)\log\left(2\,b\right)+2\,a\right)\Gamma\left(m-2,2\,bx\right)-(m-2)\cosh\left((m-3)\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sinh(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*(4*b*x*cosh((m - 3)*log(x)) + (m - 2)*cosh((m - 3)*log(2*b) + 2*a)*gam
ma(m - 2, 2*b*x) - (m - 2)*cosh((m - 3)*log(-2*b) - 2*a)*gamma(m - 2, -2*b*
x) - (m - 2)*gamma(m - 2, 2*b*x)*sinh((m - 3)*log(2*b) + 2*a) + (m - 2)*gam
ma(m - 2, -2*b*x)*sinh((m - 3)*log(-2*b) - 2*a) + 4*b*x*sinh((m - 3)*log(x)
))/(b*m - 2*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m-3}\sinh\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sinh(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^(m - 3)*sinh(b*x + a)^2, x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int x^{-3+m} \left(\sinh^2 (bx + a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(-3+m)*sinh(b*x+a)^2,x)
```

```
[Out] int(x^(-3+m)*sinh(b*x+a)^2,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sinh(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(m-3>0)', see `assume?` for more det
ails)Is m-3 equal to -1?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{m-3} \sinh (a + b\,x)^2 \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 3)*sinh(a + b*x)^2,x)
```

```
[Out] int(x^(m - 3)*sinh(a + b*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m-3} \sinh^2 (a + bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-3+m)*sinh(b*x+a)**2,x)
```

```
[Out] Integral(x**(m - 3)*sinh(a + b*x)**2, x)
```

3.92 $\int \left(\frac{x}{\operatorname{csch}^{\frac{3}{2}}(x)} + \frac{1}{3} x \sqrt{\operatorname{csch}(x)} \right) dx$

Optimal. Leaf size=24

$$\frac{2x\cosh(x)}{3\sqrt{\operatorname{csch}(x)}} - \frac{4}{9\operatorname{csch}^{\frac{3}{2}}(x)}$$

```
[Out] -4/9/csch(x)^(3/2)+2/3*x*cosh(x)/csch(x)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {4187, 4189}

$$\frac{2x\cosh(x)}{3\sqrt{\operatorname{csch}(x)}} - \frac{4}{9\operatorname{csch}^{\frac{3}{2}}(x)}$$

Antiderivative was successfully verified.

```
[In] Int[x/Csch[x]^(3/2) + (x*Sqrt[Csch[x]])/3,x]
```

```
[Out] -4/(9*Csch[x]^(3/2)) + (2*x*Cosh[x])/(3*Sqrt[Csch[x]])
```

Rule 4187

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 Simp[(d*(b*Csc[e + f*x])^n)/(f^2*n^2), x] + (Dist[(n + 1)/(b^2*n), Int[(c
+ d*x)*(b*Csc[e + f*x])^(n + 2), x], x] + Simp[((c + d*x)*Cos[e + f*x]*(b*C
sc[e + f*x])^(n + 1))/(b*f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && LtQ[n, -
1]
```

Rule 4189

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_.), x_Symb
ol] :> Dist[(b*Sin[e + f*x])^n*(b*Csc[e + f*x])^n, Int[(c + d*x)^m/(b*Sin[e
 + f*x])^n, x], x] /; FreeQ[{b, c, d, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \left(\frac{x}{\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{1}{3}x\sqrt{\operatorname{csch}(x)}\right)dx=\frac{1}{3}\int x\sqrt{\operatorname{csch}(x)}\,dx+\int \frac{x}{\operatorname{csch}^{\frac{3}{2}}(x)}\,dx$$
$$=-\frac{4}{9\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{2x\cosh(x)}{3\sqrt{\operatorname{csch}(x)}}-\frac{1}{3}\int x\sqrt{\operatorname{csch}(x)}\,dx+\frac{1}{3}\left(\sqrt{\operatorname{csch}(x)}\sqrt{-\sinh(x)}\right.$$
$$=-\frac{4}{9\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{2x\cosh(x)}{3\sqrt{\operatorname{csch}(x)}}$$

Mathematica [A] time = 0.10, size = 17, normalized size = 0.71

$$\frac{2(3x\coth(x)-2)}{9\operatorname{csch}^{\frac{3}{2}}(x)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Csch[x]^(3/2) + (x*Sqrt[Csch[x]])/3,x]
[Out] (2*(-2 + 3*x*Coth[x]))/(9*Csch[x]^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csch(x)^(3/2)+1/3*x*csch(x)^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{3}x\sqrt{\operatorname{csch}(x)}+\frac{x}{\operatorname{csch}(x)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csch(x)^(3/2)+1/3*x*csch(x)^(1/2),x, algorithm="giac")
[Out] integrate(1/3*x*sqrt(csch(x)) + x/csch(x)^(3/2), x)
```

maple [F] time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{x}{\operatorname{csch}(x)^{\frac{3}{2}}}+\frac{x\sqrt{\operatorname{csch}(x)}}{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/csch(x)^(3/2)+1/3*x*csch(x)^(1/2),x)
[Out] int(x/csch(x)^(3/2)+1/3*x*csch(x)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{3}\,x\sqrt{\operatorname{csch}(x)}+\frac{x}{\operatorname{csch}(x)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csch(x)^(3/2)+1/3*x*csch(x)^(1/2),x, algorithm="maxima")
[Out] integrate(1/3*x*sqrt(csch(x)) + x/csch(x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x\,\sqrt{\frac{1}{\sinh(x)}}}{3}+\frac{x}{{\left(\frac{1}{\sinh(x)}\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(1/sinh(x))^(1/2))/3 + x/(1/sinh(x))^(3/2),x)
[Out] int((x*(1/sinh(x))^(1/2))/3 + x/(1/sinh(x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{3x}{\operatorname{csch}^{\frac{3}{2}}(x)}\,dx+\int x\sqrt{\operatorname{csch}(x)}\,dx}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csch(x)**(3/2)+1/3*x*csch(x)**(1/2),x)
[Out] (Integral(3*x/csch(x)**(3/2), x) + Integral(x*sqrt(csch(x)), x))/3
```

3.93 $\int \left(\frac{x}{\operatorname{csch}^{\frac{5}{2}}(x)}+\frac{3x}{5\sqrt{\operatorname{csch}(x)}}\right)dx$

Optimal. Leaf size=24

$$\frac{2x\cosh(x)}{5\operatorname{csch}^{\frac{3}{2}}(x)}-\frac{4}{25\operatorname{csch}^{\frac{5}{2}}(x)}$$

```
[Out] -4/25/csch(x)^(5/2)+2/5*x*cosh(x)/csch(x)^(3/2)
```

Rubi [A] time = 0.12, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {4187, 4189}

$$\frac{2x\cosh(x)}{5\operatorname{csch}^{\frac{3}{2}}(x)}-\frac{4}{25\operatorname{csch}^{\frac{5}{2}}(x)}$$

Antiderivative was successfully verified.

```
[In] Int[x/Csch[x]^(5/2) + (3*x)/(5*Sqrt[Csch[x]]),x]
```

```
[Out] -4/(25*Csch[x]^(5/2)) + (2*x*Cosh[x])/(5*Csch[x]^(3/2))
```

Rule 4187

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 Simp[(d*(b*Csc[e + f*x])^n)/(f^2*n^2), x] + (Dist[(n + 1)/(b^2*n), Int[(c
+ d*x)*(b*Csc[e + f*x])^(n + 2), x], x] + Simp[((c + d*x)*Cos[e + f*x]*(b*C
sc[e + f*x])^(n + 1))/(b*f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && LtQ[n, -
1]
```

Rule 4189

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_.), x_Symb
ol] :> Dist[(b*Sin[e + f*x])^n*(b*Csc[e + f*x])^n, Int[(c + d*x)^m/(b*Sin[e
 + f*x])^n, x], x] /; FreeQ[{b, c, d, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \left(\frac{x}{\operatorname{csch}^{\frac{5}{2}}(x)}+\frac{3x}{5\sqrt{\operatorname{csch}(x)}}\right)dx = \frac{3}{5}\int \frac{x}{\sqrt{\operatorname{csch}(x)}}\,dx+\int \frac{x}{\operatorname{csch}^{\frac{5}{2}}(x)}\,dx$$
$$= -\frac{4}{25\operatorname{csch}^{\frac{5}{2}}(x)}+\frac{2x\cosh(x)}{5\operatorname{csch}^{\frac{3}{2}}(x)}-\frac{3}{5}\int \frac{x}{\sqrt{\operatorname{csch}(x)}}\,dx+\frac{3\int x\sqrt{-\sinh(x)}\,dx}{5\sqrt{\operatorname{csch}(x)}\,\sqrt{-\sinh(x)}}$$
$$= -\frac{4}{25\operatorname{csch}^{\frac{5}{2}}(x)}+\frac{2x\cosh(x)}{5\operatorname{csch}^{\frac{3}{2}}(x)}$$

Mathematica [A] time = 0.13, size = 17, normalized size = 0.71

$$\frac{2(5x\coth(x)-2)}{25\operatorname{csch}^{\frac{5}{2}}(x)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Csch[x]^(5/2) + (3*x)/(5*Sqrt[Csch[x]]),x]
```

```
[Out] (2*(-2 + 5*x*Coth[x]))/(25*Csch[x]^(5/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csch(x)^(5/2)+3/5*x/csch(x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{3\,x}{5\,\sqrt{\operatorname{csch}(x)}}+\frac{x}{\operatorname{csch}(x)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csch(x)^(5/2)+3/5*x/csch(x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(3/5*x/sqrt(csch(x)) + x/csch(x)^(5/2), x)
```

maple [F] time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{x}{\operatorname{csch}(x)^{\frac{5}{2}}} + \frac{3x}{5\sqrt{\operatorname{csch}(x)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/csch(x)^(5/2)+3/5*x/csch(x)^(1/2),x)
[Out] int(x/csch(x)^(5/2)+3/5*x/csch(x)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{3\,x}{5\,\sqrt{\operatorname{csch}(x)}} + \frac{x}{\operatorname{csch}(x)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csch(x)^(5/2)+3/5*x/csch(x)^(1/2),x, algorithm="maxima")
[Out] integrate(3/5*x/sqrt(csch(x)) + x/csch(x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{3\,x}{5\,\sqrt{\frac{1}{\sinh(x)}}} + \frac{x}{{\left(\frac{1}{\sinh(x)}\right)}^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x)/(5*(1/sinh(x))^(1/2)) + x/(1/sinh(x))^(5/2),x)
[Out] int((3*x)/(5*(1/sinh(x))^(1/2)) + x/(1/sinh(x))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{5x}{\operatorname{csch}^{\frac{5}{2}}(x)}\, dx + \int \frac{3x}{\sqrt{\operatorname{csch}(x)}}\, dx}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csch(x)**(5/2)+3/5*x/csch(x)**(1/2),x)
[Out] (Integral(5*x/csch(x)**(5/2), x) + Integral(3*x/sqrt(csch(x)), x))/5
```

3.94 $\int \left(\frac{x}{\text{csch}^{\frac{7}{2}}(x)}-\frac{5}{21} x \sqrt{\text{csch}(x)}\right) \, dx$

Optimal. Leaf size=47

$$\frac{20}{63\text{csch}^{\frac{3}{2}}(x)}-\frac{4}{49\text{csch}^{\frac{7}{2}}(x)}+\frac{2x\cosh(x)}{7\text{csch}^{\frac{5}{2}}(x)}-\frac{10x\cosh(x)}{21\sqrt{\text{csch}(x)}}$$

```
[Out] -4/49/csch(x)^(7/2)+2/7*x*cosh(x)/csch(x)^(5/2)+20/63/csch(x)^(3/2)-10/21*x
*cosh(x)/csch(x)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {4187, 4189}

$$\frac{20}{63\text{csch}^{\frac{3}{2}}(x)}-\frac{4}{49\text{csch}^{\frac{7}{2}}(x)}+\frac{2x\cosh(x)}{7\text{csch}^{\frac{5}{2}}(x)}-\frac{10x\cosh(x)}{21\sqrt{\text{csch}(x)}}$$

Antiderivative was successfully verified.

```
[In] Int[x/Csch[x]^(7/2) - (5*x*Sqrt[Csch[x]])/21,x]
```

```
[Out] -4/(49*Csch[x]^(7/2)) + (2*x*Cosh[x])/(7*Csch[x]^(5/2)) + 20/(63*Csch[x]^(3
/2)) - (10*x*Cosh[x])/(21*Sqrt[Csch[x]])
```

Rule 4187

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 Simp[(d*(b*Csc[e + f*x])^n)/(f^2*n^2), x] + (Dist[(n + 1)/(b^2*n), Int[(c
+ d*x)*(b*Csc[e + f*x])^(n + 2), x], x] + Simp[((c + d*x)*Cos[e + f*x]*(b*C
sc[e + f*x])^(n + 1))/(b*f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && LtQ[n, -
1]
```

Rule 4189

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_.), x_Symb
ol] :> Dist[(b*Sin[e + f*x])^n*(b*Csc[e + f*x])^n, Int[(c + d*x)^m/(b*Sin[e
 + f*x])^n, x], x] /; FreeQ[{b, c, d, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \left(\frac{x}{\operatorname{csch}^{\frac{7}{2}}(x)} - \frac{5}{21}x\sqrt{\operatorname{csch}(x)}\right)dx = -\left(\frac{5}{21}\int x\sqrt{\operatorname{csch}(x)}\,dx\right) + \int \frac{x}{\operatorname{csch}^{\frac{7}{2}}(x)}dx$$
$$= -\frac{4}{49\operatorname{csch}^{\frac{7}{2}}(x)} + \frac{2x\cosh(x)}{7\operatorname{csch}^{\frac{5}{2}}(x)} - \frac{5}{7}\int \frac{x}{\operatorname{csch}^{\frac{3}{2}}(x)}dx - \frac{1}{21}\left(5\sqrt{\operatorname{csch}(x)}\sqrt{-\sinh(\right.$$
$$= -\frac{4}{49\operatorname{csch}^{\frac{7}{2}}(x)} + \frac{2x\cosh(x)}{7\operatorname{csch}^{\frac{5}{2}}(x)} + \frac{20}{63\operatorname{csch}^{\frac{3}{2}}(x)} - \frac{10x\cosh(x)}{21\sqrt{\operatorname{csch}(x)}} + \frac{5}{21}\int x\sqrt{\operatorname{csch}(}$$
$$= -\frac{4}{49\operatorname{csch}^{\frac{7}{2}}(x)} + \frac{2x\cosh(x)}{7\operatorname{csch}^{\frac{5}{2}}(x)} + \frac{20}{63\operatorname{csch}^{\frac{3}{2}}(x)} - \frac{10x\cosh(x)}{21\sqrt{\operatorname{csch}(x)}}$$

Mathematica [A] time = 0.11, size = 45, normalized size = 0.96

$$\sqrt{\operatorname{csch}(x)}\left(-\frac{13}{42}x\sinh(2x) + \frac{1}{28}x\sinh(4x) + \frac{88}{441}\cosh(2x) - \frac{1}{98}\cosh(4x) - \frac{167}{882}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Csch[x]^(7/2) - (5*x*Sqrt[Csch[x]])/21,x]
```

```
[Out] Sqrt[Csch[x]]*(-167/882 + (88*Cosh[2*x])/441 - Cosh[4*x]/98 - (13*x*Sinh[2*
x])/42 + (x*Sinh[4*x])/28)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csch(x)^(7/2)-5/21*x*csch(x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5}{21}x\sqrt{\operatorname{csch}(x)} + \frac{x}{\operatorname{csch}(x)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csch(x)^(7/2)-5/21*x*csch(x)^(1/2),x, algorithm="giac")
```

[Out] integrate(-5/21*x*sqrt(csch(x)) + x/csch(x)^(7/2), x)

maple [F] time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{x}{\operatorname{csch}(x)^{\frac{7}{2}}}-\frac{5x\sqrt{\operatorname{csch}(x)}}{21}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x/csch(x)^(7/2)-5/21*x*csch(x)^(1/2),x)

[Out] int(x/csch(x)^(7/2)-5/21*x*csch(x)^(1/2),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5}{21}\,x\sqrt{\operatorname{csch}(x)}+\frac{x}{\operatorname{csch}(x)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x/csch(x)^(7/2)-5/21*x*csch(x)^(1/2),x, algorithm="maxima")

[Out] integrate(-5/21*x*sqrt(csch(x)) + x/csch(x)^(7/2), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$-\int \frac{5\,x\,\sqrt{\frac{1}{\sinh(x)}}}{21}-\frac{x}{{\left(\frac{1}{\sinh(x)}\right)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x/(1/sinh(x))^(7/2) - (5*x*(1/sinh(x))^(1/2))/21,x)

[Out] -int((5*x*(1/sinh(x))^(1/2))/21 - x/(1/sinh(x))^(7/2), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int \left(-\frac{21x}{\operatorname{csch}^{\frac{7}{2}}(x)}\right)dx+\int 5x\sqrt{\operatorname{csch}(x)}\,dx}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x/csch(x)**(7/2)-5/21*x*csch(x)**(1/2),x)

[Out] -(Integral(-21*x/csch(x)**(7/2), x) + Integral(5*x*sqrt(csch(x)), x))/21

3.95 $\int \left(\frac{x^2}{\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{1}{3}x^2\sqrt{\operatorname{csch}(x)}\right)dx$

Optimal. Leaf size=76

$$\frac{2x^2\cosh(x)}{3\sqrt{\operatorname{csch}(x)}}-\frac{8x}{9\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{16\cosh(x)}{27\sqrt{\operatorname{csch}(x)}}-\frac{16}{27}i\sqrt{i\sinh(x)}\sqrt{\operatorname{csch}(x)}F\left(\frac{\pi}{4}-\frac{ix}{2}\middle|2\right)$$

```
[Out] -8/9*x/csch(x)^(3/2)+16/27*cosh(x)/csch(x)^(1/2)+2/3*x^2*cosh(x)/csch(x)^(1
/2)-16/27*I*(sin(1/4*Pi+1/2*I*x)^2)^(1/2)/sin(1/4*Pi+1/2*I*x)*EllipticF(cos
(1/4*Pi+1/2*I*x),2^(1/2))*csch(x)^(1/2)*(I*sinh(x))^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {4188, 4189, 3769, 3771, 2641}

$$\frac{2x^2\cosh(x)}{3\sqrt{\operatorname{csch}(x)}}-\frac{8x}{9\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{16\cosh(x)}{27\sqrt{\operatorname{csch}(x)}}-\frac{16}{27}i\sqrt{i\sinh(x)}\sqrt{\operatorname{csch}(x)}F\left(\frac{\pi}{4}-\frac{ix}{2}\middle|2\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^2/Csch[x]^(3/2) + (x^2*Sqrt[Csch[x]])/3,x]
```

```
[Out] (-8*x)/(9*Csch[x]^(3/2)) + (16*Cosh[x])/(27*Sqrt[Csch[x]]) + (2*x^2*Cosh[x]
)/(3*Sqrt[Csch[x]]) - ((16*I)/27)*Sqrt[Csch[x]]*EllipticF[Pi/4 - (I/2)*x, 2
]*Sqrt[I*Sinh[x]]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 3769

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Cos[c + d*x]*(
b*Csc[c + d*x])^(n + 1))/(b*d*n), x] + Dist[(n + 1)/(b^2*n), Int[(b*Csc[c +
 d*x])^(n + 2), x], x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1] && IntegerQ[2*n
]
```

Rule 3771

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[(b*Csc[c + d*x]
)^n*Sin[c + d*x]^n, Int[1/Sin[c + d*x]^n, x], x] /; FreeQ[{b, c, d}, x] &&
```

```
EqQ[n^2, 1/4]
```

Rule 4188

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Csc[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(n + 1)/(b^2*n), Int[(c + d*x)^m*(b*Csc[e + f*x])^(n + 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Csc[e + f*x])^n, x], x]
+ Simp[((c + d*x)^m*Cos[e + f*x]*(b*Csc[e + f*x])^(n + 1))/(b*f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
```

Rule 4189

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_.), x_Symb
ol] :> Dist[(b*Sin[e + f*x])^n*(b*Csc[e + f*x])^n, Int[(c + d*x)^m/(b*Sin[e
 + f*x])^n, x], x] /; FreeQ[{b, c, d, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\begin{aligned}
\int \left(\frac{x^2}{\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{1}{3}x^2\sqrt{\operatorname{csch}(x)}\right)dx &= \frac{1}{3}\int x^2\sqrt{\operatorname{csch}(x)}\,dx+\int \frac{x^2}{\operatorname{csch}^{\frac{3}{2}}(x)}\,dx\\
&= -\frac{8x}{9\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{2x^2\cosh(x)}{3\sqrt{\operatorname{csch}(x)}}-\frac{1}{3}\int x^2\sqrt{\operatorname{csch}(x)}\,dx+\frac{8}{9}\int \frac{1}{\operatorname{csch}^{\frac{3}{2}}(x)}\,dx+\\
&= -\frac{8x}{9\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{16\cosh(x)}{27\sqrt{\operatorname{csch}(x)}}+\frac{2x^2\cosh(x)}{3\sqrt{\operatorname{csch}(x)}}-\frac{8}{27}\int \sqrt{\operatorname{csch}(x)}\,dx\\
&= -\frac{8x}{9\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{16\cosh(x)}{27\sqrt{\operatorname{csch}(x)}}+\frac{2x^2\cosh(x)}{3\sqrt{\operatorname{csch}(x)}}-\frac{1}{27}\left(8\sqrt{\operatorname{csch}(x)}\sqrt{i\sinh(x)}\right)\\
&= -\frac{8x}{9\operatorname{csch}^{\frac{3}{2}}(x)}+\frac{16\cosh(x)}{27\sqrt{\operatorname{csch}(x)}}+\frac{2x^2\cosh(x)}{3\sqrt{\operatorname{csch}(x)}}-\frac{16}{27}i\sqrt{\operatorname{csch}(x)}F\left(\frac{\pi}{4}-\frac{ix}{2}\middle|2\right)
\end{aligned}$$

Mathematica [A] time = 0.15, size = 63, normalized size = 0.83

$$\frac{1}{27}\sqrt{\operatorname{csch}(x)}\left(9x^2\sinh(2x)+12x+8\sinh(2x)-12x\cosh(2x)-16i\sqrt{i\sinh(x)}F\left(\frac{1}{4}(\pi-2ix)\middle|2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/Csch[x]^(3/2) + (x^2*Sqrt[Csch[x]])/3,x]
```

```
[Out] (Sqrt[Csch[x]]*(12*x - 12*x*Cosh[2*x] - (16*I)*EllipticF[(Pi - (2*I)*x)/4,
2]*Sqrt[I*Sinh[x]] + 8*Sinh[2*x] + 9*x^2*Sinh[2*x]))/27
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/csch(x)^(3/2)+1/3*x^2*csch(x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{3}\,x^2\sqrt{\operatorname{csch}(x)} + \frac{x^2}{\operatorname{csch}(x)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/csch(x)^(3/2)+1/3*x^2*csch(x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/3*x^2*sqrt(csch(x)) + x^2/csch(x)^(3/2), x)
```

maple [F] time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\operatorname{csch}(x)^{\frac{3}{2}}} + \frac{x^2\sqrt{\operatorname{csch}(x)}}{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/csch(x)^(3/2)+1/3*x^2*csch(x)^(1/2),x)
```

```
[Out] int(x^2/csch(x)^(3/2)+1/3*x^2*csch(x)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{3}\,x^2\sqrt{\operatorname{csch}(x)} + \frac{x^2}{\operatorname{csch}(x)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/csch(x)^(3/2)+1/3*x^2*csch(x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/3*x^2*sqrt(csch(x)) + x^2/csch(x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\sqrt{\frac{1}{\mathrm{sinh}(x)}}}{3}+\frac{x^2}{{\left(\frac{1}{\mathrm{sinh}(x)}\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(1/sinh(x))^(1/2))/3 + x^2/(1/sinh(x))^(3/2),x)
[Out] int((x^2*(1/sinh(x))^(1/2))/3 + x^2/(1/sinh(x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{3x^2}{\operatorname{csch}^{\frac{3}{2}}(x)}\, dx + \int x^2 \sqrt{\operatorname{csch}(x)}\, dx}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/csch(x)**(3/2)+1/3*x**2*csch(x)**(1/2),x)
[Out] (Integral(3*x**2/csch(x)**(3/2), x) + Integral(x**2*sqrt(csch(x)), x))/3
```

3.96 $\int (c+dx)^3(a+ia\sinh(e+fx))\,dx$

Optimal. Leaf size=98

$$\frac{6iad^2(c+dx)\cosh(e+fx)}{f^3}-\frac{3iad(c+dx)^2\sinh(e+fx)}{f^2}+\frac{ia(c+dx)^3\cosh(e+fx)}{f}+\frac{a(c+dx)^4}{4d}-\frac{6iad^3\sinh(e+f}{f^4}$$

```
[Out] 1/4*a*(d*x+c)^4/d+6*I*a*d^2*(d*x+c)*cosh(f*x+e)/f^3+I*a*(d*x+c)^3*cosh(f*x+
e)/f-6*I*a*d^3*sinh(f*x+e)/f^4-3*I*a*d*(d*x+c)^2*sinh(f*x+e)/f^2
```

Rubi [A] time = 0.14, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3317, 3296, 2637}

$$\frac{6iad^2(c+dx)\cosh(e+fx)}{f^3}-\frac{3iad(c+dx)^2\sinh(e+fx)}{f^2}+\frac{ia(c+dx)^3\cosh(e+fx)}{f}+\frac{a(c+dx)^4}{4d}-\frac{6iad^3\sinh(e+f}{f^4}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^4)/(4*d) + ((6*I)*a*d^2*(c + d*x)*Cosh[e + f*x])/f^3 + (I*a*(c
 + d*x)^3*Cosh[e + f*x])/f - ((6*I)*a*d^3*Sinh[e + f*x])/f^4 - ((3*I)*a*d*(
c + d*x)^2*Sinh[e + f*x])/f^2
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^3(a+ia\sinh(e+fx))\,dx = \int \left(a(c+dx)^3 + ia(c+dx)^3\sinh(e+fx)\right)\,dx$$
$$= \frac{a(c+dx)^4}{4d} + (ia)\int (c+dx)^3\sinh(e+fx)\,dx$$
$$= \frac{a(c+dx)^4}{4d} + \frac{ia(c+dx)^3\cosh(e+fx)}{f} - \frac{(3iad)\int (c+dx)^2\cosh(e+fx)\,d}{f}$$
$$= \frac{a(c+dx)^4}{4d} + \frac{ia(c+dx)^3\cosh(e+fx)}{f} - \frac{3iad(c+dx)^2\sinh(e+fx)}{f^2} + \frac{(6}{}$$
$$= \frac{a(c+dx)^4}{4d} + \frac{6iad^2(c+dx)\cosh(e+fx)}{f^3} + \frac{ia(c+dx)^3\cosh(e+fx)}{f} - \frac{3i}{}$$
$$= \frac{a(c+dx)^4}{4d} + \frac{6iad^2(c+dx)\cosh(e+fx)}{f^3} + \frac{ia(c+dx)^3\cosh(e+fx)}{f} - \frac{6i}{}$$

Mathematica [A] time = 0.82, size = 128, normalized size = 1.31

$$\frac{a\left(-12id\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2+2\right)\right)\sinh(e+fx)+4if(c+dx)\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2+6\right)\right)\cosh(e+\right.}{4f^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3*(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (a*(f^4*x*(4*c^3 + 6*c^2*d*x + 4*c*d^2*x^2 + d^3*x^3) + (4*I)*f*(c + d*x)*(
c^2*f^2 + 2*c*d*f^2*x + d^2*(6 + f^2*x^2))*Cosh[e + f*x] - (12*I)*d*(c^2*f^
2 + 2*c*d*f^2*x + d^2*(2 + f^2*x^2))*Sinh[e + f*x]))/(4*f^4)
```

fricas [B] time = 0.56, size = 279, normalized size = 2.85

$$\frac{\left(2i\,ad^3f^3x^3 + 2i\,ac^3f^3 + 6i\,ac^2df^2 + 12i\,acd^2f + 12i\,ad^3 + \left(6i\,acd^2f^3 + 6i\,ad^3f^2\right)x^2 + \left(6i\,ac^2df^3 + 12i\,acd^2f^2 +\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+I*a*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*I*a*d^3*f^3*x^3 + 2*I*a*c^3*f^3 + 6*I*a*c^2*d*f^2 + 12*I*a*c*d^2*f +
 12*I*a*d^3 + (6*I*a*c*d^2*f^3 + 6*I*a*d^3*f^2)*x^2 + (6*I*a*c^2*d*f^3 + 12
*I*a*c*d^2*f^2 + 12*I*a*d^3*f)*x + (2*I*a*d^3*f^3*x^3 + 2*I*a*c^3*f^3 - 6*I
*a*c^2*d*f^2 + 12*I*a*c*d^2*f - 12*I*a*d^3 + (6*I*a*c*d^2*f^3 - 6*I*a*d^3*f
^2)*x^2 + (6*I*a*c^2*d*f^3 - 12*I*a*c*d^2*f^2 + 12*I*a*d^3*f)*x)*e^(2*f*x +
```

```
2*e) + (a*d^3*f^4*x^4 + 4*a*c*d^2*f^4*x^3 + 6*a*c^2*d*f^4*x^2 + 4*a*c^3*f^
4*x)*e^(f*x + e))*e^(-f*x - e)/f^4
```

giac [B] time = 0.48, size = 264, normalized size = 2.69

$$\frac{1}{4}\,ad^3x^4+acd^2x^3+\frac{3}{2}\,ac^2dx^2+ac^3x-\frac{\left(-i\,ad^3f^3x^3-3i\,acd^2f^3x^2-3i\,ac^2df^3x+3i\,ad^3f^2x^2-i\,ac^3f^3+6i\,acd^2f^2x+3\cdots\right.}{2\,f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+I*a*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] 1/4*a*d^3*x^4 + a*c*d^2*x^3 + 3/2*a*c^2*d*x^2 + a*c^3*x - 1/2*(-I*a*d^3*f^3
*x^3 - 3*I*a*c*d^2*f^3*x^2 - 3*I*a*c^2*d*f^3*x + 3*I*a*d^3*f^2*x^2 - I*a*c^
3*f^3 + 6*I*a*c*d^2*f^2*x + 3*I*a*c^2*d*f^2 - 6*I*a*d^3*f*x - 6*I*a*c*d^2*f
 + 6*I*a*d^3)*e^(f*x + e)/f^4 - 1/2*(-I*a*d^3*f^3*x^3 - 3*I*a*c*d^2*f^3*x^2
 - 3*I*a*c^2*d*f^3*x - 3*I*a*d^3*f^2*x^2 - I*a*c^3*f^3 - 6*I*a*c*d^2*f^2*x
- 3*I*a*c^2*d*f^2 - 6*I*a*d^3*f*x - 6*I*a*c*d^2*f - 6*I*a*d^3)*e^(-f*x - e)
/f^4
```

maple [B] time = 0.02, size = 494, normalized size = 5.04

$$\frac{\frac{d^3a\left(fx+e\right)^4}{4f^3}-\frac{3ide\,c^2a\cosh\left(fx+e\right)}{f}-\frac{d^3ea\left(fx+e\right)^3}{f^3}+\frac{3id\,c^2a\left(\left(fx+e\right)\cosh\left(fx+e\right)-\sinh\left(fx+e\right)\right)}{f}+\frac{d^2ca\left(fx+e\right)^3}{f^2}+ic^3a\cosh\left(fx+e\right)+\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*(a+I*a*sinh(f*x+e)),x)
```

```
[Out] 1/f*(1/4/f^3*d^3*a*(f*x+e)^4-3*I*d*e/f*c^2*a*cosh(f*x+e)-1/f^3*d^3*e*a*(f*x
+e)^3+3*I/f*d*c^2*a*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))+1/f^2*d^2*c*a*(f*x+e)
^3+I*c^3*a*cosh(f*x+e)+3/2/f^3*d^3*e^2*a*(f*x+e)^2+3*I/f^3*d^3*e^2*a*((f*x+
e)*cosh(f*x+e)-sinh(f*x+e))-3/f^2*d^2*e*c*a*(f*x+e)^2+I/f^3*d^3*a*((f*x+e)^
3*cosh(f*x+e)-3*(f*x+e)^2*sinh(f*x+e)+6*(f*x+e)*cosh(f*x+e)-6*sinh(f*x+e))+
3/2/f*d*c^2*a*(f*x+e)^2-3*I/f^3*d^3*e*a*((f*x+e)^2*cosh(f*x+e)-2*(f*x+e)*si
nh(f*x+e)+2*cosh(f*x+e))-d^3*e^3/f^3*a*(f*x+e)+3*I/f^2*d^2*c*a*((f*x+e)^2*c
osh(f*x+e)-2*(f*x+e)*sinh(f*x+e)+2*cosh(f*x+e))+3*d^2*e^2/f^2*c*a*(f*x+e)-6
*I/f^2*d^2*e*c*a*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))-3*d*e/f*c^2*a*(f*x+e)-I*
d^3*e^3/f^3*a*cosh(f*x+e)+c^3*a*(f*x+e)+3*I*d^2*e^2/f^2*c*a*cosh(f*x+e))
```

maxima [B] time = 0.37, size = 235, normalized size = 2.40

$$\frac{1}{4}\,ad^3x^4+acd^2x^3+\frac{3}{2}\,ac^2dx^2+ac^3x+\frac{3}{2}i\,ac^2d\left(\frac{\left(fxe^e-e^e\right)e^{(fx)}}{f^2}+\frac{\left(fx+1\right)e^{(-fx-e)}}{f^2}\right)+\frac{3}{2}i\,acd^2\left(\frac{\left(f^2x^2e^e-2\,fxe^e+2\,e^e\right)\cdots}{f^3}\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+I*a*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/4*a*d^3*x^4 + a*c*d^2*x^3 + 3/2*a*c^2*d*x^2 + a*c^3*x + 3/2*I*a*c^2*d*((f
*x*e^e - e^e)*e^(f*x)/f^2 + (f*x + 1)*e^(-f*x - e)/f^2) + 3/2*I*a*c*d^2*((f
^2*x^2*e^e - 2*f*x*e^e + 2*e^e)*e^(f*x)/f^3 + (f^2*x^2 + 2*f*x + 2)*e^(-f*x
 - e)/f^3) + 1/2*I*a*d^3*((f^3*x^3*e^e - 3*f^2*x^2*e^e + 6*f*x*e^e - 6*e^e)
*e^(f*x)/f^4 + (f^3*x^3 + 3*f^2*x^2 + 6*f*x + 6)*e^(-f*x - e)/f^4) + I*a*c^
3*cosh(f*x + e)/f
```

mupad [B] time = 0.38, size = 196, normalized size = 2.00

$$\frac{\cosh\left(e+f\,x\right)\,\left(a\,c^3\,f^2+6\,a\,c\,d^2\right)\,1\mathrm{i}}{f^3}-\frac{\sinh\left(e+f\,x\right)\,\left(a\,c^2\,d\,f^2+2\,a\,d^3\right)\,3\mathrm{i}}{f^4}+\frac{a\,d^3\,x^4}{4}+a\,c^3\,x+\frac{x\cosh\left(e+f\,x\right)\,\left(a\,\dots\right.}{f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)*(c + d*x)^3,x)
```

```
[Out] (cosh(e + f*x)*(a*c^3*f^2 + 6*a*c*d^2)*1i)/f^3 - (sinh(e + f*x)*(2*a*d^3 +
a*c^2*d*f^2)*3i)/f^4 + (a*d^3*x^4)/4 + a*c^3*x + (x*cosh(e + f*x)*(2*a*d^3
+ a*c^2*d*f^2)*3i)/f^3 + (3*a*c^2*d*x^2)/2 + a*c*d^2*x^3 + (a*d^3*x^3*cosh(
e + f*x)*1i)/f - (a*d^3*x^2*sinh(e + f*x)*3i)/f^2 - (a*c*d^2*x*sinh(e + f*x
)*6i)/f^2 + (a*c*d^2*x^2*cosh(e + f*x)*3i)/f
```

sympy [A] time = 0.74, size = 518, normalized size = 5.29

$$ac^3x+\frac{3ac^2dx^2}{2}+acd^2x^3+\frac{ad^3x^4}{4}+\begin{cases}\frac{\left(\left(2iac^3f^7+6iac^2df^7x+6iac^2df^6+6iacd^2f^7x^2+12iacd^2f^6x+12iacd^2f^5+2iad^3f^7x^3+6iad^3f^6x^2+12iad^3f^5\dots\right.\right.}{\dots} \\ \frac{x^4\left(iad^3e^{2e}-iad^3\right)e^{-e}}{8}+\frac{x^3\left(iacd^2e^{2e}-iacd^2\right)e^{-e}}{2}+\frac{x^2\left(3iac^2de^{2e}-3iac^2d\right)e^{-e}}{4}+\frac{x\left(iac^3e^{2e}-iac^3\right)e^{-e}}{2}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*(a+I*a*sinh(f*x+e)),x)
```

```
[Out] a*c**3*x + 3*a*c**2*d*x**2/2 + a*c*d**2*x**3 + a*d**3*x**4/4 + Piecewise(((
(2*I*a*c**3*f**7 + 6*I*a*c**2*d*f**7*x + 6*I*a*c**2*d*f**6 + 6*I*a*c*d**2*f
**7*x**2 + 12*I*a*c*d**2*f**6*x + 12*I*a*c*d**2*f**5 + 2*I*a*d**3*f**7*x**3
 + 6*I*a*d**3*f**6*x**2 + 12*I*a*d**3*f**5*x + 12*I*a*d**3*f**4)*exp(-f*x)
+ (2*I*a*c**3*f**7*exp(2*e) + 6*I*a*c**2*d*f**7*x*exp(2*e) - 6*I*a*c**2*d*f
**6*exp(2*e) + 6*I*a*c*d**2*f**7*x**2*exp(2*e) - 12*I*a*c*d**2*f**6*x*exp(2
*e) + 12*I*a*c*d**2*f**5*exp(2*e) + 2*I*a*d**3*f**7*x**3*exp(2*e) - 6*I*a*d
**3*f**6*x**2*exp(2*e) + 12*I*a*d**3*f**5*x*exp(2*e) - 12*I*a*d**3*f**4*exp
(2*e))*exp(f*x))*exp(-e)/(4*f**8), Ne(4*f**8*exp(e), 0)), (x**4*(I*a*d**3*e
```

```
xp(2*e) - I*a*d**3)*exp(-e)/8 + x**3*(I*a*c*d**2*exp(2*e) - I*a*c*d**2)*exp
(-e)/2 + x**2*(3*I*a*c**2*d*exp(2*e) - 3*I*a*c**2*d)*exp(-e)/4 + x*(I*a*c**
3*exp(2*e) - I*a*c**3)*exp(-e)/2, True))
```

3.97 $\int (c+dx)^2(a+ia\sinh(e+fx))\,dx$

Optimal. Leaf size=74

$$-\frac{2iad(c+dx)\sinh(e+fx)}{f^2}+\frac{ia(c+dx)^2\cosh(e+fx)}{f}+\frac{a(c+dx)^3}{3d}+\frac{2iad^2\cosh(e+fx)}{f^3}$$

```
[Out] 1/3*a*(d*x+c)^3/d+2*I*a*d^2*cosh(f*x+e)/f^3+I*a*(d*x+c)^2*cosh(f*x+e)/f-2*I
*a*d*(d*x+c)*sinh(f*x+e)/f^2
```

Rubi [A] time = 0.10, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3317, 3296, 2638}

$$-\frac{2iad(c+dx)\sinh(e+fx)}{f^2}+\frac{ia(c+dx)^2\cosh(e+fx)}{f}+\frac{a(c+dx)^3}{3d}+\frac{2iad^2\cosh(e+fx)}{f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^3)/(3*d) + ((2*I)*a*d^2*Cosh[e + f*x])/f^3 + (I*a*(c + d*x)^2*
Cosh[e + f*x])/f - ((2*I)*a*d*(c + d*x)*Sinh[e + f*x])/f^2
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^2(a+ia\sinh(e+fx))\,dx = \int \left(a(c+dx)^2 + ia(c+dx)^2\sinh(e+fx)\right)\,dx$$
$$= \frac{a(c+dx)^3}{3d} + (ia)\int (c+dx)^2\sinh(e+fx)\,dx$$
$$= \frac{a(c+dx)^3}{3d} + \frac{ia(c+dx)^2\cosh(e+fx)}{f} - \frac{(2iad)\int (c+dx)\cosh(e+fx)\,dx}{f}$$
$$= \frac{a(c+dx)^3}{3d} + \frac{ia(c+dx)^2\cosh(e+fx)}{f} - \frac{2iad(c+dx)\sinh(e+fx)}{f^2} + \frac{(2iac}{}$$
$$= \frac{a(c+dx)^3}{3d} + \frac{2iad^2\cosh(e+fx)}{f^3} + \frac{ia(c+dx)^2\cosh(e+fx)}{f} - \frac{2iad(c+dx}{}$$

Mathematica [A] time = 0.43, size = 88, normalized size = 1.19

$$\frac{a\left(3i\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2+2\right)\right)\cosh(e+fx)+f^3x\left(3c^2+3cdx+d^2x^2\right)-6idf(c+dx)\sinh(e+fx)\right)}{3f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (a*(f^3*x*(3*c^2 + 3*c*d*x + d^2*x^2) + (3*I)*(c^2*f^2 + 2*c*d*f^2*x + d^2*
(2 + f^2*x^2))*Cosh[e + f*x] - (6*I)*d*f*(c + d*x)*Sinh[e + f*x]))/(3*f^3)
```

fricas [B] time = 0.52, size = 169, normalized size = 2.28

$$\frac{\left(3i\,ad^2f^2x^2+3i\,ac^2f^2+6i\,acdf+6i\,ad^2+\left(6i\,acdf^2+6i\,ad^2f\right)x+\left(3i\,ad^2f^2x^2+3i\,ac^2f^2-6i\,acdf+6i\,ad^2+\left(\right.\right.\right.}{6\,f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+I*a*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/6*(3*I*a*d^2*f^2*x^2 + 3*I*a*c^2*f^2 + 6*I*a*c*d*f + 6*I*a*d^2 + (6*I*a*c
*d*f^2 + 6*I*a*d^2*f)*x + (3*I*a*d^2*f^2*x^2 + 3*I*a*c^2*f^2 - 6*I*a*c*d*f
+ 6*I*a*d^2 + (6*I*a*c*d*f^2 - 6*I*a*d^2*f)*x)*e^(2*f*x + 2*e) + 2*(a*d^2*f
^3*x^3 + 3*a*c*d*f^3*x^2 + 3*a*c^2*f^3*x)*e^(f*x + e))*e^(-f*x - e)/f^3
```

giac [B] time = 0.28, size = 152, normalized size = 2.05

$$\frac{1}{3}ad^2x^3+acdx^2+ac^2x-\frac{\left(-i\,ad^2f^2x^2-2i\,acdf^2x-i\,ac^2f^2+2i\,ad^2fx+2i\,acdf-2i\,ad^2\right)e^{(fx+e)}}{2\,f^3}+\frac{\left(i\,ad^2f^2x^2+2i\,ac\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+I*a*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] 1/3*a*d^2*x^3 + a*c*d*x^2 + a*c^2*x - 1/2*(-I*a*d^2*f^2*x^2 - 2*I*a*c*d*f^2
*x - I*a*c^2*f^2 + 2*I*a*d^2*f*x + 2*I*a*c*d*f - 2*I*a*d^2)*e^(f*x + e)/f^3
 + 1/2*(I*a*d^2*f^2*x^2 + 2*I*a*c*d*f^2*x + I*a*c^2*f^2 + 2*I*a*d^2*f*x + 2
*I*a*c*d*f + 2*I*a*d^2)*e^(-f*x - e)/f^3
```

maple [B] time = 0.02, size = 249, normalized size = 3.36

$$\frac{\frac{d^2a(fx+e)^3}{3f^2}+\frac{id^2a\left((fx+e)^2\cosh(fx+e)-2(fx+e)\sinh(fx+e)+2\cosh(fx+e)\right)}{f^2}-\frac{d^2ea(fx+e)^2}{f^2}-\frac{2id^2ea\left((fx+e)\cosh(fx+e)-\sinh(fx+e)\right)}{f^2}+\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*(a+I*a*sinh(f*x+e)),x)
```

```
[Out] 1/f*(1/3/f^2*d^2*a*(f*x+e)^3+I/f^2*d^2*a*((f*x+e)^2*cosh(f*x+e)-2*(f*x+e)*s
inh(f*x+e)+2*cosh(f*x+e))-1/f^2*d^2*e*a*(f*x+e)^2-2*I/f^2*d^2*e*a*((f*x+e)*
cosh(f*x+e)-sinh(f*x+e))+1/f*d*c*a*(f*x+e)^2+2*I/f*d*c*a*((f*x+e)*cosh(f*x+
e)-sinh(f*x+e))+d^2*e^2/f^2*a*(f*x+e)+I*d^2*e^2/f^2*a*cosh(f*x+e)-2*d*e/f*c
*a*(f*x+e)-2*I*d*e/f*c*a*cosh(f*x+e)+c^2*a*(f*x+e)+I*c^2*a*cosh(f*x+e))
```

maxima [B] time = 0.49, size = 141, normalized size = 1.91

$$\frac{1}{3}ad^2x^3+acdx^2+ac^2x+i\,acd\left(\frac{\left(fxe^e-e^e\right)e^{(fx)}}{f^2}+\frac{(fx+1)e^{(-fx-e)}}{f^2}\right)+\frac{1}{2}i\,ad^2\left(\frac{\left(f^2x^2e^e-2\,fxe^e+2\,e^e\right)e^{(fx)}}{f^3}+\frac{\left(f^2x^2\cdots\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+I*a*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/3*a*d^2*x^3 + a*c*d*x^2 + a*c^2*x + I*a*c*d*((f*x*e^e - e^e)*e^(f*x)/f^2
+ (f*x + 1)*e^(-f*x - e)/f^2) + 1/2*I*a*d^2*((f^2*x^2*e^e - 2*f*x*e^e + 2*e
^e)*e^(f*x)/f^3 + (f^2*x^2 + 2*f*x + 2)*e^(-f*x - e)/f^3) + I*a*c^2*cosh(f*
x + e)/f
```

mupad [B] time = 0.25, size = 118, normalized size = 1.59

$$\frac{-\frac{af\left(6\mathrm{i}\,x\sinh(e+fx)\,d^2+6\mathrm{i}\,c\sinh(e+fx)\,d\right)}{3}+\frac{af^2\left(c^2\cosh(e+fx)\,3\mathrm{i}+d^2x^2\cosh(e+fx)\,3\mathrm{i}+c\,d\,x\cosh(e+fx)\,6\mathrm{i}\right)}{3}+a\,d^2\cosh\left(e+fx\right)\,2\mathrm{i}\cdots}{f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)*(c + d*x)^2,x)
```

```
[Out] ((a*f^2*(c^2*cosh(e + f*x)*3i + d^2*x^2*cosh(e + f*x)*3i + c*d*x*cosh(e + f
*x)*6i))/3 - (a*f*(d^2*x*sinh(e + f*x)*6i + c*d*sinh(e + f*x)*6i))/3 + a*d^
2*cosh(e + f*x)*2i)/f^3 + (a*(3*c^2*x + d^2*x^3 + 3*c*d*x^2))/3
```

sympy [A] time = 0.55, size = 316, normalized size = 4.27

$$ac^2x+acdx^2+\frac{ad^2x^3}{3}+\begin{cases} \frac{\left(\left(2iac^2f^5+4iacdf^5x+4iacdf^4+2iad^2f^5x^2+4iad^2f^4x+4iad^2f^3\right)e^{-fx}+\left(2iac^2f^5e^{2e}+4iacdf^5xe^{2e}-4iacdf^4e^{2e}+2iad^2f^5x^2e^{2e}\right.}{4f^6} \\ \frac{x^3\left(iad^2e^{2e}-iad^2\right)e^{-e}}{6}+\frac{x^2\left(iacde^{2e}-iacd\right)e^{-e}}{2}+\frac{x\left(iac^2e^{2e}-iac^2\right)e^{-e}}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*(a+I*a*sinh(f*x+e)),x)
```

```
[Out] a*c**2*x + a*c*d*x**2 + a*d**2*x**3/3 + Piecewise((((2*I*a*c**2*f**5 + 4*I*
a*c*d*f**5*x + 4*I*a*c*d*f**4 + 2*I*a*d**2*f**5*x**2 + 4*I*a*d**2*f**4*x +
4*I*a*d**2*f**3)*exp(-f*x) + (2*I*a*c**2*f**5*exp(2*e) + 4*I*a*c*d*f**5*x*e
xp(2*e) - 4*I*a*c*d*f**4*exp(2*e) + 2*I*a*d**2*f**5*x**2*exp(2*e) - 4*I*a*d
**2*f**4*x*exp(2*e) + 4*I*a*d**2*f**3*exp(2*e))*exp(f*x))*exp(-e)/(4*f**6),
 Ne(4*f**6*exp(e), 0)), (x**3*(I*a*d**2*exp(2*e) - I*a*d**2)*exp(-e)/6 + x*
*2*(I*a*c*d*exp(2*e) - I*a*c*d)*exp(-e)/2 + x*(I*a*c**2*exp(2*e) - I*a*c**2
)*exp(-e)/2, True))
```

3.98 $\int (c+dx)(a+ia\sinh(e+fx))\,dx$

Optimal. Leaf size=50

$$\frac{ia(c+dx)\cosh(e+fx)}{f}+\frac{a(c+dx)^2}{2d}-\frac{iad\sinh(e+fx)}{f^2}$$

```
[Out] 1/2*a*(d*x+c)^2/d+I*a*(d*x+c)*cosh(f*x+e)/f-I*a*d*sinh(f*x+e)/f^2
```

Rubi [A] time = 0.05, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {3317, 3296, 2637}

$$\frac{ia(c+dx)\cosh(e+fx)}{f}+\frac{a(c+dx)^2}{2d}-\frac{iad\sinh(e+fx)}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^2)/(2*d) + (I*a*(c + d*x)*Cosh[e + f*x])/f - (I*a*d*Sinh[e + f
*x])/f^2
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$
\begin{aligned}
\int (c+dx)(a+ia\sinh(e+fx))\,dx &= \int (a(c+dx)+ia(c+dx)\sinh(e+fx))\,dx \\
&= \frac{a(c+dx)^2}{2d} + (ia)\int (c+dx)\sinh(e+fx)\,dx \\
&= \frac{a(c+dx)^2}{2d} + \frac{ia(c+dx)\cosh(e+fx)}{f} - \frac{(iad)\int \cosh(e+fx)\,dx}{f} \\
&= \frac{a(c+dx)^2}{2d} + \frac{ia(c+dx)\cosh(e+fx)}{f} - \frac{iad\sinh(e+fx)}{f^2}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 48, normalized size = 0.96

$$
\frac{a\left(2if(c+dx)\cosh(e+fx)+f^2x(2c+dx)-2id\sinh(e+fx)\right)}{2f^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (a*(f^2*x*(2*c + d*x) + (2*I)*f*(c + d*x)*Cosh[e + f*x] - (2*I)*d*Sinh[e +
f*x]))/(2*f^2)
```

fricas [A] time = 0.47, size = 81, normalized size = 1.62

$$
\frac{\left(i\,adfx+i\,acf+i\,ad+\left(i\,adfx+i\,acf-i\,ad\right)e^{\left(2\,fx+2\,e\right)}+\left(adf^2x^2+2\,acf^2x\right)e^{\left(fx+e\right)}\right)e^{\left(-fx-e\right)}}{2\,f^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+I*a*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/2*(I*a*d*f*x + I*a*c*f + I*a*d + (I*a*d*f*x + I*a*c*f - I*a*d)*e^(2*f*x +
 2*e) + (a*d*f^2*x^2 + 2*a*c*f^2*x)*e^(f*x + e))*e^(-f*x - e)/f^2
```

giac [A] time = 0.18, size = 71, normalized size = 1.42

$$
\frac{1}{2}\,adx^2+acx-\frac{\left(-i\,adfx-i\,acf+i\,ad\right)e^{\left(fx+e\right)}}{2\,f^2}-\frac{\left(-i\,adfx-i\,acf-i\,ad\right)e^{\left(-fx-e\right)}}{2\,f^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+I*a*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] 1/2*a*d*x^2 + a*c*x - 1/2*(-I*a*d*f*x - I*a*c*f + I*a*d)*e^(f*x + e)/f^2 -
1/2*(-I*a*d*f*x - I*a*c*f - I*a*d)*e^(-f*x - e)/f^2
```

maple [B] time = 0.02, size = 96, normalized size = 1.92

$$\frac{\frac{da\left(fx+e\right)^{2}}{2f}+\frac{ida\left(\left(fx+e\right)\cosh\left(fx+e\right)-\sinh\left(fx+e\right)\right)}{f}-\frac{dea\left(fx+e\right)}{f}-\frac{idea\cosh\left(fx+e\right)}{f}+ca\left(fx+e\right)+ica\cosh\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*(a+I*a*sinh(f*x+e)),x)
```

```
[Out] 1/f*(1/2/f*d*a*(f*x+e)^2+I/f*d*a*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))-d*e/f*a*
(f*x+e)-I*d*e/f*a*cosh(f*x+e)+c*a*(f*x+e)+I*c*a*cosh(f*x+e))
```

maxima [A] time = 0.51, size = 66, normalized size = 1.32

$$\frac{1}{2}\,adx^{2}+acx+\frac{1}{2}i\,ad\left(\frac{\left(fxe^{e}-e^{e}\right)e^{\left(fx\right)}}{f^{2}}+\frac{\left(fx+1\right)e^{\left(-fx-e\right)}}{f^{2}}\right)+\frac{i\,ac\cosh\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+I*a*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/2*a*d*x^2 + a*c*x + 1/2*I*a*d*((f*x*e^e - e^e)*e^(f*x)/f^2 + (f*x + 1)*e^
(-f*x - e)/f^2) + I*a*c*cosh(f*x + e)/f
```

mupad [B] time = 0.12, size = 56, normalized size = 1.12

$$\frac{\frac{a\,f\,\left(c\cosh\left(e+f\,x\right)\,2\mathrm{i}+d\,x\cosh\left(e+f\,x\right)\,2\mathrm{i}\right)}{2}-a\,d\sinh\left(e+f\,x\right)\,1\mathrm{i}}{f^{2}}+\frac{a\,\left(d\,x^{2}+2\,c\,x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)*(c + d*x),x)
```

```
[Out] ((a*f*(c*cosh(e + f*x)*2i + d*x*cosh(e + f*x)*2i))/2 - a*d*sinh(e + f*x)*1i
)/f^2 + (a*(2*c*x + d*x^2))/2
```

sympy [A] time = 0.38, size = 163, normalized size = 3.26

$$acx+\frac{adx^{2}}{2}+\begin{cases}\frac{\left(\left(2iacf^{3}+2iadf^{3}x+2iadf^{2}\right)e^{-fx}+\left(2iacf^{3}e^{2e}+2iadf^{3}xe^{2e}-2iadf^{2}e^{2e}\right)e^{fx}\right)e^{-e}}{4f^{4}} & \text{for}\ 4f^{4}e^{e}\neq 0\\ \frac{x^{2}\left(iade^{2e}-iad\right)e^{-e}}{4}+\frac{x\left(iace^{2e}-iac\right)e^{-e}}{2} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+I*a*sinh(f*x+e)),x)
```

```
[Out] a*c*x + a*d*x**2/2 + Piecewise((((2*I*a*c*f**3 + 2*I*a*d*f**3*x + 2*I*a*d*f
**2)*exp(-f*x) + (2*I*a*c*f**3*exp(2*e) + 2*I*a*d*f**3*x*exp(2*e) - 2*I*a*d
*f**2*exp(2*e))*exp(f*x))*exp(-e)/(4*f**4), Ne(4*f**4*exp(e), 0)), (x**2*(I
*a*d*exp(2*e) - I*a*d)*exp(-e)/4 + x*(I*a*c*exp(2*e) - I*a*c)*exp(-e)/2, Tr
ue))
```

3.99 $\int \frac{a+ia\sinh(e+fx)}{c+dx}\,dx$

Optimal. Leaf size=70

$$\frac{ia\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d}+\frac{ia\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d}+\frac{a\log(c+dx)}{d}$$

```
[Out] a*ln(d*x+c)/d+I*a*cosh(-e+c*f/d)*Shi(c*f/d+f*x)/d-I*a*Chi(c*f/d+f*x)*sinh(-
e+c*f/d)/d
```

Rubi [A] time = 0.16, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {3317, 3303, 3298, 3301}

$$\frac{ia\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d}+\frac{ia\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d}+\frac{a\log(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[e + f*x])/(c + d*x),x]
```

```
[Out] (a*Log[c + d*x])/d + (I*a*CoshIntegral[(c*f)/d + f*x]*Sinh[e - (c*f)/d])/d
+ (I*a*Cosh[e - (c*f)/d]*SinhIntegral[(c*f)/d + f*x])/d
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+ia\sinh(e+fx)}{c+dx}\,dx &= \int \left(\frac{a}{c+dx}+\frac{ia\sinh(e+fx)}{c+dx}\right)dx\\ &= \frac{a\log(c+dx)}{d}+(ia)\int \frac{\sinh(e+fx)}{c+dx}\,dx\\ &= \frac{a\log(c+dx)}{d}+\left(ia\cosh\left(e-\frac{cf}{d}\right)\right)\int \frac{\sinh\left(\frac{cf}{d}+fx\right)}{c+dx}\,dx+\left(ia\sinh\left(e-\frac{cf}{d}\right)\right)\int \frac{\cos\ldots}{\ldots}\\ &= \frac{a\log(c+dx)}{d}+\frac{ia\mathrm{Chi}\left(\frac{cf}{d}+fx\right)\sinh\left(e-\frac{cf}{d}\right)}{d}+\frac{ia\cosh\left(e-\frac{cf}{d}\right)\mathrm{Shi}\left(\frac{cf}{d}+fx\right)}{d}\end{aligned}$$

Mathematica [A] time = 0.29, size = 60, normalized size = 0.86

$$\frac{a\left(i\mathrm{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\sinh\left(e-\frac{cf}{d}\right)+i\cosh\left(e-\frac{cf}{d}\right)\mathrm{Shi}\left(f\left(\frac{c}{d}+x\right)\right)+\log(c+dx)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[e + f*x])/(c + d*x),x]
```

```
[Out] (a*(Log[c + d*x] + I*CoshIntegral[f*(c/d + x)]*Sinh[e - (c*f)/d] + I*Cosh[e
 - (c*f)/d]*SinhIntegral[f*(c/d + x)]))/d
```

fricas [A] time = 0.44, size = 79, normalized size = 1.13

$$\frac{i\,a\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(\frac{de-cf}{d}\right)}-i\,a\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(-\frac{de-cf}{d}\right)}+2\,a\log\left(\frac{dx+c}{d}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c),x, algorithm="fricas")
```

```
[Out] 1/2*(I*a*Ei((d*f*x + c*f)/d)*e^((d*e - c*f)/d) - I*a*Ei(-(d*f*x + c*f)/d)*e
^(-(d*e - c*f)/d) + 2*a*log((d*x + c)/d))/d
```

giac [A] time = 0.19, size = 71, normalized size = 1.01

$$-\frac{i\,a\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(\frac{cf}{d}-e\right)}-i\,a\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(-\frac{cf}{d}+e\right)}-2\,a\log\left(dx+c\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c),x, algorithm="giac")
```

```
[Out] -1/2*(I*a*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) - I*a*Ei((d*f*x + c*f)/d)*e^(-
c*f/d + e) - 2*a*log(d*x + c))/d
```

maple [A] time = 0.08, size = 96, normalized size = 1.37

$$\frac{a\ln\left(dx+c\right)}{d}+\frac{ia\,\mathrm{e}^{\frac{cf-de}{d}}\,\mathrm{Ei}\left(1,fx+e+\frac{cf-de}{d}\right)}{2d}-\frac{ia\,\mathrm{e}^{-\frac{cf-de}{d}}\,\mathrm{Ei}\left(1,-fx-e-\frac{cf-de}{d}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))/(d*x+c),x)
```

```
[Out] a*ln(d*x+c)/d+1/2*I*a/d*exp((c*f-d*e)/d)*Ei(1,f*x+e+(c*f-d*e)/d)-1/2*I*a/d*
exp(-(c*f-d*e)/d)*Ei(1,-f*x-e-(c*f-d*e)/d)
```

maxima [A] time = 0.39, size = 71, normalized size = 1.01

$$\frac{1}{2}i\,a\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_1\left(\frac{(dx+c)f}{d}\right)}{d}-\frac{e^{\left(e-\frac{cf}{d}\right)}E_1\left(-\frac{(dx+c)f}{d}\right)}{d}\right)+\frac{a\log\left(dx+c\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c),x, algorithm="maxima")
```

```
[Out] 1/2*I*a*(e^(-e + c*f/d)*exp_integral_e(1, (d*x + c)*f/d)/d - e^(e - c*f/d)*
exp_integral_e(1, -(d*x + c)*f/d)/d) + a*log(d*x + c)/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{a+a\sinh\left(e+f\,x\right)\,1\mathrm{i}}{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)/(c + d*x),x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)/(c + d*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$ia\left(\int\left(-\frac{i}{c+dx}\right)dx+\int\frac{\sinh\left(e+fx\right)}{c+dx}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c),x)
```

```
[Out] I*a*(Integral(-I/(c + d*x), x) + Integral(sinh(e + f*x)/(c + d*x), x))
```

3.100 $\int \frac{a+ia\sinh(e+fx)}{(c+dx)^2}\,dx$

Optimal. Leaf size=95

$$\frac{iaf\text{Chi}\left(xf+\frac{cf}{d}\right)\cosh\left(e-\frac{cf}{d}\right)}{d^2}+\frac{iaf\sinh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{ia\sinh(e+fx)}{d(c+dx)}-\frac{a}{d(c+dx)}$$

```
[Out] -a/d/(d*x+c)+I*a*f*Chi(c*f/d+f*x)*cosh(-e+c*f/d)/d^2-I*a*f*Shi(c*f/d+f*x)*s
inh(-e+c*f/d)/d^2-I*a*sinh(f*x+e)/d/(d*x+c)
```

Rubi [A] time = 0.19, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3317, 3297, 3303, 3298, 3301}

$$\frac{iaf\text{Chi}\left(xf+\frac{cf}{d}\right)\cosh\left(e-\frac{cf}{d}\right)}{d^2}+\frac{iaf\sinh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{ia\sinh(e+fx)}{d(c+dx)}-\frac{a}{d(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[e + f*x])/(c + d*x)^2,x]
```

```
[Out] -(a/(d*(c + d*x))) + (I*a*f*Cosh[e - (c*f)/d]*CoshIntegral[(c*f)/d + f*x])/
d^2 - (I*a*Sinh[e + f*x])/(d*(c + d*x)) + (I*a*f*Sinh[e - (c*f)/d]*SinhInte
gral[(c*f)/d + f*x])/d^2
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+ia\sinh(e+fx)}{(c+dx)^2}\,dx &= \int \left(\frac{a}{(c+dx)^2}+\frac{ia\sinh(e+fx)}{(c+dx)^2}\right)dx \\
&= -\frac{a}{d(c+dx)}+(ia)\int \frac{\sinh(e+fx)}{(c+dx)^2}\,dx \\
&= -\frac{a}{d(c+dx)}-\frac{ia\sinh(e+fx)}{d(c+dx)}+\frac{(iaf)\int \frac{\cosh(e+fx)}{c+dx}\,dx}{d} \\
&= -\frac{a}{d(c+dx)}-\frac{ia\sinh(e+fx)}{d(c+dx)}+\frac{\left(iaf\cosh\left(e-\frac{cf}{d}\right)\right)\int \frac{\cosh\left(\frac{cf}{d}+fx\right)}{c+dx}\,dx}{d}+\frac{\left(iaf\sinh\left(e-\cdots\right.\right.}{} \\
&= -\frac{a}{d(c+dx)}+\frac{iaf\cosh\left(e-\frac{cf}{d}\right)\text{Chi}\left(\frac{cf}{d}+fx\right)}{d^2}-\frac{ia\sinh(e+fx)}{d(c+dx)}+\frac{iaf\sinh\left(e-\frac{cf}{d}\right)\cdots}{d^2}
\end{aligned}$$

Mathematica [A] time = 0.48, size = 83, normalized size = 0.87

$$\frac{ia\left(f(c+dx)\text{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\cosh\left(e-\frac{cf}{d}\right)+f(c+dx)\sinh\left(e-\frac{cf}{d}\right)\text{Shi}\left(f\left(\frac{c}{d}+x\right)\right)-d(\sinh(e+fx)-i)\right)}{d^2(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[e + f*x])/(c + d*x)^2,x]
```

```
[Out] (I*a*(f*(c + d*x)*Cosh[e - (c*f)/d]*CoshIntegral[f*(c/d + x)] - d*(-I + Sin
h[e + f*x]) + f*(c + d*x)*Sinh[e - (c*f)/d]*SinhIntegral[f*(c/d + x)]))/(d^
2*(c + d*x))
```

fricas [A] time = 1.30, size = 134, normalized size = 1.41

$$\frac{\left(-i\,ade^{(2\,fx+2\,e)}+i\,ad+\left(\left(i\,adfx+i\,acf\right)\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(\frac{de-cf}{d}\right)}+\left(i\,adfx+i\,acf\right)\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(-\frac{de-cf}{d}\right)}-2\,ad\right)e^{(fx+}}{2\left(d^3x+cd^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(-I*a*d*e^(2*f*x + 2*e) + I*a*d + ((I*a*d*f*x + I*a*c*f)*Ei((d*f*x + c*
f)/d)*e^((d*e - c*f)/d) + (I*a*d*f*x + I*a*c*f)*Ei(-(d*f*x + c*f)/d)*e^(-(d
*e - c*f)/d) - 2*a*d)*e^(f*x + e))*e^(-f*x - e)/(d^3*x + c*d^2)
```

giac [B] time = 0.22, size = 682, normalized size = 7.18

$$\frac{1}{2}i\,a\left(\left(\frac{\left((dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)f^2\mathrm{Ei}\left(\frac{(dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)-cf+de}{d}\right)e^{\left(\frac{cf-de}{d}\right)}-cf^3\mathrm{Ei}\left(\frac{(dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)-cf+de}{d}\right)e^{\left(\frac{cf-de}{d}\right)}\right.}{\left((dx+c)d^4\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)-cd^4f+d\right.}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c)^2,x, algorithm="giac")
```

```
[Out] 1/2*I*a*(((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*Ei(((d*x + c)*(
c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^((c*f - d*e)/d) - c*f^
3*Ei(((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^((c*f
 - d*e)/d) + d*f^2*Ei(((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f
+ d*e)/d)*e^((c*f - d*e)/d + 1) - d*f^2*e^((d*x + c)*(c*f/(d*x + c) - f - d
*e/(d*x + c))/d))*d^2/(((d*x + c)*d^4*(c*f/(d*x + c) - f - d*e/(d*x + c)) -
 c*d^4*f + d^5*e)*f) + ((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*E
i(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^(-(c*f
- d*e)/d) - c*f^3*Ei(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f
+ d*e)/d)*e^(-(c*f - d*e)/d) + d*f^2*Ei(-((d*x + c)*(c*f/(d*x + c) - f - d*
e/(d*x + c)) - c*f + d*e)/d)*e^(-(c*f - d*e)/d + 1) + d*f^2*e^(-(d*x + c)*(
c*f/(d*x + c) - f - d*e/(d*x + c))/d))*d^2/(((d*x + c)*d^4*(c*f/(d*x + c) -
 f - d*e/(d*x + c)) - c*d^4*f + d^5*e)*f)) - a/((d*x + c)*d)
```

maple [A] time = 0.10, size = 153, normalized size = 1.61

$$-\frac{a}{d\left(dx+c\right)}+\frac{iaf\,\mathrm{e}^{-fx-e}}{2d\left(dfx+cf\right)}-\frac{iaf\,\mathrm{e}^{\frac{cf-de}{d}}\,\mathrm{Ei}\left(1,fx+e+\frac{cf-de}{d}\right)}{2d^{2}}-\frac{iaf\,\mathrm{e}^{fx+e}}{2d^{2}\left(\frac{cf}{d}+fx\right)}-\frac{iaf\,\mathrm{e}^{-\frac{cf-de}{d}}\,\mathrm{Ei}\left(1,-fx-e-\frac{cf-de}{d}\right)}{2d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))/(d*x+c)^2,x)
```

```
[Out] -a/d/(d*x+c)+1/2*I*a*f*exp(-f*x-e)/d/(d*f*x+c*f)-1/2*I*a*f/d^2*exp((c*f-d*e
)/d)*Ei(1,f*x+e+(c*f-d*e)/d)-1/2*I*a*f/d^2*exp(f*x+e)/(c*f/d+f*x)-1/2*I*a*f
/d^2*exp(-(c*f-d*e)/d)*Ei(1,-f*x-e-(c*f-d*e)/d)
```

maxima [A] time = 0.40, size = 88, normalized size = 0.93

$$\frac{1}{2}i\,a\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_{2}\left(\frac{(dx+c)f}{d}\right)}{(dx+c)d}-\frac{e^{\left(e-\frac{cf}{d}\right)}E_{2}\left(-\frac{(dx+c)f}{d}\right)}{(dx+c)d}\right)-\frac{a}{d^{2}x+cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] 1/2*I*a*(e^(-e + c*f/d)*exp_integral_e(2, (d*x + c)*f/d)/((d*x + c)*d) - e^
(e - c*f/d)*exp_integral_e(2, -(d*x + c)*f/d)/((d*x + c)*d)) - a/(d^2*x + c
*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1{}\mathrm{i}}{{\left(c+d\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)/(c + d*x)^2,x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)/(c + d*x)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c)**2,x)
```

```
[Out] Timed out
```

3.101 $\int \frac{a+ia\sinh(e+fx)}{(c+dx)^3}\,dx$

Optimal. Leaf size=131

$$\frac{iaf^2\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{2d^3}+\frac{iaf^2\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{2d^3}-\frac{iaf\cosh(e+fx)}{2d^2(c+dx)}-\frac{ia\sinh(e+fx)}{2d(c+dx)^2}-\frac{a}{2d(c+$$

```
[Out] -1/2*a/d/(d*x+c)^2-1/2*I*a*f*cosh(f*x+e)/d^2/(d*x+c)+1/2*I*a*f^2*cosh(-e+c*
f/d)*Shi(c*f/d+f*x)/d^3-1/2*I*a*f^2*Chi(c*f/d+f*x)*sinh(-e+c*f/d)/d^3-1/2*I
*a*sinh(f*x+e)/d/(d*x+c)^2
```

Rubi [A] time = 0.23, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3317, 3297, 3303, 3298, 3301}

$$\frac{iaf^2\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{2d^3}+\frac{iaf^2\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{2d^3}-\frac{iaf\cosh(e+fx)}{2d^2(c+dx)}-\frac{ia\sinh(e+fx)}{2d(c+dx)^2}-\frac{a}{2d(c+$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[e + f*x])/(c + d*x)^3,x]
```

```
[Out] -a/(2*d*(c + d*x)^2) - ((I/2)*a*f*Cosh[e + f*x])/(d^2*(c + d*x)) + ((I/2)*a
*f^2*CoshIntegral[(c*f)/d + f*x]*Sinh[e - (c*f)/d])/d^3 - ((I/2)*a*Sinh[e +
 f*x])/(d*(c + d*x)^2) + ((I/2)*a*f^2*Cosh[e - (c*f)/d]*SinhIntegral[(c*f)/
d + f*x])/d^3
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
```

```
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+ia\sinh(e+fx)}{(c+dx)^3}\,dx &= \int \left(\frac{a}{(c+dx)^3}+\frac{ia\sinh(e+fx)}{(c+dx)^3}\right)dx \\
&= -\frac{a}{2d(c+dx)^2}+(ia)\int \frac{\sinh(e+fx)}{(c+dx)^3}\,dx \\
&= -\frac{a}{2d(c+dx)^2}-\frac{ia\sinh(e+fx)}{2d(c+dx)^2}+\frac{(iaf)\int \frac{\cosh(e+fx)}{(c+dx)^2}\,dx}{2d} \\
&= -\frac{a}{2d(c+dx)^2}-\frac{iaf\cosh(e+fx)}{2d^2(c+dx)}-\frac{ia\sinh(e+fx)}{2d(c+dx)^2}+\frac{\left(iaf^2\right)\int \frac{\sinh(e+fx)}{c+dx}\,dx}{2d^2} \\
&= -\frac{a}{2d(c+dx)^2}-\frac{iaf\cosh(e+fx)}{2d^2(c+dx)}-\frac{ia\sinh(e+fx)}{2d(c+dx)^2}+\frac{\left(iaf^2\cosh\left(e-\frac{cf}{d}\right)\right)\int \frac{\sinh\left(\frac{cf}{d}+\right.}{c+dx}}{2d^2} \\
&= -\frac{a}{2d(c+dx)^2}-\frac{iaf\cosh(e+fx)}{2d^2(c+dx)}+\frac{iaf^2\text{Chi}\left(\frac{cf}{d}+fx\right)\sinh\left(e-\frac{cf}{d}\right)}{2d^3}-\frac{ia\sinh(e+f}{2d(c+dx)^2}
\end{aligned}$$

Mathematica [A] time = 0.65, size = 109, normalized size = 0.83

$$\frac{ia\left(f^2(c+dx)^2\text{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\sinh\left(e-\frac{cf}{d}\right)+f^2(c+dx)^2\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(f\left(\frac{c}{d}+x\right)\right)-d(f(c+dx)\cosh(e+f\right.}{2d^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[e + f*x])/(c + d*x)^3,x]
```

```
[Out] ((I/2)*a*(f^2*(c + d*x)^2*CoshIntegral[f*(c/d + x)]*Sinh[e - (c*f)/d] - d*(
f*(c + d*x)*Cosh[e + f*x] + d*(-I + Sinh[e + f*x])) + f^2*(c + d*x)^2*Cosh[
e - (c*f)/d]*SinhIntegral[f*(c/d + x)]))/(d^3*(c + d*x)^2)
```

fricas [A] time = 0.47, size = 222, normalized size = 1.69

$$\frac{\left(-i\,ad^2fx - i\,acdf + i\,ad^2 + \left(-i\,ad^2fx - i\,acdf - i\,ad^2\right)e^{(2\,fx+2\,e)} - \left(2\,ad^2 - \left(i\,ad^2f^2x^2 + 2i\,acdf^2x + i\,ac^2f^2\right)\mathrm{Ei}\right.\right.}{4\left(d^5x^2 + 2\,cd^4x + c^2d^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(-I*a*d^2*f*x - I*a*c*d*f + I*a*d^2 + (-I*a*d^2*f*x - I*a*c*d*f - I*a*d
^2)*e^(2*f*x + 2*e) - (2*a*d^2 - (I*a*d^2*f^2*x^2 + 2*I*a*c*d*f^2*x + I*a*c
^2*f^2)*Ei((d*f*x + c*f)/d)*e^((d*e - c*f)/d) - (-I*a*d^2*f^2*x^2 - 2*I*a*c
*d*f^2*x - I*a*c^2*f^2)*Ei(-(d*f*x + c*f)/d)*e^(-(d*e - c*f)/d))*e^(f*x + e
))*e^(-f*x - e)/(d^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

giac [B] time = 0.23, size = 334, normalized size = 2.55

$$\frac{-i\,ad^2f^2x^2\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(\frac{cf}{d}-e\right)} + i\,ad^2f^2x^2\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(-\frac{cf}{d}+e\right)} - 2i\,acdf^2x\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(\frac{cf}{d}-e\right)} + 2i\,acdf^2x\mathrm{Ei}\left(\frac{df}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c)^3,x, algorithm="giac")
```

```
[Out] 1/4*(-I*a*d^2*f^2*x^2*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) + I*a*d^2*f^2*x^2*
Ei((d*f*x + c*f)/d)*e^(-c*f/d + e) - 2*I*a*c*d*f^2*x*Ei(-(d*f*x + c*f)/d)*e
^(c*f/d - e) + 2*I*a*c*d*f^2*x*Ei((d*f*x + c*f)/d)*e^(-c*f/d + e) - I*a*c^2
*f^2*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) + I*a*c^2*f^2*Ei((d*f*x + c*f)/d)*e
^(-c*f/d + e) - I*a*d^2*f*x*e^(f*x + e) - I*a*d^2*f*x*e^(-f*x - e) - I*a*c*
d*f*e^(f*x + e) - I*a*c*d*f*e^(-f*x - e) - I*a*d^2*e^(f*x + e) + I*a*d^2*e^
(-f*x - e) - 2*a*d^2)/(d^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

maple [B] time = 0.10, size = 303, normalized size = 2.31

$$-\frac{a}{2d\left(dx+c\right)^2} - \frac{ia\,f^3\mathrm{e}^{-fx-e}x}{4d\left(d^2f^2x^2+2cd\,f^2x+c^2f^2\right)} - \frac{ia\,f^3\mathrm{e}^{-fx-e}c}{4d^2\left(d^2f^2x^2+2cd\,f^2x+c^2f^2\right)} + \frac{ia\,f^2\mathrm{e}^{-fx-e}}{4d\left(d^2f^2x^2+2cd\,f^2x+c^2f^2\right)} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))/(d*x+c)^3,x)
```

```
[Out] -1/2*a/d/(d*x+c)^2-1/4*I*a*f^3*exp(-f*x-e)/d/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f
^2)*x-1/4*I*a*f^3*exp(-f*x-e)/d^2/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)*c+1/4*I
*a*f^2*exp(-f*x-e)/d/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)+1/4*I*a*f^2/d^3*exp(
(c*f-d*e)/d)*Ei(1,f*x+e+(c*f-d*e)/d)-1/4*I*a*f^2/d^3*exp(f*x+e)/(c*f/d+f*x)
^2-1/4*I*a*f^2/d^3*exp(f*x+e)/(c*f/d+f*x)-1/4*I*a*f^2/d^3*exp(-(c*f-d*e)/d)
*Ei(1,-f*x-e-(c*f-d*e)/d)
```

maxima [A] time = 0.42, size = 99, normalized size = 0.76

$$\frac{1}{2} i a \left(\frac{e^{\left(-e + \frac{cf}{d}\right)} E_3\left(\frac{(dx+c)f}{d}\right)}{(dx+c)^2 d} - \frac{e^{\left(e - \frac{cf}{d}\right)} E_3\left(-\frac{(dx+c)f}{d}\right)}{(dx+c)^2 d} \right) - \frac{a}{2\left(d^3x^2 + 2\,cd^2x + c^2d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c)^3,x, algorithm="maxima")
```

```
[Out] 1/2*I*a*(e^(-e + c*f/d)*exp_integral_e(3, (d*x + c)*f/d)/((d*x + c)^2*d) -
e^(e - c*f/d)*exp_integral_e(3, -(d*x + c)*f/d)/((d*x + c)^2*d)) - 1/2*a/(d
^3*x^2 + 2*c*d^2*x + c^2*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + a\sinh\left(e + f\,x\right)\,1{}\mathrm{i}}{{\left(c + d\,x\right)}^3} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)/(c + d*x)^3,x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)/(c + d*x)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))/(d*x+c)**3,x)
```

```
[Out] Timed out
```

3.102 $\int (c+dx)^3(a+ia\sinh(e+fx))^2\,dx$

Optimal. Leaf size=245

$$\frac{12ia^2d^2(c+dx)\cosh(e+fx)}{f^3}-\frac{3a^2d^2(c+dx)\sinh(e+fx)\cosh(e+fx)}{4f^3}+\frac{3a^2cd^2x}{4f^2}+\frac{3a^2d(c+dx)^2\sinh^2(e+fx)}{4f^2}$$

```
[Out] 3/4*a^2*c*d^2*x/f^2+3/8*a^2*d^3*x^2/f^2+3/8*a^2*(d*x+c)^4/d+12*I*a^2*d^2*(d
*x+c)*cosh(f*x+e)/f^3+2*I*a^2*(d*x+c)^3*cosh(f*x+e)/f-12*I*a^2*d^3*sinh(f*x
+e)/f^4-6*I*a^2*d*(d*x+c)^2*sinh(f*x+e)/f^2-3/4*a^2*d^2*(d*x+c)*cosh(f*x+e)
*sinh(f*x+e)/f^3-1/2*a^2*(d*x+c)^3*cosh(f*x+e)*sinh(f*x+e)/f+3/8*a^2*d^3*si
nh(f*x+e)^2/f^4+3/4*a^2*d*(d*x+c)^2*sinh(f*x+e)^2/f^2
```

Rubi [A] time = 0.29, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {3317, 3296, 2637, 3311, 32, 3310}

$$\frac{12ia^2d^2(c+dx)\cosh(e+fx)}{f^3}-\frac{3a^2d^2(c+dx)\sinh(e+fx)\cosh(e+fx)}{4f^3}+\frac{3a^2cd^2x}{4f^2}+\frac{3a^2d(c+dx)^2\sinh^2(e+fx)}{4f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (3*a^2*c*d^2*x)/(4*f^2) + (3*a^2*d^3*x^2)/(8*f^2) + (3*a^2*(c + d*x)^4)/(8*
d) + ((12*I)*a^2*d^2*(c + d*x)*Cosh[e + f*x])/f^3 + ((2*I)*a^2*(c + d*x)^3*
Cosh[e + f*x])/f - ((12*I)*a^2*d^3*Sinh[e + f*x])/f^4 - ((6*I)*a^2*d*(c + d
*x)^2*Sinh[e + f*x])/f^2 - (3*a^2*d^2*(c + d*x)*Cosh[e + f*x]*Sinh[e + f*x]
)/(4*f^3) - (a^2*(c + d*x)^3*Cosh[e + f*x]*Sinh[e + f*x])/(2*f) + (3*a^2*d^
3*Sinh[e + f*x]^2)/(8*f^4) + (3*a^2*d*(c + d*x)^2*Sinh[e + f*x]^2)/(4*f^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}
\int (c+dx)^3(a+ia\sinh(e+fx))^2\,dx &= \int \left(a^2(c+dx)^3+2ia^2(c+dx)^3\sinh(e+fx)-a^2(c+dx)^3\sinh^2(e+fx)\right) \\
&= \frac{a^2(c+dx)^4}{4d}+\left(2ia^2\right)\int (c+dx)^3\sinh(e+fx)\,dx-a^2\int (c+dx)^3\sinh^2(e \\
&= \frac{a^2(c+dx)^4}{4d}+\frac{2ia^2(c+dx)^3\cosh(e+fx)}{f}-\frac{a^2(c+dx)^3\cosh(e+fx)\sinh}{2f} \\
&= \frac{3a^2(c+dx)^4}{8d}+\frac{2ia^2(c+dx)^3\cosh(e+fx)}{f}-\frac{6ia^2d(c+dx)^2\sinh(e+fx)}{f^2} \\
&= \frac{3a^2cd^2x}{4f^2}+\frac{3a^2d^3x^2}{8f^2}+\frac{3a^2(c+dx)^4}{8d}+\frac{12ia^2d^2(c+dx)\cosh(e+fx)}{f^3}+\frac{2ia}{} \\
&= \frac{3a^2cd^2x}{4f^2}+\frac{3a^2d^3x^2}{8f^2}+\frac{3a^2(c+dx)^4}{8d}+\frac{12ia^2d^2(c+dx)\cosh(e+fx)}{f^3}+\frac{2ia}{}
\end{aligned}$$

Mathematica [A] time = 1.41, size = 220, normalized size = 0.90

$$\frac{a^2\left(-2f(c+dx)\left(2c^2f^2+4cdf^2x+d^2\left(2f^2x^2+3\right)\right)\sinh(2(e+fx))-96id\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2+2\right)\right)\sin\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3*(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (a^2*(6*f^4*x*(4*c^3 + 6*c^2*d*x + 4*c*d^2*x^2 + d^3*x^3) + (32*I)*f*(c + d
*x)*(c^2*f^2 + 2*c*d*f^2*x + d^2*(6 + f^2*x^2))*Cosh[e + f*x] + 3*d*(2*c^2*
f^2 + 4*c*d*f^2*x + d^2*(1 + 2*f^2*x^2))*Cosh[2*(e + f*x)] - (96*I)*d*(c^2*
f^2 + 2*c*d*f^2*x + d^2*(2 + f^2*x^2))*Sinh[e + f*x] - 2*f*(c + d*x)*(2*c^2
*f^2 + 4*c*d*f^2*x + d^2*(3 + 2*f^2*x^2))*Sinh[2*(e + f*x)]))/(16*f^4)
```

fricas [B] time = 0.65, size = 590, normalized size = 2.41

$$\frac{\left(4\,a^2d^3f^3x^3+4\,a^2c^3f^3+6\,a^2c^2df^2+6\,a^2cd^2f+3\,a^2d^3+6\left(2\,a^2cd^2f^3+a^2d^3f^2\right)x^2+6\left(2\,a^2c^2df^3+2\,a^2cd^2f^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+I*a*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/32*(4*a^2*d^3*f^3*x^3 + 4*a^2*c^3*f^3 + 6*a^2*c^2*d*f^2 + 6*a^2*c*d^2*f +
 3*a^2*d^3 + 6*(2*a^2*c*d^2*f^3 + a^2*d^3*f^2)*x^2 + 6*(2*a^2*c^2*d*f^3 + 2
*a^2*c*d^2*f^2 + a^2*d^3*f)*x - (4*a^2*d^3*f^3*x^3 + 4*a^2*c^3*f^3 - 6*a^2*
c^2*d*f^2 + 6*a^2*c*d^2*f - 3*a^2*d^3 + 6*(2*a^2*c*d^2*f^3 - a^2*d^3*f^2)*x
^2 + 6*(2*a^2*c^2*d*f^3 - 2*a^2*c*d^2*f^2 + a^2*d^3*f)*x)*e^(4*f*x + 4*e) +
 (32*I*a^2*d^3*f^3*x^3 + 32*I*a^2*c^3*f^3 - 96*I*a^2*c^2*d*f^2 + 192*I*a^2*
c*d^2*f - 192*I*a^2*d^3 + (96*I*a^2*c*d^2*f^3 - 96*I*a^2*d^3*f^2)*x^2 + (96
*I*a^2*c^2*d*f^3 - 192*I*a^2*c*d^2*f^2 + 192*I*a^2*d^3*f)*x)*e^(3*f*x + 3*e
) + 12*(a^2*d^3*f^4*x^4 + 4*a^2*c*d^2*f^4*x^3 + 6*a^2*c^2*d*f^4*x^2 + 4*a^2
*c^3*f^4*x)*e^(2*f*x + 2*e) + (32*I*a^2*d^3*f^3*x^3 + 32*I*a^2*c^3*f^3 + 96
*I*a^2*c^2*d*f^2 + 192*I*a^2*c*d^2*f + 192*I*a^2*d^3 + (96*I*a^2*c*d^2*f^3
+ 96*I*a^2*d^3*f^2)*x^2 + (96*I*a^2*c^2*d*f^3 + 192*I*a^2*c*d^2*f^2 + 192*I
*a^2*d^3*f)*x)*e^(f*x + e))*e^(-2*f*x - 2*e)/f^4
```

giac [B] time = 0.23, size = 584, normalized size = 2.38

$$\frac{3}{8}\,a^2d^3x^4+\frac{3}{2}\,a^2cd^2x^3+\frac{9}{4}\,a^2c^2dx^2+\frac{3}{2}\,a^2c^3x-\frac{\left(4\,a^2d^3f^3x^3+12\,a^2cd^2f^3x^2+12\,a^2c^2df^3x-6\,a^2d^3f^2x^2+4\,a^2c^3f^3-\right.}{32\,}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+I*a*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 3/8*a^2*d^3*x^4 + 3/2*a^2*c*d^2*x^3 + 9/4*a^2*c^2*d*x^2 + 3/2*a^2*c^3*x - 1
/32*(4*a^2*d^3*f^3*x^3 + 12*a^2*c*d^2*f^3*x^2 + 12*a^2*c^2*d*f^3*x - 6*a^2*
d^3*f^2*x^2 + 4*a^2*c^3*f^3 - 12*a^2*c*d^2*f^2*x - 6*a^2*c^2*d*f^2 + 6*a^2*
d^3*f*x + 6*a^2*c*d^2*f - 3*a^2*d^3)*e^(2*f*x + 2*e)/f^4 + (I*a^2*d^3*f^3*x
^3 + 3*I*a^2*c*d^2*f^3*x^2 + 3*I*a^2*c^2*d*f^3*x - 3*I*a^2*d^3*f^2*x^2 + I*
a^2*c^3*f^3 - 6*I*a^2*c*d^2*f^2*x - 3*I*a^2*c^2*d*f^2 + 6*I*a^2*d^3*f*x + 6
*I*a^2*c*d^2*f - 6*I*a^2*d^3)*e^(f*x + e)/f^4 + (I*a^2*d^3*f^3*x^3 + 3*I*a^
2*c*d^2*f^3*x^2 + 3*I*a^2*c^2*d*f^3*x + 3*I*a^2*d^3*f^2*x^2 + I*a^2*c^3*f^3
 + 6*I*a^2*c*d^2*f^2*x + 3*I*a^2*c^2*d*f^2 + 6*I*a^2*d^3*f*x + 6*I*a^2*c*d^
2*f + 6*I*a^2*d^3)*e^(-f*x - e)/f^4 + 1/32*(4*a^2*d^3*f^3*x^3 + 12*a^2*c*d^
2*f^3*x^2 + 12*a^2*c^2*d*f^3*x + 6*a^2*d^3*f^2*x^2 + 4*a^2*c^3*f^3 + 12*a^2
*c*d^2*f^2*x + 6*a^2*c^2*d*f^2 + 6*a^2*d^3*f*x + 6*a^2*c*d^2*f + 3*a^2*d^3)
*e^(-2*f*x - 2*e)/f^4
```

maple [B] time = 0.03, size = 1082, normalized size = 4.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*(a+I*a*sinh(f*x+e))^2,x)
```

```
[Out] 1/f*(3/f^2*c*d^2*e^2*a^2*(f*x+e)-6*I/f*c^2*d*e*a^2*cosh(f*x+e)-12*I/f^2*c*d
^2*e*a^2*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))+6*I/f^2*c*d^2*e^2*a^2*cosh(f*x+e
)-3/f*c^2*d*e*a^2*(f*x+e)+6*I/f^3*d^3*e^2*a^2*((f*x+e)*cosh(f*x+e)-sinh(f*x
+e))+6*I/f^2*c*d^2*a^2*((f*x+e)^2*cosh(f*x+e)-2*(f*x+e)*sinh(f*x+e)+2*cosh(
f*x+e))+6*I/f*c^2*d*a^2*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))+6/f^2*c*d^2*e*a^2
*(1/2*(f*x+e)*cosh(f*x+e)*sinh(f*x+e)-1/4*(f*x+e)^2-1/4*cosh(f*x+e)^2)-6*I/
f^3*d^3*e*a^2*((f*x+e)^2*cosh(f*x+e)-2*(f*x+e)*sinh(f*x+e)+2*cosh(f*x+e))+3
/f*c^2*d*e*a^2*(1/2*cosh(f*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e)-2*I/f^3*d^3*e^3*
a^2*cosh(f*x+e)-3/f^2*c*d^2*e*a^2*(f*x+e)^2-3/f^2*c*d^2*e^2*a^2*(1/2*cosh(f
*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e)+2*I*c^3*a^2*cosh(f*x+e)+1/4/f^3*d^3*a^2*(f
*x+e)^4-1/f^3*d^3*a^2*(1/2*(f*x+e)^3*cosh(f*x+e)*sinh(f*x+e)-1/8*(f*x+e)^4-
3/4*(f*x+e)^2*cosh(f*x+e)^2+3/4*(f*x+e)*cosh(f*x+e)*sinh(f*x+e)+3/8*(f*x+e)
^2-3/8*cosh(f*x+e)^2)+1/f^2*c*d^2*a^2*(f*x+e)^3+2*I/f^3*d^3*a^2*((f*x+e)^3*
cosh(f*x+e)-3*(f*x+e)^2*sinh(f*x+e)+6*(f*x+e)*cosh(f*x+e)-6*sinh(f*x+e))+3/
f^3*d^3*e*a^2*(1/2*(f*x+e)^2*cosh(f*x+e)*sinh(f*x+e)-1/6*(f*x+e)^3-1/2*(f*x
+e)*cosh(f*x+e)^2+1/4*cosh(f*x+e)*sinh(f*x+e)+1/4*f*x+1/4*e)-3/f^3*d^3*e^2*
a^2*(1/2*(f*x+e)*cosh(f*x+e)*sinh(f*x+e)-1/4*(f*x+e)^2-1/4*cosh(f*x+e)^2)-1
/f^3*d^3*e^3*a^2*(f*x+e)-1/f^3*d^3*e*a^2*(f*x+e)^3+3/2/f*c^2*d*a^2*(f*x+e)^
2-3/f^2*c*d^2*a^2*(1/2*(f*x+e)^2*cosh(f*x+e)*sinh(f*x+e)-1/6*(f*x+e)^3-1/2*
(f*x+e)*cosh(f*x+e)^2+1/4*cosh(f*x+e)*sinh(f*x+e)+1/4*f*x+1/4*e)-3/f*c^2*d*
a^2*(1/2*(f*x+e)*cosh(f*x+e)*sinh(f*x+e)-1/4*(f*x+e)^2-1/4*cosh(f*x+e)^2)+1
/f^3*d^3*e^3*a^2*(1/2*cosh(f*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e)+3/2/f^3*d^3*e^
```

```
2*a^2*(f*x+e)^2+c^3*a^2*(f*x+e)-c^3*a^2*(1/2*cosh(f*x+e)*sinh(f*x+e)-1/2*f*
x-1/2*e))
```

maxima [B] time = 0.40, size = 525, normalized size = 2.14

$$\frac{1}{4}a^2d^3x^4+a^2cd^2x^3+\frac{3}{2}a^2c^2dx^2+\frac{3}{16}\left(4x^2-\frac{\left(2fxe^{(2e)}-e^{(2e)}\right)e^{(2fx)}}{f^2}+\frac{\left(2fx+1\right)e^{(-2fx-2e)}}{f^2}\right)a^2c^2d+\frac{1}{16}\left(8x^3-\frac{3(}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+I*a*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/4*a^2*d^3*x^4 + a^2*c*d^2*x^3 + 3/2*a^2*c^2*d*x^2 + 3/16*(4*x^2 - (2*f*x*
e^(2*e) - e^(2*e))*e^(2*f*x)/f^2 + (2*f*x + 1)*e^(-2*f*x - 2*e)/f^2)*a^2*c^
2*d + 1/16*(8*x^3 - 3*(2*f^2*x^2*e^(2*e) - 2*f*x*e^(2*e) + e^(2*e))*e^(2*f*
x)/f^3 + 3*(2*f^2*x^2 + 2*f*x + 1)*e^(-2*f*x - 2*e)/f^3)*a^2*c*d^2 + 1/32*(
4*x^4 - (4*f^3*x^3*e^(2*e) - 6*f^2*x^2*e^(2*e) + 6*f*x*e^(2*e) - 3*e^(2*e))
*e^(2*f*x)/f^4 + (4*f^3*x^3 + 6*f^2*x^2 + 6*f*x + 3)*e^(-2*f*x - 2*e)/f^4)*
a^2*d^3 + 1/8*a^2*c^3*(4*x - e^(2*f*x + 2*e)/f + e^(-2*f*x - 2*e)/f) + a^2*
c^3*x + 3*I*a^2*c^2*d*((f*x*e^e - e^e)*e^(f*x)/f^2 + (f*x + 1)*e^(-f*x - e)
/f^2) + 3*I*a^2*c*d^2*((f^2*x^2*e^e - 2*f*x*e^e + 2*e^e)*e^(f*x)/f^3 + (f^2
*x^2 + 2*f*x + 2)*e^(-f*x - e)/f^3) + I*a^2*d^3*((f^3*x^3*e^e - 3*f^2*x^2*e
^e + 6*f*x*e^e - 6*e^e)*e^(f*x)/f^4 + (f^3*x^3 + 3*f^2*x^2 + 6*f*x + 6)*e^(
-f*x - e)/f^4) + 2*I*a^2*c^3*cosh(f*x + e)/f
```

mupad [B] time = 1.05, size = 393, normalized size = 1.60

$$\frac{a^2\left(3d^3\cosh\left(2e+2fx\right)+24c^3f^4x-4c^3f^3\sinh\left(2e+2fx\right)+6d^3f^4x^4+6c^2df^2\cosh\left(2e+2fx\right)+36\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^2*(c + d*x)^3,x)
```

```
[Out] (a^2*(3*d^3*cosh(2*e + 2*f*x) - d^3*sinh(e + f*x)*192i + c^3*f^3*cosh(e + f
*x)*32i + 24*c^3*f^4*x - 4*c^3*f^3*sinh(2*e + 2*f*x) + 6*d^3*f^4*x^4 + 6*c^
2*d*f^2*cosh(2*e + 2*f*x) + 36*c^2*d*f^4*x^2 + 24*c*d^2*f^4*x^3 + d^3*f^3*x
^3*cosh(e + f*x)*32i - d^3*f^2*x^2*sinh(e + f*x)*96i + c*d^2*f*cosh(e + f*x
)*192i + d^3*f*x*cosh(e + f*x)*192i + 6*d^3*f^2*x^2*cosh(2*e + 2*f*x) - 4*d
^3*f^3*x^3*sinh(2*e + 2*f*x) - 6*c*d^2*f*sinh(2*e + 2*f*x) - c^2*d*f^2*sinh
(e + f*x)*96i - 6*d^3*f*x*sinh(2*e + 2*f*x) + c^2*d*f^3*x*cosh(e + f*x)*96i
 - c*d^2*f^2*x*sinh(e + f*x)*192i + 12*c*d^2*f^2*x*cosh(2*e + 2*f*x) + c*d^
2*f^3*x^2*cosh(e + f*x)*96i - 12*c^2*d*f^3*x*sinh(2*e + 2*f*x) - 12*c*d^2*f
^3*x^2*sinh(2*e + 2*f*x)))/(16*f^4)
```

sympy [A] time = 1.44, size = 1136, normalized size = 4.64

$$\frac{3a^2c^3x}{2}+\frac{9a^2c^2dx^2}{4}+\frac{3a^2cd^2x^3}{2}+\frac{3a^2d^3x^4}{8}+\begin{cases}\frac{\left(\left(128a^2c^3f^{15}e^e+384a^2c^2df^{15}xe^e+192a^2c^2df^{14}e^e+384a^2cd^2f^{15}x^2e^e+384a^2cd^2f^{14}xe^e+192a^2c\right.\right.}{} \\ \frac{x^4\left(-a^2d^3e^{4e}+4ia^2d^3e^{3e}-4ia^2d^3e^e-a^2d^3\right)e^{-2e}}{16}+\frac{x^3\left(-a^2cd^2e^{4e}+4ia^2cd^2e^{3e}-4ia^2cd^2e^e-a^2cd^2\right)e}{4}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*(a+I*a*sinh(f*x+e))**2,x)
```

```
[Out] 3*a**2*c**3*x/2 + 9*a**2*c**2*d*x**2/4 + 3*a**2*c*d**2*x**3/2 + 3*a**2*d**3
*x**4/8 + Piecewise((((128*a**2*c**3*f**15*exp(e) + 384*a**2*c**2*d*f**15*x
*exp(e) + 192*a**2*c**2*d*f**14*exp(e) + 384*a**2*c*d**2*f**15*x**2*exp(e)
+ 384*a**2*c*d**2*f**14*x*exp(e) + 192*a**2*c*d**2*f**13*exp(e) + 128*a**2*
d**3*f**15*x**3*exp(e) + 192*a**2*d**3*f**14*x**2*exp(e) + 192*a**2*d**3*f*
*13*x*exp(e) + 96*a**2*d**3*f**12*exp(e))*exp(-2*f*x) + (-128*a**2*c**3*f**
15*exp(5*e) - 384*a**2*c**2*d*f**15*x*exp(5*e) + 192*a**2*c**2*d*f**14*exp(
5*e) - 384*a**2*c*d**2*f**15*x**2*exp(5*e) + 384*a**2*c*d**2*f**14*x*exp(5*
e) - 192*a**2*c*d**2*f**13*exp(5*e) - 128*a**2*d**3*f**15*x**3*exp(5*e) + 1
92*a**2*d**3*f**14*x**2*exp(5*e) - 192*a**2*d**3*f**13*x*exp(5*e) + 96*a**2
*d**3*f**12*exp(5*e))*exp(2*f*x) + (1024*I*a**2*c**3*f**15*exp(2*e) + 3072*
I*a**2*c**2*d*f**15*x*exp(2*e) + 3072*I*a**2*c**2*d*f**14*exp(2*e) + 3072*I
*a**2*c*d**2*f**15*x**2*exp(2*e) + 6144*I*a**2*c*d**2*f**14*x*exp(2*e) + 61
44*I*a**2*c*d**2*f**13*exp(2*e) + 1024*I*a**2*d**3*f**15*x**3*exp(2*e) + 30
72*I*a**2*d**3*f**14*x**2*exp(2*e) + 6144*I*a**2*d**3*f**13*x*exp(2*e) + 61
44*I*a**2*d**3*f**12*exp(2*e))*exp(-f*x) + (1024*I*a**2*c**3*f**15*exp(4*e)
 + 3072*I*a**2*c**2*d*f**15*x*exp(4*e) - 3072*I*a**2*c**2*d*f**14*exp(4*e)
+ 3072*I*a**2*c*d**2*f**15*x**2*exp(4*e) - 6144*I*a**2*c*d**2*f**14*x*exp(4
*e) + 6144*I*a**2*c*d**2*f**13*exp(4*e) + 1024*I*a**2*d**3*f**15*x**3*exp(4
*e) - 3072*I*a**2*d**3*f**14*x**2*exp(4*e) + 6144*I*a**2*d**3*f**13*x*exp(4
*e) - 6144*I*a**2*d**3*f**12*exp(4*e))*exp(f*x))*exp(-3*e)/(1024*f**16), Ne
(1024*f**16*exp(3*e), 0)), (x**4*(-a**2*d**3*exp(4*e) + 4*I*a**2*d**3*exp(3
*e) - 4*I*a**2*d**3*exp(e) - a**2*d**3)*exp(-2*e)/16 + x**3*(-a**2*c*d**2*e
xp(4*e) + 4*I*a**2*c*d**2*exp(3*e) - 4*I*a**2*c*d**2*exp(e) - a**2*c*d**2)*
exp(-2*e)/4 + x**2*(-3*a**2*c**2*d*exp(4*e) + 12*I*a**2*c**2*d*exp(3*e) - 1
2*I*a**2*c**2*d*exp(e) - 3*a**2*c**2*d)*exp(-2*e)/8 + x*(-a**2*c**3*exp(4*e
) + 4*I*a**2*c**3*exp(3*e) - 4*I*a**2*c**3*exp(e) - a**2*c**3)*exp(-2*e)/4,
 True))
```

3.103 $\int (c+dx)^2 (a+ia\sinh(e+fx))^2\,dx$

Optimal. Leaf size=174

$$\frac{a^2 d(c+dx)\sinh^2(e+fx)}{2f^2} - \frac{4ia^2 d(c+dx)\sinh(e+fx)}{f^2} + \frac{2ia^2(c+dx)^2\cosh(e+fx)}{f} - \frac{a^2(c+dx)^2\sinh(e+fx)\,\mathrm{c}}{2f}$$

```
[Out] 1/4*a^2*d^2*x/f^2+1/2*a^2*(d*x+c)^3/d+4*I*a^2*d^2*cosh(f*x+e)/f^3+2*I*a^2*(
d*x+c)^2*cosh(f*x+e)/f-4*I*a^2*d*(d*x+c)*sinh(f*x+e)/f^2-1/4*a^2*d^2*cosh(f
*x+e)*sinh(f*x+e)/f^3-1/2*a^2*(d*x+c)^2*cosh(f*x+e)*sinh(f*x+e)/f+1/2*a^2*d
*(d*x+c)*sinh(f*x+e)^2/f^2
```

Rubi [A] time = 0.20, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {3317, 3296, 2638, 3311, 32, 2635, 8}

$$\frac{a^2 d(c+dx)\sinh^2(e+fx)}{2f^2} - \frac{4ia^2 d(c+dx)\sinh(e+fx)}{f^2} + \frac{2ia^2(c+dx)^2\cosh(e+fx)}{f} - \frac{a^2(c+dx)^2\sinh(e+fx)\,\mathrm{c}}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (a^2*d^2*x)/(4*f^2) + (a^2*(c + d*x)^3)/(2*d) + ((4*I)*a^2*d^2*Cosh[e + f*x
])/f^3 + ((2*I)*a^2*(c + d*x)^2*Cosh[e + f*x])/f - ((4*I)*a^2*d*(c + d*x)*S
inh[e + f*x])/f^2 - (a^2*d^2*Cosh[e + f*x]*Sinh[e + f*x])/(4*f^3) - (a^2*(c
 + d*x)^2*Cosh[e + f*x]*Sinh[e + f*x])/(2*f) + (a^2*d*(c + d*x)*Sinh[e + f*
x]^2)/(2*f^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^2(a+ia\sinh(e+fx))^2\,dx = \int \left(a^2(c+dx)^2+2ia^2(c+dx)^2\sinh(e+fx)-a^2(c+dx)^2\sinh^2(e+fx)\right)$$

$$= \frac{a^2(c+dx)^3}{3d}+\left(2ia^2\right)\int (c+dx)^2\sinh(e+fx)\,dx-a^2\int (c+dx)^2\sinh^2(e$$

$$= \frac{a^2(c+dx)^3}{3d}+\frac{2ia^2(c+dx)^2\cosh(e+fx)}{f}-\frac{a^2(c+dx)^2\cosh(e+fx)\sinh}{2f}$$

$$= \frac{a^2(c+dx)^3}{2d}+\frac{2ia^2(c+dx)^2\cosh(e+fx)}{f}-\frac{4ia^2d(c+dx)\sinh(e+fx)}{f^2}-$$

$$= \frac{a^2d^2x}{4f^2}+\frac{a^2(c+dx)^3}{2d}+\frac{4ia^2d^2\cosh(e+fx)}{f^3}+\frac{2ia^2(c+dx)^2\cosh(e+fx)}{f}$$

Mathematica [A] time = 0.69, size = 189, normalized size = 1.09

$$\frac{a^2\left(16i\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2+2\right)\right)\cosh(e+fx)-2c^2f^2\sinh(2(e+fx))+12c^2f^3x-4cdf^2x\sinh(2(e+f$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (a^2*(12*c^2*f^3*x + 12*c*d*f^3*x^2 + 4*d^2*f^3*x^3 + (16*I)*(c^2*f^2 + 2*c
*d*f^2*x + d^2*(2 + f^2*x^2))*Cosh[e + f*x] + 2*d*f*(c + d*x)*Cosh[2*(e + f
*x)] - (32*I)*c*d*f*Sinh[e + f*x] - (32*I)*d^2*f*x*Sinh[e + f*x] - d^2*Sinh
[2*(e + f*x)] - 2*c^2*f^2*Sinh[2*(e + f*x)] - 4*c*d*f^2*x*Sinh[2*(e + f*x)]
 - 2*d^2*f^2*x^2*Sinh[2*(e + f*x)]))/(8*f^3)
```

fricas [B] time = 0.44, size = 347, normalized size = 1.99

$$\frac{\left(2\,a^2d^2f^2x^2+2\,a^2c^2f^2+2\,a^2cdf+a^2d^2+2\left(2\,a^2cdf^2+a^2d^2f\right)x-\left(2\,a^2d^2f^2x^2+2\,a^2c^2f^2-2\,a^2cdf+a^2d^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+I*a*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/16*(2*a^2*d^2*f^2*x^2 + 2*a^2*c^2*f^2 + 2*a^2*c*d*f + a^2*d^2 + 2*(2*a^2*
c*d*f^2 + a^2*d^2*f)*x - (2*a^2*d^2*f^2*x^2 + 2*a^2*c^2*f^2 - 2*a^2*c*d*f +
 a^2*d^2 + 2*(2*a^2*c*d*f^2 - a^2*d^2*f)*x)*e^(4*f*x + 4*e) + (16*I*a^2*d^2
*f^2*x^2 + 16*I*a^2*c^2*f^2 - 32*I*a^2*c*d*f + 32*I*a^2*d^2 + (32*I*a^2*c*d
*f^2 - 32*I*a^2*d^2*f)*x)*e^(3*f*x + 3*e) + 8*(a^2*d^2*f^3*x^3 + 3*a^2*c*d*
f^3*x^2 + 3*a^2*c^2*f^3*x)*e^(2*f*x + 2*e) + (16*I*a^2*d^2*f^2*x^2 + 16*I*a
^2*c^2*f^2 + 32*I*a^2*c*d*f + 32*I*a^2*d^2 + (32*I*a^2*c*d*f^2 + 32*I*a^2*d
^2*f)*x)*e^(f*x + e))*e^(-2*f*x - 2*e)/f^3
```

giac [B] time = 0.21, size = 337, normalized size = 1.94

$$\frac{1}{2}\,a^2d^2x^3+\frac{3}{2}\,a^2cdx^2+\frac{3}{2}\,a^2c^2x-\frac{\left(2\,a^2d^2f^2x^2+4\,a^2cdf^2x+2\,a^2c^2f^2-2\,a^2d^2fx-2\,a^2cdf+a^2d^2\right)e^{\left(2\,fx+2\,e\right)}}{16\,f^3}+\frac{\left(i\,a^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+I*a*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/2*a^2*d^2*x^3 + 3/2*a^2*c*d*x^2 + 3/2*a^2*c^2*x - 1/16*(2*a^2*d^2*f^2*x^2
 + 4*a^2*c*d*f^2*x + 2*a^2*c^2*f^2 - 2*a^2*d^2*f*x - 2*a^2*c*d*f + a^2*d^2)
*e^(2*f*x + 2*e)/f^3 + (I*a^2*d^2*f^2*x^2 + 2*I*a^2*c*d*f^2*x + I*a^2*c^2*f
```

```
^2 - 2*I*a^2*d^2*f*x - 2*I*a^2*c*d*f + 2*I*a^2*d^2)*e^(f*x + e)/f^3 - (-I*a
^2*d^2*f^2*x^2 - 2*I*a^2*c*d*f^2*x - I*a^2*c^2*f^2 - 2*I*a^2*d^2*f*x - 2*I*
a^2*c*d*f - 2*I*a^2*d^2)*e^(-f*x - e)/f^3 + 1/16*(2*a^2*d^2*f^2*x^2 + 4*a^2
*c*d*f^2*x + 2*a^2*c^2*f^2 + 2*a^2*d^2*f*x + 2*a^2*c*d*f + a^2*d^2)*e^(-2*f
*x - 2*e)/f^3
```

maple [B] time = 0.03, size = 550, normalized size = 3.16

$$\frac{\frac{d^2a^2(fx+e)^3}{3f^2}+\frac{2id^2e^2a^2\cosh(fx+e)}{f^2}-\frac{d^2a^2\left(\frac{(fx+e)^2\cosh(fx+e)\sinh(fx+e)}{2}-\frac{(fx+e)^3}{6}-\frac{(fx+e)(\cosh^2(fx+e))}{2}+\frac{\cosh(fx+e)\sinh(fx+e)}{4}+\frac{fx}{4}+\frac{e}{4}\right)}{f^2}-\frac{d^2e\,a^2(fx\cdots}{f^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*(a+I*a*sinh(f*x+e))^2,x)
```

```
[Out] 1/f*(1/3/f^2*d^2*a^2*(f*x+e)^3+2*I/f^2*d^2*e^2*a^2*cosh(f*x+e)-1/f^2*d^2*a^
2*(1/2*(f*x+e)^2*cosh(f*x+e)*sinh(f*x+e)-1/6*(f*x+e)^3-1/2*(f*x+e)*cosh(f*x
+e)^2+1/4*cosh(f*x+e)*sinh(f*x+e)+1/4*f*x+1/4*e)-1/f^2*d^2*e*a^2*(f*x+e)^2+
2*I/f^2*d^2*a^2*((f*x+e)^2*cosh(f*x+e)-2*(f*x+e)*sinh(f*x+e)+2*cosh(f*x+e))
+2/f^2*d^2*e*a^2*(1/2*(f*x+e)*cosh(f*x+e)*sinh(f*x+e)-1/4*(f*x+e)^2-1/4*cos
h(f*x+e)^2)+1/f^2*d^2*e^2*a^2*(f*x+e)-4*I/f^2*d^2*e*a^2*((f*x+e)*cosh(f*x+e
)-sinh(f*x+e))-1/f^2*d^2*e^2*a^2*(1/2*cosh(f*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e
)+1/f*c*d*a^2*(f*x+e)^2-4*I/f*c*d*e*a^2*cosh(f*x+e)-2/f*c*d*a^2*(1/2*(f*x+e
)*cosh(f*x+e)*sinh(f*x+e)-1/4*(f*x+e)^2-1/4*cosh(f*x+e)^2)-2/f*c*d*e*a^2*(f
*x+e)+4*I/f*c*d*a^2*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))+2/f*c*d*e*a^2*(1/2*co
sh(f*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e)+c^2*a^2*(f*x+e)+2*I*c^2*a^2*cosh(f*x+e
)-c^2*a^2*(1/2*cosh(f*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e))
```

maxima [B] time = 0.40, size = 326, normalized size = 1.87

$$\frac{1}{3}a^2d^2x^3+a^2cdx^2+\frac{1}{8}\left(4x^2-\frac{\left(2fxe^{(2e)}-e^{(2e)}\right)e^{(2fx)}}{f^2}+\frac{(2fx+1)e^{(-2fx-2e)}}{f^2}\right)a^2cd+\frac{1}{48}\left(8x^3-\frac{3\left(2f^2x^2e^{(2e)}-2f\cdots\right.}{f\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+I*a*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/3*a^2*d^2*x^3 + a^2*c*d*x^2 + 1/8*(4*x^2 - (2*f*x*e^(2*e) - e^(2*e))*e^(2
*f*x)/f^2 + (2*f*x + 1)*e^(-2*f*x - 2*e)/f^2)*a^2*c*d + 1/48*(8*x^3 - 3*(2*
f^2*x^2*e^(2*e) - 2*f*x*e^(2*e) + e^(2*e))*e^(2*f*x)/f^3 + 3*(2*f^2*x^2 + 2
*f*x + 1)*e^(-2*f*x - 2*e)/f^3)*a^2*d^2 + 1/8*a^2*c^2*(4*x - e^(2*f*x + 2*e
)/f + e^(-2*f*x - 2*e)/f) + a^2*c^2*x + 2*I*a^2*c*d*((f*x*e^e - e^e)*e^(f*x
)/f^2 + (f*x + 1)*e^(-f*x - e)/f^2) + I*a^2*d^2*((f^2*x^2*e^e - 2*f*x*e^e +
```

```
 2*e^e)*e^(f*x)/f^3 + (f^2*x^2 + 2*f*x + 2)*e^(-f*x - e)/f^3) + 2*I*a^2*c^2
*cosh(f*x + e)/f
```

mupad [B] time = 0.68, size = 217, normalized size = 1.25

$$\frac{a^2\left(12\,c^2\,x+12\,c\,d\,x^2+4\,d^2\,x^3\right)}{8}+\frac{\frac{a^2\left(-d^2\,\sinh\left(2\,e+2\,f\,x\right)+d^2\,\cosh\left(e+f\,x\right)\,32\mathrm{i}\right)}{8}+\frac{a^2\,f^2\left(-2\,c^2\,\sinh\left(2\,e+2\,f\,x\right)-2\,d^2\,x^2\,\sinh\left(2\,e+2\,f\,x\right)-4\cdots\right.}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^2*(c + d*x)^2,x)
```

```
[Out] (a^2*(12*c^2*x + 4*d^2*x^3 + 12*c*d*x^2))/8 + ((a^2*(d^2*cosh(e + f*x)*32i
- d^2*sinh(2*e + 2*f*x)))/8 + (a^2*f^2*(c^2*cosh(e + f*x)*16i - 2*c^2*sinh(
2*e + 2*f*x) + d^2*x^2*cosh(e + f*x)*16i - 2*d^2*x^2*sinh(2*e + 2*f*x) + c*
d*x*cosh(e + f*x)*32i - 4*c*d*x*sinh(2*e + 2*f*x)))/8 - (a^2*f*(d^2*x*sinh(
e + f*x)*32i - 2*d^2*x*cosh(2*e + 2*f*x) + c*d*sinh(e + f*x)*32i - 2*c*d*co
sh(2*e + 2*f*x)))/8)/f^3
```

sympy [A] time = 1.03, size = 695, normalized size = 3.99

$$\frac{3a^2c^2x}{2}+\frac{3a^2cdx^2}{2}+\frac{a^2d^2x^3}{2}+\begin{cases}\frac{\left(\left(32a^2c^2f^{11}e^e+64a^2cdf^{11}xe^e+32a^2cdf^{10}e^e+32a^2d^2f^{11}x^2e^e+32a^2d^2f^{10}xe^e+16a^2d^2f^9e^e\right)e^{-2fx}+\left(-32a^2c^2f^{11}e^{\cdots}\right.\right.}{\cdots} \\ \frac{x^3\left(-a^2d^2e^{4e}+4ia^2d^2e^{3e}-4ia^2d^2e^e-a^2d^2\right)e^{-2e}}{12}+\frac{x^2\left(-a^2cde^{4e}+4ia^2cde^{3e}-4ia^2cde^e-a^2cd\right)e^{-2e}}{4}+\frac{x\left(-a^2c^2e^{4e}+\cdots\right.}{\cdots}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*(a+I*a*sinh(f*x+e))**2,x)
```

```
[Out] 3*a**2*c**2*x/2 + 3*a**2*c*d*x**2/2 + a**2*d**2*x**3/2 + Piecewise((((32*a*
*2*c**2*f**11*exp(e) + 64*a**2*c*d*f**11*x*exp(e) + 32*a**2*c*d*f**10*exp(e
) + 32*a**2*d**2*f**11*x**2*exp(e) + 32*a**2*d**2*f**10*x*exp(e) + 16*a**2*
d**2*f**9*exp(e))*exp(-2*f*x) + (-32*a**2*c**2*f**11*exp(5*e) - 64*a**2*c*d
*f**11*x*exp(5*e) + 32*a**2*c*d*f**10*exp(5*e) - 32*a**2*d**2*f**11*x**2*ex
p(5*e) + 32*a**2*d**2*f**10*x*exp(5*e) - 16*a**2*d**2*f**9*exp(5*e))*exp(2*
f*x) + (256*I*a**2*c**2*f**11*exp(2*e) + 512*I*a**2*c*d*f**11*x*exp(2*e) +
512*I*a**2*c*d*f**10*exp(2*e) + 256*I*a**2*d**2*f**11*x**2*exp(2*e) + 512*I
*a**2*d**2*f**10*x*exp(2*e) + 512*I*a**2*d**2*f**9*exp(2*e))*exp(-f*x) + (2
56*I*a**2*c**2*f**11*exp(4*e) + 512*I*a**2*c*d*f**11*x*exp(4*e) - 512*I*a**
2*c*d*f**10*exp(4*e) + 256*I*a**2*d**2*f**11*x**2*exp(4*e) - 512*I*a**2*d**
2*f**10*x*exp(4*e) + 512*I*a**2*d**2*f**9*exp(4*e))*exp(f*x))*exp(-3*e)/(25
6*f**12), Ne(256*f**12*exp(3*e), 0)), (x**3*(-a**2*d**2*exp(4*e) + 4*I*a**2
*d**2*exp(3*e) - 4*I*a**2*d**2*exp(e) - a**2*d**2)*exp(-2*e)/12 + x**2*(-a*
*2*c*d*exp(4*e) + 4*I*a**2*c*d*exp(3*e) - 4*I*a**2*c*d*exp(e) - a**2*c*d)*e
```

```
xp(-2*e)/4 + x*(-a**2*c**2*exp(4*e) + 4*I*a**2*c**2*exp(3*e) - 4*I*a**2*c**
2*exp(e) - a**2*c**2)*exp(-2*e)/4, True))
```

3.104 $\int (c+dx)(a+ia\sinh(e+fx))^2\,dx$

Optimal. Leaf size=122

$$\frac{2ia^2(c+dx)\cosh(e+fx)}{f}-\frac{a^2(c+dx)\sinh(e+fx)\cosh(e+fx)}{2f}+\frac{a^2(c+dx)^2}{2d}+\frac{1}{2}a^2cx+\frac{a^2d\sinh^2(e+fx)}{4f^2}-\frac{2ia^2}{}$$

```
[Out] 1/2*a^2*c*x+1/4*a^2*d*x^2+1/2*a^2*(d*x+c)^2/d+2*I*a^2*(d*x+c)*cosh(f*x+e)/f
-2*I*a^2*d*sinh(f*x+e)/f^2-1/2*a^2*(d*x+c)*cosh(f*x+e)*sinh(f*x+e)/f+1/4*a^
2*d*sinh(f*x+e)^2/f^2
```

Rubi [A] time = 0.11, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {3317, 3296, 2637, 3310}

$$\frac{2ia^2(c+dx)\cosh(e+fx)}{f}-\frac{a^2(c+dx)\sinh(e+fx)\cosh(e+fx)}{2f}+\frac{a^2(c+dx)^2}{2d}+\frac{1}{2}a^2cx+\frac{a^2d\sinh^2(e+fx)}{4f^2}-\frac{2ia^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (a^2*c*x)/2 + (a^2*d*x^2)/4 + (a^2*(c + d*x)^2)/(2*d) + ((2*I)*a^2*(c + d*x
)*Cosh[e + f*x])/f - ((2*I)*a^2*d*Sinh[e + f*x])/f^2 - (a^2*(c + d*x)*Cosh[
e + f*x]*Sinh[e + f*x])/(2*f) + (a^2*d*Sinh[e + f*x]^2)/(4*f^2)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}\int (c+dx)(a+ia\sinh(e+fx))^2\,dx &= \int \left(a^2(c+dx)+2ia^2(c+dx)\sinh(e+fx)-a^2(c+dx)\sinh^2(e+fx)\right)dx\\ &= \frac{a^2(c+dx)^2}{2d}+\left(2ia^2\right)\int (c+dx)\sinh(e+fx)\,dx-a^2\int (c+dx)\sinh^2(e+f\\ &= \frac{a^2(c+dx)^2}{2d}+\frac{2ia^2(c+dx)\cosh(e+fx)}{f}-\frac{a^2(c+dx)\cosh(e+fx)\sinh(e}{2f}\\ &= \frac{1}{2}a^2cx+\frac{1}{4}a^2dx^2+\frac{a^2(c+dx)^2}{2d}+\frac{2ia^2(c+dx)\cosh(e+fx)}{f}-\frac{2ia^2d\sinh(e}{f^2}\end{aligned}$$

Mathematica [A] time = 1.18, size = 86, normalized size = 0.70

$$\frac{a^2(-2(3(e+fx)(-2cf+de-dfx)+f(c+dx)\sinh(2(e+fx))+8id\sinh(e+fx))+16if(c+dx)\cosh(e+fx)}{8f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (a^2*((16*I)*f*(c + d*x)*Cosh[e + f*x] + d*Cosh[2*(e + f*x)] - 2*(3*(e + f*
x)*(d*e - 2*c*f - d*f*x) + (8*I)*d*Sinh[e + f*x] + f*(c + d*x)*Sinh[2*(e +
f*x)])))/(8*f^2)
```

fricas [A] time = 0.50, size = 162, normalized size = 1.33

$$\frac{\left(2\,a^2dfx+2\,a^2cf+a^2d-\left(2\,a^2dfx+2\,a^2cf-a^2d\right)e^{(4\,fx+4\,e)}+\left(16i\,a^2dfx+16i\,a^2cf-16i\,a^2d\right)e^{(3\,fx+3\,e)}+12\left(a^2\right.\right.}{16\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+I*a*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/16*(2*a^2*d*f*x + 2*a^2*c*f + a^2*d - (2*a^2*d*f*x + 2*a^2*c*f - a^2*d)*e
^(4*f*x + 4*e) + (16*I*a^2*d*f*x + 16*I*a^2*c*f - 16*I*a^2*d)*e^(3*f*x + 3*
```

```
e) + 12*(a^2*d*f^2*x^2 + 2*a^2*c*f^2*x)*e^(2*f*x + 2*e) + (16*I*a^2*d*f*x +
 16*I*a^2*c*f + 16*I*a^2*d)*e^(f*x + e))*e^(-2*f*x - 2*e)/f^2
```

giac [A] time = 0.22, size = 159, normalized size = 1.30

$$\frac{3}{4}\,a^2dx^2+\frac{3}{2}\,a^2cx-\frac{\left(2\,a^2dfx+2\,a^2cf-a^2d\right)e^{\left(2\,fx+2\,e\right)}}{16\,f^2}+\frac{\left(i\,a^2dfx+i\,a^2cf-i\,a^2d\right)e^{\left(fx+e\right)}}{f^2}+\frac{\left(i\,a^2dfx+i\,a^2cf+i\,a^2d\right.}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+I*a*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 3/4*a^2*d*x^2 + 3/2*a^2*c*x - 1/16*(2*a^2*d*f*x + 2*a^2*c*f - a^2*d)*e^(2*f
*x + 2*e)/f^2 + (I*a^2*d*f*x + I*a^2*c*f - I*a^2*d)*e^(f*x + e)/f^2 + (I*a^
2*d*f*x + I*a^2*c*f + I*a^2*d)*e^(-f*x - e)/f^2 + 1/16*(2*a^2*d*f*x + 2*a^2
*c*f + a^2*d)*e^(-2*f*x - 2*e)/f^2
```

maple [A] time = 0.03, size = 215, normalized size = 1.76

$$\frac{\frac{d\,a^2\left(fx+e\right)^2}{2f}+\frac{2id\,a^2\left(\left(fx+e\right)\cosh\left(fx+e\right)-\sinh\left(fx+e\right)\right)}{f}-\frac{d\,a^2\left(\frac{\left(fx+e\right)\cosh\left(fx+e\right)\sinh\left(fx+e\right)}{2}-\frac{\left(fx+e\right)^2}{4}-\frac{\left(\cosh^2\left(fx+e\right)\right)}{4}\right)}{f}-\frac{de\,a^2\left(fx+e\right)}{f}-\frac{2ide\,a^2\cos}{f}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*(a+I*a*sinh(f*x+e))^2,x)
```

```
[Out] 1/f*(1/2/f*d*a^2*(f*x+e)^2+2*I/f*d*a^2*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))-1/
f*d*a^2*(1/2*(f*x+e)*cosh(f*x+e)*sinh(f*x+e)-1/4*(f*x+e)^2-1/4*cosh(f*x+e)^
2)-d*e/f*a^2*(f*x+e)-2*I*d*e/f*a^2*cosh(f*x+e)+d*e/f*a^2*(1/2*cosh(f*x+e)*s
inh(f*x+e)-1/2*f*x-1/2*e)+c*a^2*(f*x+e)+2*I*c*a^2*cosh(f*x+e)-c*a^2*(1/2*co
sh(f*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e))
```

maxima [A] time = 0.39, size = 167, normalized size = 1.37

$$\frac{1}{2}\,a^2dx^2+\frac{1}{16}\left(4\,x^2-\frac{\left(2\,fxe^{(2\,e)}-e^{(2\,e)}\right)e^{\left(2\,fx\right)}}{f^2}+\frac{\left(2\,fx+1\right)e^{\left(-2\,fx-2\,e\right)}}{f^2}\right)a^2d+\frac{1}{8}\,a^2c\left(4\,x-\frac{e^{\left(2\,fx+2\,e\right)}}{f}+\frac{e^{\left(-2\,fx-2\,e\right)}}{f}\right)+a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+I*a*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*d*x^2 + 1/16*(4*x^2 - (2*f*x*e^(2*e) - e^(2*e))*e^(2*f*x)/f^2 + (2*
f*x + 1)*e^(-2*f*x - 2*e)/f^2)*a^2*d + 1/8*a^2*c*(4*x - e^(2*f*x + 2*e)/f +
```

```
 e^(-2*f*x - 2*e)/f) + a^2*c*x + I*a^2*d*((f*x*e^e - e^e)*e^(f*x)/f^2 + (f*
x + 1)*e^(-f*x - e)/f^2) + 2*I*a^2*c*cosh(f*x + e)/f
```

mupad [B] time = 0.35, size = 104, normalized size = 0.85

$$\frac{a^2\left(6\,d\,x^2+12\,c\,x\right)}{8}-\frac{\frac{a^2\left(-d\cosh\left(2\,e+2\,f\,x\right)+d\sinh\left(e+f\,x\right)16\mathrm{i}\right)}{8}-\frac{a^2\,f\left(c\cosh\left(e+f\,x\right)16\mathrm{i}-2\,c\sinh\left(2\,e+2\,f\,x\right)-2\,d\,x\sinh\left(2\,e+2\,f\,x\right)+d\,x\cosh\left(e\right.\right.}{8}}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^2*(c + d*x),x)
```

```
[Out] (a^2*(12*c*x + 6*d*x^2))/8 - ((a^2*(d*sinh(e + f*x)*16i - d*cosh(2*e + 2*f*
x)))/8 - (a^2*f*(c*cosh(e + f*x)*16i - 2*c*sinh(2*e + 2*f*x) - 2*d*x*sinh(2
*e + 2*f*x) + d*x*cosh(e + f*x)*16i))/8)/f^2
```

sympy [A] time = 0.68, size = 359, normalized size = 2.94

$$\frac{3a^2cx}{2}+\frac{3a^2dx^2}{4}+\begin{cases}\frac{\left(\left(32a^2cf^7e^e+32a^2df^7xe^e+16a^2df^6e^e\right)e^{-2fx}+\left(-32a^2cf^7e^{5e}-32a^2df^7xe^{5e}+16a^2df^6e^{5e}\right)e^{2fx}+\left(256ia^2cf^7e^{2e}+256ia^2df^7xe^{2e}+25\right.\right.}{256f^8} \\ \frac{x^2\left(-a^2de^{4e}+4ia^2de^{3e}-4ia^2de^e-a^2d\right)e^{-2e}}{8}+\frac{x\left(-a^2ce^{4e}+4ia^2ce^{3e}-4ia^2ce^e-a^2c\right)e^{-2e}}{4}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+I*a*sinh(f*x+e))**2,x)
```

```
[Out] 3*a**2*c*x/2 + 3*a**2*d*x**2/4 + Piecewise((((32*a**2*c*f**7*exp(e) + 32*a*
*2*d*f**7*x*exp(e) + 16*a**2*d*f**6*exp(e))*exp(-2*f*x) + (-32*a**2*c*f**7*
exp(5*e) - 32*a**2*d*f**7*x*exp(5*e) + 16*a**2*d*f**6*exp(5*e))*exp(2*f*x)
+ (256*I*a**2*c*f**7*exp(2*e) + 256*I*a**2*d*f**7*x*exp(2*e) + 256*I*a**2*d
*f**6*exp(2*e))*exp(-f*x) + (256*I*a**2*c*f**7*exp(4*e) + 256*I*a**2*d*f**7
*x*exp(4*e) - 256*I*a**2*d*f**6*exp(4*e))*exp(f*x))*exp(-3*e)/(256*f**8), N
e(256*f**8*exp(3*e), 0)), (x**2*(-a**2*d*exp(4*e) + 4*I*a**2*d*exp(3*e) - 4
*I*a**2*d*exp(e) - a**2*d)*exp(-2*e)/8 + x*(-a**2*c*exp(4*e) + 4*I*a**2*c*e
xp(3*e) - 4*I*a**2*c*exp(e) - a**2*c)*exp(-2*e)/4, True))
```

3.105 $\int \frac{(a+ia\sinh(e+fx))^2}{c+dx}\,dx$

Optimal. Leaf size=149

$$\frac{2ia^2\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d}-\frac{a^2\text{Chi}\left(2xf+\frac{2cf}{d}\right)\cosh\left(2e-\frac{2cf}{d}\right)}{2d}-\frac{a^2\sinh\left(2e-\frac{2cf}{d}\right)\text{Shi}\left(2xf+\frac{2cf}{d}\right)}{2d}+\frac{2ia^2}{}$$

```
[Out] -1/2*a^2*Chi(2*c*f/d+2*f*x)*cosh(-2*e+2*c*f/d)/d+3/2*a^2*ln(d*x+c)/d+2*I*a^
2*cosh(-e+c*f/d)*Shi(c*f/d+f*x)/d+1/2*a^2*Shi(2*c*f/d+2*f*x)*sinh(-2*e+2*c*
f/d)/d-2*I*a^2*Chi(c*f/d+f*x)*sinh(-e+c*f/d)/d
```

Rubi [A] time = 0.35, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {3318, 3312, 3303, 3298, 3301}

$$\frac{2ia^2\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d}-\frac{a^2\text{Chi}\left(2xf+\frac{2cf}{d}\right)\cosh\left(2e-\frac{2cf}{d}\right)}{2d}-\frac{a^2\sinh\left(2e-\frac{2cf}{d}\right)\text{Shi}\left(2xf+\frac{2cf}{d}\right)}{2d}+\frac{2ia^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[e + f*x])^2/(c + d*x),x]
```

```
[Out] -(a^2*Cosh[2*e - (2*c*f)/d]*CoshIntegral[(2*c*f)/d + 2*f*x])/(2*d) + (3*a^2
*Log[c + d*x])/(2*d) + ((2*I)*a^2*CoshIntegral[(c*f)/d + f*x]*Sinh[e - (c*f
)/d])/d + ((2*I)*a^2*Cosh[e - (c*f)/d]*SinhIntegral[(c*f)/d + f*x])/d - (a^
2*Sinh[2*e - (2*c*f)/d]*SinhIntegral[(2*c*f)/d + 2*f*x])/(2*d)
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
```

```
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+ia\sinh(e+fx))^2}{c+dx}\,dx = \left(4a^2\right)\int \frac{\sin^4\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)}{c+dx}\,dx$$

$$= \left(4a^2\right)\int \left(\frac{3}{8(c+dx)}-\frac{\cosh(2e+2fx)}{8(c+dx)}+\frac{i\sinh(e+fx)}{2(c+dx)}\right)dx$$

$$= \frac{3a^2\log(c+dx)}{2d}+\left(2ia^2\right)\int \frac{\sinh(e+fx)}{c+dx}\,dx-\frac{1}{2}a^2\int \frac{\cosh(2e+2fx)}{c+dx}\,dx$$

$$= \frac{3a^2\log(c+dx)}{2d}-\frac{1}{2}\left(a^2\cosh\left(2e-\frac{2cf}{d}\right)\right)\int \frac{\cosh\left(\frac{2cf}{d}+2fx\right)}{c+dx}\,dx+\left(2ia^2\cosh\left(e\right.\right.$$

$$= -\frac{a^2\cosh\left(2e-\frac{2cf}{d}\right)\text{Chi}\left(\frac{2cf}{d}+2fx\right)}{2d}+\frac{3a^2\log(c+dx)}{2d}+\frac{2ia^2\text{Chi}\left(\frac{cf}{d}+fx\right)\sinh}{d}$$

Mathematica [A] time = 0.36, size = 117, normalized size = 0.79

$$-\frac{a^2\left(-4i\text{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\sinh\left(e-\frac{cf}{d}\right)+\text{Chi}\left(\frac{2f(c+dx)}{d}\right)\cosh\left(2e-\frac{2cf}{d}\right)+\sinh\left(2e-\frac{2cf}{d}\right)\text{Shi}\left(\frac{2f(c+dx)}{d}\right)-4i\cosh\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[e + f*x])^2/(c + d*x),x]
```

```
[Out] -1/2*(a^2*(Cosh[2*e - (2*c*f)/d]*CoshIntegral[(2*f*(c + d*x))/d] - 3*Log[c
+ d*x] - (4*I)*CoshIntegral[f*(c/d + x)]*Sinh[e - (c*f)/d] - (4*I)*Cosh[e -
```

```
 (c*f)/d]*SinhIntegral[f*(c/d + x)] + Sinh[2*e - (2*c*f)/d]*SinhIntegral[(2
*f*(c + d*x))/d]))/d
```

fricas [A] time = 0.50, size = 149, normalized size = 1.00

$$-\frac{a^2\text{Ei}\left(\frac{2\left(dfx+cf\right)}{d}\right)e^{\left(\frac{2\left(de-cf\right)}{d}\right)}-4i\,a^2\text{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(\frac{de-cf}{d}\right)}+4i\,a^2\text{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(-\frac{de-cf}{d}\right)}+a^2\text{Ei}\left(-\frac{2\left(dfx+cf\right)}{d}\right)e^{\left(-\frac{2\left(de-cf\right)}{d}\right)}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^2/(d*x+c),x, algorithm="fricas")
```

```
[Out] -1/4*(a^2*Ei(2*(d*f*x + c*f)/d)*e^(2*(d*e - c*f)/d) - 4*I*a^2*Ei((d*f*x + c
*f)/d)*e^((d*e - c*f)/d) + 4*I*a^2*Ei(-(d*f*x + c*f)/d)*e^(-(d*e - c*f)/d)
+ a^2*Ei(-2*(d*f*x + c*f)/d)*e^(-2*(d*e - c*f)/d) - 6*a^2*log((d*x + c)/d))
/d
```

giac [A] time = 0.16, size = 139, normalized size = 0.93

$$-\frac{a^2\text{Ei}\left(-\frac{2\left(dfx+cf\right)}{d}\right)e^{\left(\frac{2cf}{d}-2e\right)}+4i\,a^2\text{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(\frac{cf}{d}-e\right)}-4i\,a^2\text{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(-\frac{cf}{d}+e\right)}+a^2\text{Ei}\left(\frac{2\left(dfx+cf\right)}{d}\right)e^{\left(-\frac{2cf}{d}+2e\right)}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^2/(d*x+c),x, algorithm="giac")
```

```
[Out] -1/4*(a^2*Ei(-2*(d*f*x + c*f)/d)*e^(2*c*f/d - 2*e) + 4*I*a^2*Ei(-(d*f*x + c
*f)/d)*e^(c*f/d - e) - 4*I*a^2*Ei((d*f*x + c*f)/d)*e^(-c*f/d + e) + a^2*Ei(
2*(d*f*x + c*f)/d)*e^(-2*c*f/d + 2*e) - 6*a^2*log(d*x + c))/d
```

maple [A] time = 0.22, size = 193, normalized size = 1.30

$$-\frac{ia^2\mathrm{e}^{-\frac{cf-de}{d}}\,\text{Ei}\left(1,-fx-e-\frac{cf-de}{d}\right)}{d}+\frac{3a^2\ln\left(dx+c\right)}{2d}+\frac{a^2\mathrm{e}^{\frac{2cf-2de}{d}}\,\text{Ei}\left(1,2fx+2e+\frac{2cf-2de}{d}\right)}{4d}+\frac{a^2\mathrm{e}^{-\frac{2(cf-de)}{d}}\,\text{Ei}\left(1,-2f\right.}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))^2/(d*x+c),x)
```

```
[Out] -I*a^2/d*exp(-(c*f-d*e)/d)*Ei(1,-f*x-e-(c*f-d*e)/d)+3/2*a^2*ln(d*x+c)/d+1/4
*a^2/d*exp(2*(c*f-d*e)/d)*Ei(1,2*f*x+2*e+2*(c*f-d*e)/d)+1/4*a^2/d*exp(-2*(c
*f-d*e)/d)*Ei(1,-2*f*x-2*e-2*(c*f-d*e)/d)+I*a^2/d*exp((c*f-d*e)/d)*Ei(1,f*x
+e+(c*f-d*e)/d)
```

maxima [A] time = 0.48, size = 150, normalized size = 1.01

$$\frac{1}{4}a^2\left(\frac{e^{\left(-2e+\frac{2cf}{d}\right)}E_1\left(\frac{2(dx+c)f}{d}\right)}{d}+\frac{e^{\left(2e-\frac{2cf}{d}\right)}E_1\left(-\frac{2(dx+c)f}{d}\right)}{d}+\frac{2\log(dx+c)}{d}\right)+ia^2\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_1\left(\frac{(dx+c)f}{d}\right)}{d}-\frac{e^{\left(e-\frac{cf}{d}\right)}E_1\left(-\right.}{d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^2/(d*x+c),x, algorithm="maxima")
```

```
[Out] 1/4*a^2*(e^(-2*e + 2*c*f/d)*exp_integral_e(1, 2*(d*x + c)*f/d)/d + e^(2*e -
 2*c*f/d)*exp_integral_e(1, -2*(d*x + c)*f/d)/d + 2*log(d*x + c)/d) + I*a^2
*(e^(-e + c*f/d)*exp_integral_e(1, (d*x + c)*f/d)/d - e^(e - c*f/d)*exp_int
egral_e(1, -(d*x + c)*f/d)/d) + a^2*log(d*x + c)/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+a\sinh\left(e+f\,x\right)\,1\mathrm{i}\right)^2}{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^2/(c + d*x),x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)^2/(c + d*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-a^2\left(\int \frac{\sinh^2\left(e+fx\right)}{c+dx}\,dx+\int\left(-\frac{2i\sinh\left(e+fx\right)}{c+dx}\right)dx+\int\left(-\frac{1}{c+dx}\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))**2/(d*x+c),x)
```

```
[Out] -a**2*(Integral(sinh(e + f*x)**2/(c + d*x), x) + Integral(-2*I*sinh(e + f*x
)/(c + d*x), x) + Integral(-1/(c + d*x), x))
```

3.106 $\int \frac{(a+ia\sinh(e+fx))^2}{(c+dx)^2}\,dx$

Optimal. Leaf size=170

$$-\frac{a^2 f\text{Chi}\left(2xf+\frac{2cf}{d}\right)\sinh\left(2e-\frac{2cf}{d}\right)}{d^2}+\frac{2ia^2 f\text{Chi}\left(xf+\frac{cf}{d}\right)\cosh\left(e-\frac{cf}{d}\right)}{d^2}+\frac{2ia^2 f\sinh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d^2} - a$$

```
[Out] 2*I*a^2*f*Chi(c*f/d+f*x)*cosh(-e+c*f/d)/d^2-4*a^2*cosh(1/2*e+1/4*I*Pi+1/2*f
*x)^4/d/(d*x+c)-a^2*f*cosh(-2*e+2*c*f/d)*Shi(2*c*f/d+2*f*x)/d^2+a^2*f*Chi(2
*c*f/d+2*f*x)*sinh(-2*e+2*c*f/d)/d^2-2*I*a^2*f*Shi(c*f/d+f*x)*sinh(-e+c*f/d
)/d^2
```

Rubi [A] time = 0.34, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {3318, 3313, 3303, 3298, 3301}

$$-\frac{a^2 f\text{Chi}\left(2xf+\frac{2cf}{d}\right)\sinh\left(2e-\frac{2cf}{d}\right)}{d^2}+\frac{2ia^2 f\text{Chi}\left(xf+\frac{cf}{d}\right)\cosh\left(e-\frac{cf}{d}\right)}{d^2}+\frac{2ia^2 f\sinh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d^2} - a$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[e + f*x])^2/(c + d*x)^2,x]
```

```
[Out] (-4*a^2*Cosh[e/2 + (I/4)*Pi + (f*x)/2]^4)/(d*(c + d*x)) + ((2*I)*a^2*f*Cosh
[e - (c*f)/d]*CoshIntegral[(c*f)/d + f*x])/d^2 - (a^2*f*CoshIntegral[(2*c*f
)/d + 2*f*x]*Sinh[2*e - (2*c*f)/d])/d^2 + ((2*I)*a^2*f*Sinh[e - (c*f)/d]*Si
nhIntegral[(c*f)/d + f*x])/d^2 - (a^2*f*Cosh[2*e - (2*c*f)/d]*SinhIntegral[
(2*c*f)/d + 2*f*x])/d^2
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+ia\sinh(e+fx))^2}{(c+dx)^2}\,dx = \left(4a^2\right)\int \frac{\sin^4\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)}{(c+dx)^2}\,dx$$

$$= -\frac{4a^2\cosh^4\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)} + \frac{\left(8ia^2f\right)\int \left(\frac{\cosh(e+fx)}{4(c+dx)}+\frac{i\sinh(2e+2fx)}{8(c+dx)}\right)dx}{d}$$

$$= -\frac{4a^2\cosh^4\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)} + \frac{\left(2ia^2f\right)\int \frac{\cosh(e+fx)}{c+dx}\,dx}{d} - \frac{\left(a^2f\right)\int \frac{\sinh(2e+2fx)}{c+dx}\,dx}{d}$$

$$= -\frac{4a^2\cosh^4\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)} - \frac{\left(a^2f\cosh\left(2e-\frac{2cf}{d}\right)\right)\int \frac{\sinh\left(\frac{2cf}{d}+2fx\right)}{c+dx}\,dx}{d} + \frac{\left(2ia^2f\cos\right.}{}$$

$$= -\frac{4a^2\cosh^4\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)} + \frac{2ia^2f\cosh\left(e-\frac{cf}{d}\right)\mathrm{Chi}\left(\frac{cf}{d}+fx\right)}{d^2} - \frac{a^2f\mathrm{Chi}\left(\frac{2cf}{d}+2\right.}{}$$

Mathematica [A] time = 0.64, size = 214, normalized size = 1.26

$$\frac{a^2\left(-2f(c+dx)\mathrm{Chi}\left(\frac{2f(c+dx)}{d}\right)\sinh\left(2e-\frac{2cf}{d}\right)+4if(c+dx)\mathrm{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\cosh\left(e-\frac{cf}{d}\right)+4idfx\sinh\left(e-\frac{cf}{d}\right)\mathrm{S}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[e + f*x])^2/(c + d*x)^2,x]
```

```
[Out] (a^2*(-3*d + d*Cosh[2*(e + f*x)] + (4*I)*f*(c + d*x)*Cosh[e - (c*f)/d]*Cosh
Integral[f*(c/d + x)] - 2*f*(c + d*x)*CoshIntegral[(2*f*(c + d*x))/d]*Sinh[
2*e - (2*c*f)/d] - (4*I)*d*Sinh[e + f*x] + (4*I)*c*f*Sinh[e - (c*f)/d]*Sinh
Integral[f*(c/d + x)] + (4*I)*d*f*x*Sinh[e - (c*f)/d]*SinhIntegral[f*(c/d +
 x)] - 2*c*f*Cosh[2*e - (2*c*f)/d]*SinhIntegral[(2*f*(c + d*x))/d] - 2*d*f*
x*Cosh[2*e - (2*c*f)/d]*SinhIntegral[(2*f*(c + d*x))/d]))/(2*d^2*(c + d*x))
```

fricas [A] time = 0.90, size = 267, normalized size = 1.57

$$\left(a^2de^{\left(4fx+4e\right)} - 4i\,a^2de^{\left(3fx+3e\right)} + 4i\,a^2de^{\left(fx+e\right)} + a^2d - \left(6\,a^2d + 2\left(a^2dfx + a^2cf\right)\mathrm{Ei}\left(\frac{2\left(dfx+cf\right)}{d}\right)e^{\left(\frac{2\left(de-cf\right)}{d}\right)} - \left(4i\,a\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^2/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(a^2*d*e^(4*f*x + 4*e) - 4*I*a^2*d*e^(3*f*x + 3*e) + 4*I*a^2*d*e^(f*x +
 e) + a^2*d - (6*a^2*d + 2*(a^2*d*f*x + a^2*c*f)*Ei(2*(d*f*x + c*f)/d)*e^(2
*(d*e - c*f)/d) - (4*I*a^2*d*f*x + 4*I*a^2*c*f)*Ei((d*f*x + c*f)/d)*e^((d*e
 - c*f)/d) - (4*I*a^2*d*f*x + 4*I*a^2*c*f)*Ei(-(d*f*x + c*f)/d)*e^(-(d*e -
c*f)/d) - 2*(a^2*d*f*x + a^2*c*f)*Ei(-2*(d*f*x + c*f)/d)*e^(-2*(d*e - c*f)/
d))*e^(2*f*x + 2*e))*e^(-2*f*x - 2*e)/(d^3*x + c*d^2)
```

giac [B] time = 0.49, size = 1226, normalized size = 7.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^2/(d*x+c)^2,x, algorithm="giac")
```

```
[Out] 1/4*(2*(d*x + c)*a^2*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*Ei(2*((d*x + c
)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^(2*(c*f - d*e)/d) -
 2*a^2*c*f^3*Ei(2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*
e)/d)*e^(2*(c*f - d*e)/d) + 4*I*(d*x + c)*a^2*(c*f/(d*x + c) - f - d*e/(d*x
 + c))*f^2*Ei(((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d
)*e^((c*f - d*e)/d) - 4*I*a^2*c*f^3*Ei(((d*x + c)*(c*f/(d*x + c) - f - d*e/
(d*x + c)) - c*f + d*e)/d)*e^((c*f - d*e)/d) + 4*I*(d*x + c)*a^2*(c*f/(d*x
+ c) - f - d*e/(d*x + c))*f^2*Ei(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x
+ c)) - c*f + d*e)/d)*e^(-(c*f - d*e)/d) - 4*I*a^2*c*f^3*Ei(-((d*x + c)*(c*
f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^(-(c*f - d*e)/d) - 2*(d*
```

```
x + c)*a^2*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*Ei(-2*((d*x + c)*(c*f/(d
*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^(-2*(c*f - d*e)/d) + 2*a^2*c
*f^3*Ei(-2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e
^(-2*(c*f - d*e)/d) + 2*a^2*d*f^2*Ei(2*((d*x + c)*(c*f/(d*x + c) - f - d*e/
(d*x + c)) - c*f + d*e)/d)*e^(2*(c*f - d*e)/d + 1) + 4*I*a^2*d*f^2*Ei(((d*x
 + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^((c*f - d*e)/d
+ 1) + 4*I*a^2*d*f^2*Ei(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c
*f + d*e)/d)*e^(-(c*f - d*e)/d + 1) - 2*a^2*d*f^2*Ei(-2*((d*x + c)*(c*f/(d*
x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^(-2*(c*f - d*e)/d + 1) - a^2*
d*f^2*e^(2*(d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c))/d) - 4*I*a^2*d*f^2
*e^((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c))/d) + 4*I*a^2*d*f^2*e^(-(d
*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c))/d) - a^2*d*f^2*e^(-2*(d*x + c)*
(c*f/(d*x + c) - f - d*e/(d*x + c))/d) + 6*a^2*d*f^2)*d^2/(((d*x + c)*d^4*(
c*f/(d*x + c) - f - d*e/(d*x + c)) - c*d^4*f + d^5*e)*f)
```

maple [A] time = 0.24, size = 313, normalized size = 1.84

$$-\frac{i a^2 f\,\mathrm{e}^{f x+e}}{d^2\left(\frac{cf}{d}+fx\right)}-\frac{i a^2 f\,\mathrm{e}^{-\frac{cf-de}{d}}\,\mathrm{Ei}\left(1,-fx-e-\frac{cf-de}{d}\right)}{d^2}-\frac{3a^2}{2d\,(dx+c)}+\frac{f\,a^2\mathrm{e}^{-2fx-2e}}{4d\left(dfx+cf\right)}-\frac{f\,a^2\mathrm{e}^{\frac{2cf-2de}{d}}\,\mathrm{Ei}\left(1,2fx+2e+\frac{2cf}{}\right.}{2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))^2/(d*x+c)^2,x)
```

```
[Out] -I*a^2*f/d^2*exp(f*x+e)/(c*f/d+f*x)-I*a^2*f/d^2*exp(-(c*f-d*e)/d)*Ei(1,-f*x
-e-(c*f-d*e)/d)-3/2*a^2/d/(d*x+c)+1/4*f*a^2*exp(-2*f*x-2*e)/d/(d*f*x+c*f)-1
/2*f*a^2/d^2*exp(2*(c*f-d*e)/d)*Ei(1,2*f*x+2*e+2*(c*f-d*e)/d)+1/4*f*a^2/d^2
*exp(2*f*x+2*e)/(c*f/d+f*x)+1/2*f*a^2/d^2*exp(-2*(c*f-d*e)/d)*Ei(1,-2*f*x-2
*e-2*(c*f-d*e)/d)+I*a^2*f*exp(-f*x-e)/d/(d*f*x+c*f)-I*a^2*f/d^2*exp((c*f-d*
e)/d)*Ei(1,f*x+e+(c*f-d*e)/d)
```

maxima [A] time = 0.46, size = 183, normalized size = 1.08

$$\frac{1}{4}a^2\left(\frac{e^{\left(-2e+\frac{2cf}{d}\right)}E_2\left(\frac{2(dx+c)f}{d}\right)}{(dx+c)d}+\frac{e^{\left(2e-\frac{2cf}{d}\right)}E_2\left(-\frac{2(dx+c)f}{d}\right)}{(dx+c)d}-\frac{2}{d^2x+cd}\right)+i\,a^2\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_2\left(\frac{(dx+c)f}{d}\right)}{(dx+c)d}-\frac{e^{\left(e-\frac{cf}{d}\right)}E_2\left(-\frac{(dx+c)}{d}\right.}{(dx+c)d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^2/(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] 1/4*a^2*(e^(-2*e + 2*c*f/d)*exp_integral_e(2, 2*(d*x + c)*f/d)/((d*x + c)*d
) + e^(2*e - 2*c*f/d)*exp_integral_e(2, -2*(d*x + c)*f/d)/((d*x + c)*d) - 2
```

```
/(d^2*x + c*d)) + I*a^2*(e^(-e + c*f/d)*exp_integral_e(2, (d*x + c)*f/d)/((
d*x + c)*d) - e^(e - c*f/d)*exp_integral_e(2, -(d*x + c)*f/d)/((d*x + c)*d)
) - a^2/(d^2*x + c*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a + a\sinh\left(e + f\,x\right)\,1\mathrm{i}\right)^2}{\left(c + d\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^2/(c + d*x)^2,x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)^2/(c + d*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-a^2\left(\int \frac{\sinh^2\left(e + fx\right)}{c^2 + 2cdx + d^2x^2}\,dx + \int \left(-\frac{2i\sinh\left(e + fx\right)}{c^2 + 2cdx + d^2x^2}\right)dx + \int \left(-\frac{1}{c^2 + 2cdx + d^2x^2}\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))**2/(d*x+c)**2,x)
```

```
[Out] -a**2*(Integral(sinh(e + f*x)**2/(c**2 + 2*c*d*x + d**2*x**2), x) + Integra
l(-2*I*sinh(e + f*x)/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(-1/(c**2 +
 2*c*d*x + d**2*x**2), x))
```

3.107 $\int \frac{(a+ia\sinh(e+fx))^2}{(c+dx)^3}\,dx$

Optimal. Leaf size=236

$$\frac{ia^2f^2\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d^3}-\frac{a^2f^2\text{Chi}\left(2xf+\frac{2cf}{d}\right)\cosh\left(2e-\frac{2cf}{d}\right)}{d^3}-\frac{a^2f^2\sinh\left(2e-\frac{2cf}{d}\right)\text{Shi}\left(2xf+\frac{2cf}{d}\right)}{d^3}+$$

```
[Out] -a^2*f^2*Chi(2*c*f/d+2*f*x)*cosh(-2*e+2*c*f/d)/d^3-2*a^2*cosh(1/2*e+1/4*I*P
i+1/2*f*x)^4/d/(d*x+c)^2+I*a^2*f^2*cosh(-e+c*f/d)*Shi(c*f/d+f*x)/d^3+a^2*f^
2*Shi(2*c*f/d+2*f*x)*sinh(-2*e+2*c*f/d)/d^3-I*a^2*f^2*Chi(c*f/d+f*x)*sinh(-
e+c*f/d)/d^3-4*a^2*f*cosh(1/2*e+1/4*I*Pi+1/2*f*x)^3*sinh(1/2*e+1/4*I*Pi+1/2
*f*x)/d^2/(d*x+c)
```

Rubi [A] time = 0.53, antiderivative size = 236, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {3318, 3314, 3312, 3303, 3298, 3301}

$$\frac{ia^2f^2\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d^3}-\frac{a^2f^2\text{Chi}\left(2xf+\frac{2cf}{d}\right)\cosh\left(2e-\frac{2cf}{d}\right)}{d^3}-\frac{a^2f^2\sinh\left(2e-\frac{2cf}{d}\right)\text{Shi}\left(2xf+\frac{2cf}{d}\right)}{d^3}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[e + f*x])^2/(c + d*x)^3,x]
```

```
[Out] (-2*a^2*Cosh[e/2 + (I/4)*Pi + (f*x)/2]^4)/(d*(c + d*x)^2) - (a^2*f^2*Cosh[2
*e - (2*c*f)/d]*CoshIntegral[(2*c*f)/d + 2*f*x])/d^3 + (I*a^2*f^2*CoshInteg
ral[(c*f)/d + f*x]*Sinh[e - (c*f)/d])/d^3 - (4*a^2*f*Cosh[e/2 + (I/4)*Pi +
(f*x)/2]^3*Sinh[e/2 + (I/4)*Pi + (f*x)/2])/(d^2*(c + d*x)) + (I*a^2*f^2*Cos
h[e - (c*f)/d]*SinhIntegral[(c*f)/d + f*x])/d^3 - (a^2*f^2*Sinh[2*e - (2*c*
f)/d]*SinhIntegral[(2*c*f)/d + 2*f*x])/d^3
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+ia\sinh(e+fx))^2}{(c+dx)^3}\,dx = \left(4a^2\right)\int \frac{\sin^4\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)}{(c+dx)^3}\,dx$$

$$= -\frac{2a^2\cosh^4\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)^2} - \frac{4a^2f\cosh^3\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sinh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d^2(c+dx)} + \frac{\left(6a^2\right.}{}$$

$$= -\frac{2a^2\cosh^4\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)^2} - \frac{4a^2f\cosh^3\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sinh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d^2(c+dx)} - \frac{\left(6a^2\right.}{}$$

$$= -\frac{2a^2\cosh^4\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)^2} - \frac{4a^2f\cosh^3\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sinh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d^2(c+dx)} - \frac{\left(3ia^2\right.}{}$$

$$= -\frac{2a^2\cosh^4\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)^2} - \frac{4a^2f\cosh^3\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sinh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d^2(c+dx)} - \frac{\left(a^2f^2\right.}{}$$

$$= -\frac{2a^2\cosh^4\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)^2} - \frac{a^2f^2\cosh\left(2e-\frac{2cf}{d}\right)\text{Chi}\left(\frac{2cf}{d}+2fx\right)}{d^3} + \frac{ia^2f^2\text{Chi}\left(\frac{c}{d}\right.}{}$$

Mathematica [A] time = 2.21, size = 198, normalized size = 0.84

$$\frac{a^2\left(4if^2\text{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\sinh\left(e-\frac{cf}{d}\right)-4f^2\text{Chi}\left(\frac{2f(c+dx)}{d}\right)\cosh\left(2e-\frac{2cf}{d}\right)-4f^2\sinh\left(2e-\frac{2cf}{d}\right)\text{Shi}\left(\frac{2f(c+dx)}{d}\right)+4\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[e + f*x])^2/(c + d*x)^3,x]
```

```
[Out] (a^2*(-4*f^2*Cosh[2*e - (2*c*f)/d]*CoshIntegral[(2*f*(c + d*x))/d] + (4*I)*
f^2*CoshIntegral[f*(c/d + x)]*Sinh[e - (c*f)/d] + (d*(-3*d - (4*I)*f*(c + d
*x)*Cosh[e + f*x] + d*Cosh[2*(e + f*x)] - (4*I)*d*Sinh[e + f*x] + 2*c*f*Sin
h[2*(e + f*x)] + 2*d*f*x*Sinh[2*(e + f*x)]))/(c + d*x)^2 + (4*I)*f^2*Cosh[e
 - (c*f)/d]*SinhIntegral[f*(c/d + x)] - 4*f^2*Sinh[2*e - (2*c*f)/d]*SinhInt
egral[(2*f*(c + d*x))/d]))/(4*d^3)
```

fricas [B] time = 0.75, size = 453, normalized size = 1.92

$$-\frac{\left(2\,a^2d^2fx+2\,a^2cdf-a^2d^2-\left(2\,a^2d^2fx+2\,a^2cdf+a^2d^2\right)e^{\left(4\,fx+4\,e\right)}-\left(-4i\,a^2d^2fx-4i\,a^2cdf-4i\,a^2d^2\right)e^{\left(3\,fx+3\,e\right.}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^2/(d*x+c)^3,x, algorithm="fricas")
```

```
[Out] -1/8*(2*a^2*d^2*f*x + 2*a^2*c*d*f - a^2*d^2 - (2*a^2*d^2*f*x + 2*a^2*c*d*f
+ a^2*d^2)*e^(4*f*x + 4*e) - (-4*I*a^2*d^2*f*x - 4*I*a^2*c*d*f - 4*I*a^2*d^
2)*e^(3*f*x + 3*e) + (6*a^2*d^2 + 4*(a^2*d^2*f^2*x^2 + 2*a^2*c*d*f^2*x + a^
2*c^2*f^2)*Ei(2*(d*f*x + c*f)/d)*e^(2*(d*e - c*f)/d) - (4*I*a^2*d^2*f^2*x^2
 + 8*I*a^2*c*d*f^2*x + 4*I*a^2*c^2*f^2)*Ei((d*f*x + c*f)/d)*e^((d*e - c*f)/
d) - (-4*I*a^2*d^2*f^2*x^2 - 8*I*a^2*c*d*f^2*x - 4*I*a^2*c^2*f^2)*Ei(-(d*f*
x + c*f)/d)*e^(-(d*e - c*f)/d) + 4*(a^2*d^2*f^2*x^2 + 2*a^2*c*d*f^2*x + a^2
*c^2*f^2)*Ei(-2*(d*f*x + c*f)/d)*e^(-2*(d*e - c*f)/d))*e^(2*f*x + 2*e) - (-
4*I*a^2*d^2*f*x - 4*I*a^2*c*d*f + 4*I*a^2*d^2)*e^(f*x + e))*e^(-2*f*x - 2*e
)/(d^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

giac [B] time = 0.17, size = 706, normalized size = 2.99

$$-\frac{4\,a^2d^2f^2x^2\mathrm{Ei}\left(-\frac{2\left(dfx+cf\right)}{d}\right)e^{\left(\frac{2\,cf}{d}-2\,e\right)}+4i\,a^2d^2f^2x^2\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(\frac{cf}{d}-e\right)}-4i\,a^2d^2f^2x^2\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(-\frac{cf}{d}+e\right)}+4\,a^2d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^2/(d*x+c)^3,x, algorithm="giac")
```

```
[Out] -1/8*(4*a^2*d^2*f^2*x^2*Ei(-2*(d*f*x + c*f)/d)*e^(2*c*f/d - 2*e) + 4*I*a^2*
d^2*f^2*x^2*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) - 4*I*a^2*d^2*f^2*x^2*Ei((d*
f*x + c*f)/d)*e^(-c*f/d + e) + 4*a^2*d^2*f^2*x^2*Ei(2*(d*f*x + c*f)/d)*e^(-
2*c*f/d + 2*e) + 8*a^2*c*d*f^2*x*Ei(-2*(d*f*x + c*f)/d)*e^(2*c*f/d - 2*e) +
 8*I*a^2*c*d*f^2*x*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) - 8*I*a^2*c*d*f^2*x*E
i((d*f*x + c*f)/d)*e^(-c*f/d + e) + 8*a^2*c*d*f^2*x*Ei(2*(d*f*x + c*f)/d)*e
^(-2*c*f/d + 2*e) + 4*a^2*c^2*f^2*Ei(-2*(d*f*x + c*f)/d)*e^(2*c*f/d - 2*e)
+ 4*I*a^2*c^2*f^2*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) - 4*I*a^2*c^2*f^2*Ei((
d*f*x + c*f)/d)*e^(-c*f/d + e) + 4*a^2*c^2*f^2*Ei(2*(d*f*x + c*f)/d)*e^(-2*
c*f/d + 2*e) - 2*a^2*d^2*f*x*e^(2*f*x + 2*e) + 4*I*a^2*d^2*f*x*e^(f*x + e)
+ 4*I*a^2*d^2*f*x*e^(-f*x - e) + 2*a^2*d^2*f*x*e^(-2*f*x - 2*e) - 2*a^2*c*d
*f*e^(2*f*x + 2*e) + 4*I*a^2*c*d*f*e^(f*x + e) + 4*I*a^2*c*d*f*e^(-f*x - e)
 + 2*a^2*c*d*f*e^(-2*f*x - 2*e) - a^2*d^2*e^(2*f*x + 2*e) + 4*I*a^2*d^2*e^(
f*x + e) - 4*I*a^2*d^2*e^(-f*x - e) - a^2*d^2*e^(-2*f*x - 2*e) + 6*a^2*d^2)
/(d^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

maple [B] time = 0.25, size = 625, normalized size = 2.65

$$-\frac{ia^2f^2\mathrm{e}^{fx+e}}{2d^3\left(\frac{cf}{d}+fx\right)^2}-\frac{ia^2f^2\mathrm{e}^{fx+e}}{2d^3\left(\frac{cf}{d}+fx\right)}-\frac{ia^2f^2\mathrm{e}^{-\frac{cf-de}{d}}\,\mathrm{Ei}\left(1,-fx-e-\frac{cf-de}{d}\right)}{2d^3}-\frac{3a^2}{4d\left(dx+c\right)^2}-\frac{f^3a^2\mathrm{e}^{-2fx-2e}x}{4d\left(d^2f^2x^2+2cd\,f^2x+c^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))^2/(d*x+c)^3,x)
```

```
[Out] -1/2*I*a^2*f^2/d^3*exp(f*x+e)/(c*f/d+f*x)^2-1/2*I*a^2*f^2/d^3*exp(f*x+e)/(c
*f/d+f*x)-1/2*I*a^2*f^2/d^3*exp(-(c*f-d*e)/d)*Ei(1,-f*x-e-(c*f-d*e)/d)-3/4*
a^2/d/(d*x+c)^2-1/4*f^3*a^2*exp(-2*f*x-2*e)/d/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*
f^2)*x-1/4*f^3*a^2*exp(-2*f*x-2*e)/d^2/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)*c+
1/8*f^2*a^2*exp(-2*f*x-2*e)/d/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)+1/2*f^2*a^2
/d^3*exp(2*(c*f-d*e)/d)*Ei(1,2*f*x+2*e+2*(c*f-d*e)/d)+1/8*f^2*a^2/d^3*exp(2
*f*x+2*e)/(c*f/d+f*x)^2+1/4*f^2*a^2/d^3*exp(2*f*x+2*e)/(c*f/d+f*x)+1/2*f^2*
a^2/d^3*exp(-2*(c*f-d*e)/d)*Ei(1,-2*f*x-2*e-2*(c*f-d*e)/d)-1/2*I*a^2*f^3*ex
p(-f*x-e)/d/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)*x-1/2*I*a^2*f^3*exp(-f*x-e)/d
^2/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)*c+1/2*I*a^2*f^2*exp(-f*x-e)/d/(d^2*f^2
*x^2+2*c*d*f^2*x+c^2*f^2)+1/2*I*a^2*f^2/d^3*exp((c*f-d*e)/d)*Ei(1,f*x+e+(c*
f-d*e)/d)
```

maxima [A] time = 0.46, size = 205, normalized size = 0.87

$$-\frac{1}{4}a^2\left(\frac{1}{d^3x^2+2\,cd^2x+c^2d}-\frac{e^{\left(-2\,e+\frac{2\,cf}{d}\right)}E_3\left(\frac{2\,(dx+c)f}{d}\right)}{(dx+c)^2d}-\frac{e^{\left(2\,e-\frac{2\,cf}{d}\right)}E_3\left(-\frac{2\,(dx+c)f}{d}\right)}{(dx+c)^2d}\right)+i\,a^2\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_3\left(\frac{(dx+c)f}{d}\right)}{(dx+c)^2d}-\frac{e^{\left(e-\frac{c}{d}\right.}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^2/(d*x+c)^3,x, algorithm="maxima")
```

```
[Out] -1/4*a^2*(1/(d^3*x^2 + 2*c*d^2*x + c^2*d) - e^(-2*e + 2*c*f/d)*exp_integral
_e(3, 2*(d*x + c)*f/d)/((d*x + c)^2*d) - e^(2*e - 2*c*f/d)*exp_integral_e(3
, -2*(d*x + c)*f/d)/((d*x + c)^2*d)) + I*a^2*(e^(-e + c*f/d)*exp_integral_e
(3, (d*x + c)*f/d)/((d*x + c)^2*d) - e^(e - c*f/d)*exp_integral_e(3, -(d*x
+ c)*f/d)/((d*x + c)^2*d)) - 1/2*a^2/(d^3*x^2 + 2*c*d^2*x + c^2*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1{}\mathrm{i}\right)}^2}{{\left(c+d\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^2/(c + d*x)^3,x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)^2/(c + d*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-a^2\left(\int \frac{\sinh^2\left(e+fx\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\int\left(-\frac{2i\sinh\left(e+fx\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\right)dx+\int\left(-\frac{1}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))**2/(d*x+c)**3,x)
```

```
[Out] -a**2*(Integral(sinh(e + f*x)**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*
x**3), x) + Integral(-2*I*sinh(e + f*x)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2
+ d**3*x**3), x) + Integral(-1/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x*
*3), x))
```

3.108 $\int \frac{(c+dx)^3}{a+ia\sinh(e+fx)}\,dx$

Optimal. Leaf size=132

$$-\frac{12d^2(c+dx)\text{Li}_2\left(-ie^{e+fx}\right)}{af^3}-\frac{6d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{af^2}+\frac{(c+dx)^3\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{af}+\frac{(c+dx)^3}{af}+\frac{12d^3\text{Li}_3\left(-ie\right.}{af^4}$$

```
[Out] (d*x+c)^3/a/f-6*d*(d*x+c)^2*ln(1+I*exp(f*x+e))/a/f^2-12*d^2*(d*x+c)*polylog
(2,-I*exp(f*x+e))/a/f^3+12*d^3*polylog(3,-I*exp(f*x+e))/a/f^4+(d*x+c)^3*tan
h(1/2*e+1/4*I*Pi+1/2*f*x)/a/f
```

Rubi [A] time = 0.30, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {3318, 4184, 3716, 2190, 2531, 2282, 6589}

$$-\frac{12d^2(c+dx)\text{PolyLog}\left(2,-ie^{e+fx}\right)}{af^3}+\frac{12d^3\text{PolyLog}\left(3,-ie^{e+fx}\right)}{af^4}-\frac{6d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{af^2}+\frac{(c+dx)^3\tanh\left(\frac{e}{2}\right.}{af}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3/(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (c + d*x)^3/(a*f) - (6*d*(c + d*x)^2*Log[1 + I*E^(e + f*x)])/(a*f^2) - (12*
d^2*(c + d*x)*PolyLog[2, (-I)*E^(e + f*x)])/(a*f^3) + (12*d^3*PolyLog[3, (-
I)*E^(e + f*x)])/(a*f^4) + ((c + d*x)^3*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/(a*
f)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(c+dx)^3}{a+ia\sinh(e+fx)}\,dx = \frac{\int (c+dx)^3\csc^2\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)dx}{2a}$$

$$= \frac{(c+dx)^3\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af} - \frac{(3d)\int (c+dx)^2\coth\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx}{af}$$

$$= \frac{(c+dx)^3}{af} + \frac{(c+dx)^3\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af} - \frac{(6id)\int \frac{e^{2\left(\frac{e}{2}+\frac{fx}{2}\right)}(c+dx)^2}{1+ie^{2\left(\frac{e}{2}+\frac{fx}{2}\right)}}dx}{af}$$

$$= \frac{(c+dx)^3}{af} - \frac{6d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{af^2} + \frac{(c+dx)^3\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af} + \frac{(12d^2)\int (\cdots}{\cdots}$$

$$= \frac{(c+dx)^3}{af} - \frac{6d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{af^2} - \frac{12d^2(c+dx)\text{Li}_2\left(-ie^{e+fx}\right)}{af^3} + \frac{(c+dx)^3\tanh\cdots}{\cdots}$$

$$= \frac{(c+dx)^3}{af} - \frac{6d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{af^2} - \frac{12d^2(c+dx)\text{Li}_2\left(-ie^{e+fx}\right)}{af^3} + \frac{(c+dx)^3\tanh\cdots}{\cdots}$$

$$= \frac{(c+dx)^3}{af} - \frac{6d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{af^2} - \frac{12d^2(c+dx)\text{Li}_2\left(-ie^{e+fx}\right)}{af^3} + \frac{12d^3\text{Li}_3\left(-ie^{\cdots}\right.}{af^4}$$

Mathematica [A] time = 2.93, size = 206, normalized size = 1.56

$$\frac{2\left(\frac{3de^e\left(-\frac{2ide^{-e}\left(e^e-i\right)\left(f(c+dx)\text{Li}_2\left(ie^{-e-fx}\right)+d\text{Li}_3\left(ie^{-e-fx}\right)\right)}{f^3}+\frac{\left(e^{-e}+i\right)(c+dx)^2\log\left(1-ie^{-e-fx}\right)}{f}+\frac{e^{-e}(c+dx)^3}{3d}\right)}{-1-ie^e} + \frac{(c+dx)^3\sinh\left(\frac{fx}{2}\right)}{\left(\cosh\left(\frac{e}{2}\right)+i\sinh\left(\frac{e}{2}\right)\right)\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e\cdots\right.\right.}\right)}{af}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3/(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (2*((3*d*E^e*((c + d*x)^3/(3*d*E^e) + ((I + E^(-e))*(c + d*x)^2*Log[1 - I*E
^(-e - f*x)])/f - ((2*I)*d*(-I + E^e)*(f*(c + d*x)*PolyLog[2, I*E^(-e - f*x
)] + d*PolyLog[3, I*E^(-e - f*x)]))/(E^e*f^3)))/(-1 - I*E^e) + ((c + d*x)^3
*Sinh[(f*x)/2])/((Cosh[e/2] + I*Sinh[e/2])*(Cosh[(e + f*x)/2] + I*Sinh[(e +
 f*x)/2]))))/(a*f)
```

fricas [C] time = 0.50, size = 363, normalized size = 2.75

$$\frac{-2i\,d^3e^3+6i\,cd^2e^2f-6i\,c^2def^2+2i\,c^3f^3+\left(12i\,d^3fx+12i\,cd^2f-12\left(d^3fx+cd^2f\right)e^{(fx+e)}\right)\mathrm{Li}_2\left(-i\,e^{(fx+e)}\right)+2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+I*a*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] (-2*I*d^3*e^3 + 6*I*c*d^2*e^2*f - 6*I*c^2*d*e*f^2 + 2*I*c^3*f^3 + (12*I*d^3
*f*x + 12*I*c*d^2*f - 12*(d^3*f*x + c*d^2*f)*e^(f*x + e))*dilog(-I*e^(f*x +
 e)) + 2*(d^3*f^3*x^3 + 3*c*d^2*f^3*x^2 + 3*c^2*d*f^3*x + d^3*e^3 - 3*c*d^2
*e^2*f + 3*c^2*d*e*f^2)*e^(f*x + e) + (6*I*d^3*e^2 - 12*I*c*d^2*e*f + 6*I*c
^2*d*f^2 - 6*(d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2)*e^(f*x + e))*log(e^(f*x +
e) - I) + (6*I*d^3*f^2*x^2 + 12*I*c*d^2*f^2*x - 6*I*d^3*e^2 + 12*I*c*d^2*e*
f - 6*(d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*e^(f*x + e))*lo
g(I*e^(f*x + e) + 1) + (12*d^3*e^(f*x + e) - 12*I*d^3)*polylog(3, -I*e^(f*x
 + e)))/(a*f^4*e^(f*x + e) - I*a*f^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^3}{i\,a\sinh\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+I*a*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3/(I*a*sinh(f*x + e) + a), x)
```

maple [B] time = 0.17, size = 435, normalized size = 3.30

$$\frac{2i\left(d^3x^3+3c\,d^2x^2+3c^2dx+c^3\right)}{fa\left(e^{fx+e}-i\right)}-\frac{4d^3e^3}{a\,f^4}-\frac{6d^3e^2\ln\left(e^{fx+e}-i\right)}{a\,f^4}+\frac{2d^3x^3}{af}-\frac{6d^3\ln\left(1+ie^{fx+e}\right)x^2}{a\,f^2}+\frac{6d^3\ln\left(1+ie^{fx+e}\right.}{a\,f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] 2*I*(d^3*x^3+3*c*d^2*x^2+3*c^2*d*x+c^3)/f/a/(exp(f*x+e)-I)-4/a/f^4*d^3*e^3-
6/a/f^4*d^3*e^2*ln(exp(f*x+e)-I)+2/a/f*d^3*x^3-6/a/f^2*d^3*ln(1+I*exp(f*x+e
))*x^2+6/a/f^4*d^3*ln(1+I*exp(f*x+e))*e^2-6/a/f^2*d*ln(exp(f*x+e)-I)*c^2+12
/a/f^2*d^2*c*e*x-12/a/f^2*d^2*c*ln(1+I*exp(f*x+e))*x-12/a/f^3*d^2*c*ln(1+I*
exp(f*x+e))*e-12/a/f^3*d^2*c*e*ln(exp(f*x+e))+6/a/f^2*d*ln(exp(f*x+e))*c^2+
```

```
6/a/f^4*d^3*e^2*ln(exp(f*x+e))-12/a/f^3*d^3*polylog(2,-I*exp(f*x+e))*x+12/a
/f^3*d^2*c*e*ln(exp(f*x+e)-I)+6/a/f^3*d^2*c*e^2-12/a/f^3*d^2*c*polylog(2,-I
*exp(f*x+e))+6/a/f*d^2*c*x^2-6/a/f^3*d^3*e^2*x+12*d^3*polylog(3,-I*exp(f*x+
e))/a/f^4
```

maxima [B] time = 0.57, size = 237, normalized size = 1.80

$$6\,c^2 d\left(\frac{xe^{(fx+e)}}{afe^{(fx+e)} - i\,af} - \frac{\log\left(\left(e^{(fx+e)} - i\right)e^{(-e)}\right)}{af^2}\right) - \frac{2\,c^3}{\left(i\,ae^{(-fx-e)} - a\right)f} + \frac{2i\,d^3x^3 + 6i\,cd^2x^2}{afe^{(fx+e)} - i\,af} - \frac{12\left(fx\log\left(i\,e^{(fx+e)} + 1\right)\right.}{af^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+I*a*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 6*c^2*d*(x*e^(f*x + e)/(a*f*e^(f*x + e) - I*a*f) - log((e^(f*x + e) - I)*e^
(-e))/(a*f^2)) - 2*c^3/((I*a*e^(-f*x - e) - a)*f) + (2*I*d^3*x^3 + 6*I*c*d^
2*x^2)/(a*f*e^(f*x + e) - I*a*f) - 12*(f*x*log(I*e^(f*x + e) + 1) + dilog(-
I*e^(f*x + e)))*c*d^2/(a*f^3) - 6*(f^2*x^2*log(I*e^(f*x + e) + 1) + 2*f*x*d
ilog(-I*e^(f*x + e)) - 2*polylog(3, -I*e^(f*x + e)))*d^3/(a*f^4) + 2*(d^3*f
^3*x^3 + 3*c*d^2*f^3*x^2)/(a*f^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c + d\,x)^3}{a + a\sinh\left(e + f\,x\right)\,1\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^3/(a + a*sinh(e + f*x)*1i),x)
```

```
[Out] int((c + d*x)^3/(a + a*sinh(e + f*x)*1i), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{-2ic^3e^e - 6ic^2dxe^e - 6icd^2x^2e^e - 2id^3x^3e^e}{-iafe^e - afe^{-fx}} - \frac{6d\left(\int \frac{c^2e^{fx}}{e^ee^{fx}-i}\,dx + \int \frac{d^2x^2e^{fx}}{e^ee^{fx}-i}\,dx + \int \frac{2cdxe^{fx}}{e^ee^{fx}-i}\,dx\right)e^e}{af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] (-2*I*c**3*exp(e) - 6*I*c**2*d*x*exp(e) - 6*I*c*d**2*x**2*exp(e) - 2*I*d**3
*x**3*exp(e))/(-I*a*f*exp(e) - a*f*exp(-f*x)) - 6*d*(Integral(c**2*exp(f*x)
/(exp(e)*exp(f*x) - I), x) + Integral(d**2*x**2*exp(f*x)/(exp(e)*exp(f*x) -
 I), x) + Integral(2*c*d*x*exp(f*x)/(exp(e)*exp(f*x) - I), x))*exp(e)/(a*f)
```

3.109 $\int \frac{(c+dx)^2}{a+ia\sinh(e+fx)}\,dx$

Optimal. Leaf size=101

$$-\frac{4d(c+dx)\log\left(1+ie^{e+fx}\right)}{af^2}+\frac{(c+dx)^2\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{af}+\frac{(c+dx)^2}{af}-\frac{4d^2\text{Li}_2\left(-ie^{e+fx}\right)}{af^3}$$

```
[Out] (d*x+c)^2/a/f-4*d*(d*x+c)*ln(1+I*exp(f*x+e))/a/f^2-4*d^2*polylog(2,-I*exp(f
*x+e))/a/f^3+(d*x+c)^2*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/a/f
```

Rubi [A] time = 0.22, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {3318, 4184, 3716, 2190, 2279, 2391}

$$-\frac{4d^2\text{PolyLog}\left(2,-ie^{e+fx}\right)}{af^3}-\frac{4d(c+dx)\log\left(1+ie^{e+fx}\right)}{af^2}+\frac{(c+dx)^2\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{af}+\frac{(c+dx)^2}{af}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2/(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (c + d*x)^2/(a*f) - (4*d*(c + d*x)*Log[1 + I*E^(e + f*x)])/(a*f^2) - (4*d^2
*PolyLog[2, (-I)*E^(e + f*x)])/(a*f^3) + ((c + d*x)^2*Tanh[e/2 + (I/4)*Pi +
 (f*x)/2])/(a*f)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(c+dx)^2}{a+ia\sinh(e+fx)}\,dx = \frac{\int (c+dx)^2\csc^2\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)dx}{2a}$$

$$= \frac{(c+dx)^2\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af} - \frac{(2d)\int (c+dx)\coth\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx}{af}$$

$$= \frac{(c+dx)^2}{af} + \frac{(c+dx)^2\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af} - \frac{(4id)\int \frac{e^{2\left(\frac{e}{2}+\frac{fx}{2}\right)}(c+dx)}{1+ie^{2\left(\frac{e}{2}+\frac{fx}{2}\right)}}dx}{af}$$

$$= \frac{(c+dx)^2}{af} - \frac{4d(c+dx)\log\left(1+ie^{e+fx}\right)}{af^2} + \frac{(c+dx)^2\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af} + \frac{\left(4d^2\right)\int \mathrm{lo}}{}$$

$$= \frac{(c+dx)^2}{af} - \frac{4d(c+dx)\log\left(1+ie^{e+fx}\right)}{af^2} + \frac{(c+dx)^2\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af} + \frac{\left(4d^2\right)\mathrm{Sub}}{}$$

$$= \frac{(c+dx)^2}{af} - \frac{4d(c+dx)\log\left(1+ie^{e+fx}\right)}{af^2} - \frac{4d^2\mathrm{Li}_2\left(-ie^{e+fx}\right)}{af^3} + \frac{(c+dx)^2\tanh\left(\frac{e}{2}+\frac{i\pi}{4}\right.}{af}$$

Mathematica [A] time = 2.23, size = 150, normalized size = 1.49

$$\frac{2\left(\frac{f^2(c+dx)^2\sinh\left(\frac{fx}{2}\right)}{\left(\cosh\left(\frac{e}{2}\right)+i\sinh\left(\frac{e}{2}\right)\right)\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)}+\frac{if(c+dx)\left(f(c+dx)+2d(1+ie^e)\log\left(1-ie^{-e-fx}\right)\right)}{e^e-i}+2d^2\mathrm{Li}_2\left(ie^{-e-fx}\right)\right)}{af^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2/(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (2*((I*f*(c + d*x)*(f*(c + d*x) + 2*d*(1 + I*E^e)*Log[1 - I*E^(-e - f*x)]))
/(-I + E^e) + 2*d^2*PolyLog[2, I*E^(-e - f*x)] + (f^2*(c + d*x)^2*Sinh[(f*x
)/2])/((Cosh[e/2] + I*Sinh[e/2])*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2]))
))/(a*f^3)
```

fricas [B] time = 0.56, size = 200, normalized size = 1.98

$$\frac{2i\,d^2e^2-4i\,cdef+2i\,c^2f^2-\left(4\,d^2e^{(fx+e)}-4i\,d^2\right)\mathrm{Li}_2\left(-i\,e^{(fx+e)}\right)+2\left(d^2f^2x^2+2\,cdf^2x-d^2e^2+2\,cdef\right)e^{(fx+e)}+}{af^3e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+I*a*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] (2*I*d^2*e^2 - 4*I*c*d*e*f + 2*I*c^2*f^2 - (4*d^2*e^(f*x + e) - 4*I*d^2)*di
log(-I*e^(f*x + e)) + 2*(d^2*f^2*x^2 + 2*c*d*f^2*x - d^2*e^2 + 2*c*d*e*f)*e
^(f*x + e) + (-4*I*d^2*e + 4*I*c*d*f + 4*(d^2*e - c*d*f)*e^(f*x + e))*log(e
^(f*x + e) - I) + (4*I*d^2*f*x + 4*I*d^2*e - 4*(d^2*f*x + d^2*e)*e^(f*x + e
))*log(I*e^(f*x + e) + 1))/(a*f^3*e^(f*x + e) - I*a*f^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^2}{i\,a\sinh\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+I*a*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^2/(I*a*sinh(f*x + e) + a), x)
```

maple [B] time = 0.10, size = 227, normalized size = 2.25

$$\frac{2i\left(d^2x^2+2cdx+c^2\right)}{fa\left(e^{fx+e}-i\right)}-\frac{4d\ln\left(e^{fx+e}-i\right)c}{a\,f^2}+\frac{4d\ln\left(e^{fx+e}\right)c}{a\,f^2}+\frac{2d^2x^2}{af}+\frac{4d^2ex}{a\,f^2}+\frac{2d^2e^2}{a\,f^3}-\frac{4d^2\ln\left(1+ie^{fx+e}\right)x}{a\,f^2}-\frac{4d^2\ln\left(1\right.}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] 2*I*(d^2*x^2+2*c*d*x+c^2)/f/a/(exp(f*x+e)-I)-4/a/f^2*d*ln(exp(f*x+e)-I)*c+4
/a/f^2*d*ln(exp(f*x+e))*c+2/a/f*d^2*x^2+4/a/f^2*d^2*e*x+2/a/f^3*d^2*e^2-4/a
/f^2*d^2*ln(1+I*exp(f*x+e))*x-4/a/f^3*d^2*ln(1+I*exp(f*x+e))*e-4*d^2*polylo
g(2,-I*exp(f*x+e))/a/f^3+4/a/f^3*d^2*e*ln(exp(f*x+e)-I)-4/a/f^3*d^2*e*ln(ex
p(f*x+e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$d^2\left(\frac{2i\,x^2}{afe^{\left(fx+e\right)}-i\,af}-4i\int\frac{x}{afe^{\left(fx+e\right)}-i\,af}\,dx\right)+4\,cd\left(\frac{xe^{\left(fx+e\right)}}{afe^{\left(fx+e\right)}-i\,af}-\frac{\log\left(\left(e^{\left(fx+e\right)}-i\right)e^{\left(-e\right)}\right)}{af^2}\right)-\frac{2\,c^2}{\left(i\,ae^{\left(-fx-e\right)}-a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+I*a*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] d^2*(2*I*x^2/(a*f*e^(f*x + e) - I*a*f) - 4*I*integrate(x/(a*f*e^(f*x + e) -
 I*a*f), x)) + 4*c*d*(x*e^(f*x + e)/(a*f*e^(f*x + e) - I*a*f) - log((e^(f*x
 + e) - I)*e^(-e))/(a*f^2)) - 2*c^2/((I*a*e^(-f*x - e) - a)*f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c+d\,x)^2}{a+a\sinh\left(e+f\,x\right)\,1\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^2/(a + a*sinh(e + f*x)*1i),x)
```

```
[Out] int((c + d*x)^2/(a + a*sinh(e + f*x)*1i), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{-2ic^2e^e - 4icdxe^e - 2id^2x^2e^e}{-iafe^e - afe^{-fx}} - \frac{4d\left(\int \frac{ce^{fx}}{e^ee^{fx}-i}\,dx + \int \frac{dxe^{fx}}{e^ee^{fx}-i}\,dx\right)e^e}{af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] (-2*I*c**2*exp(e) - 4*I*c*d*x*exp(e) - 2*I*d**2*x**2*exp(e))/(-I*a*f*exp(e)
 - a*f*exp(-f*x)) - 4*d*(Integral(c*exp(f*x)/(exp(e)*exp(f*x) - I), x) + In
tegral(d*x*exp(f*x)/(exp(e)*exp(f*x) - I), x))*exp(e)/(a*f)
```

3.110 $\int \frac{c+dx}{a+ia\sinh(e+fx)}\,dx$

Optimal. Leaf size=63

$$\frac{(c+dx)\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{af}-\frac{2d\log\left(\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\right)}{af^2}$$

```
[Out] -2*d*ln(cosh(1/2*e+1/4*I*Pi+1/2*f*x))/a/f^2+(d*x+c)*tanh(1/2*e+1/4*I*Pi+1/2
*f*x)/a/f
```

Rubi [A] time = 0.07, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3318, 4184, 3475}

$$\frac{(c+dx)\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{af}-\frac{2d\log\left(\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\right)}{af^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)/(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (-2*d*Log[Cosh[e/2 + (I/4)*Pi + (f*x)/2]])/(a*f^2) + ((c + d*x)*Tanh[e/2 +
(I/4)*Pi + (f*x)/2])/(a*f)
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{c+dx}{a+ia\sinh(e+fx)}\,dx = \frac{\int (c+dx)\csc^2\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)dx}{2a}$$
$$= \frac{(c+dx)\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af} - \frac{d\int \coth\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx}{af}$$
$$= -\frac{2d\log\left(\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)}{af^2} + \frac{(c+dx)\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af}$$

Mathematica [B] time = 0.46, size = 185, normalized size = 2.94

$$\frac{2cf\sinh\left(\frac{fx}{2}\right)+idfx\cosh\left(e+\frac{fx}{2}\right)-id\sinh\left(e+\frac{fx}{2}\right)\log(\cosh(e+fx))+2d\sinh\left(e+\frac{fx}{2}\right)\tan^{-1}\left(\sinh\left(\frac{fx}{2}\right)\mathrm{se}\right.}{af^2\left(\cosh\left(\frac{e}{2}\right)+i\sinh\left(\frac{e}{2}\right)\right)\left(\cosh\left(\frac{1}{2}\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)/(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (I*d*f*x*Cosh[e + (f*x)/2] + Cosh[(f*x)/2]*((-2*I)*d*ArcTan[Sech[e + (f*x)/
2]*Sinh[(f*x)/2]] - d*Log[Cosh[e + f*x]]) + 2*c*f*Sinh[(f*x)/2] + d*f*x*Sin
h[(f*x)/2] + 2*d*ArcTan[Sech[e + (f*x)/2]*Sinh[(f*x)/2]]*Sinh[e + (f*x)/2]
- I*d*Log[Cosh[e + f*x]]*Sinh[e + (f*x)/2])/(a*f^2*(Cosh[e/2] + I*Sinh[e/2]
)*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2]))
```

fricas [A] time = 0.76, size = 61, normalized size = 0.97

$$\frac{2\,dfxe^{(fx+e)}+2i\,cf-\left(2\,de^{(fx+e)}-2i\,d\right)\log\left(e^{(fx+e)}-i\right)}{af^2e^{(fx+e)}-i\,af^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+I*a*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] (2*d*f*x*e^(f*x + e) + 2*I*c*f - (2*d*e^(f*x + e) - 2*I*d)*log(e^(f*x + e)
- I))/(a*f^2*e^(f*x + e) - I*a*f^2)
```

giac [A] time = 0.20, size = 72, normalized size = 1.14

$$\frac{2\,dfxe^{(fx+e)}-2\,de^{(fx+e)}\log\left(e^{(fx+e)}-i\right)+2i\,cf+2i\,d\log\left(e^{(fx+e)}-i\right)}{af^2e^{(fx+e)}-i\,af^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+I*a*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] (2*d*f*x*e^(f*x + e) - 2*d*e^(f*x + e)*log(e^(f*x + e) - I) + 2*I*c*f + 2*I
*d*log(e^(f*x + e) - I))/(a*f^2*e^(f*x + e) - I*a*f^2)
```

maple [A] time = 0.10, size = 66, normalized size = 1.05

$$\frac{2dx}{af}+\frac{2de}{a f^{2}}+\frac{2i\left(dx+c\right)}{fa\left({\mathrm e}^{fx+e}-i\right)}-\frac{2d\ln\left({\mathrm e}^{fx+e}-i\right)}{a f^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] 2*d/a/f*x+2*d/a/f^2*e+2*I*(d*x+c)/f/a/(exp(f*x+e)-I)-2*d/a/f^2*ln(exp(f*x+e
)-I)
```

maxima [A] time = 0.38, size = 75, normalized size = 1.19

$$2\,d\left(\frac{xe^{\left(fx+e\right)}}{afe^{\left(fx+e\right)}-i\,af}-\frac{\log\left(\left(e^{\left(fx+e\right)}-i\right)e^{\left(-e\right)}\right)}{af^{2}}\right)-\frac{2\,c}{\left(i\,ae^{\left(-fx-e\right)}-a\right)f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+I*a*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 2*d*(x*e^(f*x + e)/(a*f*e^(f*x + e) - I*a*f) - log((e^(f*x + e) - I)*e^(-e)
)/(a*f^2)) - 2*c/((I*a*e^(-f*x - e) - a)*f)
```

mupad [B] time = 0.34, size = 56, normalized size = 0.89

$$\frac{\left(c+d\,x\right)\,2{}\mathrm{i}}{a\,f\,\left({\mathrm{e}}^{e+f\,x}-\mathrm{i}\right)}+\frac{2\,d\,x}{a\,f}-\frac{2\,d\,\ln\left({\mathrm{e}}^{f\,x}\,{\mathrm{e}}^{e}-\mathrm{i}\right)}{a\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/(a + a*sinh(e + f*x)*1i),x)
```

```
[Out] ((c + d*x)*2i)/(a*f*(exp(e + f*x) - 1i)) + (2*d*x)/(a*f) - (2*d*log(exp(f*x
)*exp(e) - 1i))/(a*f^2)
```

sympy [A] time = 0.27, size = 68, normalized size = 1.08

$$\frac{-2ice^{e}-2idxe^{e}}{-iafe^{e}-afe^{-fx}}-\frac{2dx}{af}-\frac{2d\log\left(ie^{e}+e^{-fx}\right)}{af^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] (-2*I*c*exp(e) - 2*I*d*x*exp(e))/(-I*a*f*exp(e) - a*f*exp(-f*x)) - 2*d*x/(a
*f) - 2*d*log(I*exp(e) + exp(-f*x))/(a*f**2)
```

3.111 $\int \frac{1}{(c+dx)(a+ia\sinh(e+fx))}\,dx$

Optimal. Leaf size=26

$$\text{Int}\left(\frac{1}{(c+dx)(a+ia\sinh(e+fx))},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)/(a+I*a*sinh(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)(a+ia\sinh(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)*(a + I*a*Sinh[e + f*x])),x]
[Out] Defer[Int][1/((c + d*x)*(a + I*a*Sinh[e + f*x])), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)(a+ia\sinh(e+fx))}\,dx=\int \frac{1}{(c+dx)(a+ia\sinh(e+fx))}\,dx$$

Mathematica [A] time = 20.66, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)(a+ia\sinh(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)*(a + I*a*Sinh[e + f*x])),x]
[Out] Integrate[1/((c + d*x)*(a + I*a*Sinh[e + f*x])), x]
```

fricas [A] time = 0.67, size = 0, normalized size = 0.00

$$\frac{\left(-i\,adfx-i\,acf+\left(adfx+acf\right)e^{(fx+e)}\right)\text{integral}\left(\frac{2i\,d}{-i\,ad^2fx^2-2i\,acdfx-i\,ac^2f+\left(ad^2fx^2+2\,acdfx+ac^2f\right)e^{(fx+e)}},x\right)+2i}{-i\,adfx-i\,acf+\left(adfx+acf\right)e^{(fx+e)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+I*a*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] ((-I*a*d*f*x - I*a*c*f + (a*d*f*x + a*c*f)*e^(f*x + e))*integral(2*I*d/(-I*
a*d^2*f*x^2 - 2*I*a*c*d*f*x - I*a*c^2*f + (a*d^2*f*x^2 + 2*a*c*d*f*x + a*c^
2*f)*e^(f*x + e)), x) + 2*I)/(-I*a*d*f*x - I*a*c*f + (a*d*f*x + a*c*f)*e^(f
*x + e))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(i\,a\sinh\left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+I*a*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)*(I*a*sinh(f*x + e) + a)), x)
```

maple [A] time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(a+ia\sinh\left(fx+e\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] int(1/(d*x+c)/(a+I*a*sinh(f*x+e)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$2i\,d\int \frac{1}{-i\,ad^2fx^2-2i\,acdfx-i\,ac^2f+\left(ad^2fx^2e^e+2\,acdfxe^e+ac^2fe^e\right)e^{(fx)}}\,dx+\frac{2i}{-i\,adfx-i\,acf+\left(adfxe^e+ac\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+I*a*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 2*I*d*integrate(1/(-I*a*d^2*f*x^2 - 2*I*a*c*d*f*x - I*a*c^2*f + (a*d^2*f*x^
2*e^e + 2*a*c*d*f*x*e^e + a*c^2*f*e^e)*e^(f*x)), x) + 2*I/(-I*a*d*f*x - I*a
*c*f + (a*d*f*x*e^e + a*c*f*e^e)*e^(f*x))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+a\sinh\left(e+f\,x\right)\,1\mathrm{i}\right)\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a*sinh(e + f*x)*1i)*(c + d*x)),x)
```

```
[Out] int(1/((a + a*sinh(e + f*x)*1i)*(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2e^{e}}{acfe^{e}+adfxe^{e}+\left(-iacf-iadfx\right)e^{-fx}}+\frac{2de^{e}\int\frac{e^{fx}}{c^{2}e^{e}e^{fx}-ic^{2}+2cdxe^{e}e^{fx}-2icdx+d^{2}x^{2}e^{e}e^{fx}-id^{2}x^{2}}\,dx}{af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] 2*exp(e)/(a*c*f*exp(e) + a*d*f*x*exp(e) + (-I*a*c*f - I*a*d*f*x)*exp(-f*x))
 + 2*d*exp(e)*Integral(exp(f*x)/(c**2*exp(e)*exp(f*x) - I*c**2 + 2*c*d*x*ex
p(e)*exp(f*x) - 2*I*c*d*x + d**2*x**2*exp(e)*exp(f*x) - I*d**2*x**2), x)/(a
*f)
```

3.112 $\int \frac{1}{(c+dx)^2(a+ia\sinh(e+fx))}\,dx$

Optimal. Leaf size=26

$$\text{Int}\left(\frac{1}{(c+dx)^2(a+ia\sinh(e+fx))},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)^2/(a+I*a*sinh(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} =$ 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)^2(a+ia\sinh(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)^2*(a + I*a*Sinh[e + f*x])),x]
[Out] Defer[Int][1/((c + d*x)^2*(a + I*a*Sinh[e + f*x])), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)^2(a+ia\sinh(e+fx))}\,dx = \int \frac{1}{(c+dx)^2(a+ia\sinh(e+fx))}\,dx$$

Mathematica [A] time = 21.07, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)^2(a+ia\sinh(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)^2*(a + I*a*Sinh[e + f*x])),x]
[Out] Integrate[1/((c + d*x)^2*(a + I*a*Sinh[e + f*x])), x]
```

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$\frac{\left(-i\,ad^2fx^2 - 2i\,acdfx - i\,ac^2f + \left(ad^2fx^2 + 2\,acdfx + ac^2f\right)e^{(fx+e)}\right)\text{integral}\left(\frac{4i\,d}{-i\,ad^3fx^3 - 3i\,acd^2fx^2 - 3i\,ac^2dfx - i\,ac^3f + (a\ldots}\right.}{-i\,ad^2fx^2 - 2i\,acdfx - i\,ac^2f + \left(ad^2fx^2 + 2\,acdfx + ac^2f\right)e^{(fx+e)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+I*a*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] ((-I*a*d^2*f*x^2 - 2*I*a*c*d*f*x - I*a*c^2*f + (a*d^2*f*x^2 + 2*a*c*d*f*x +
 a*c^2*f)*e^(f*x + e))*integral(4*I*d/(-I*a*d^3*f*x^3 - 3*I*a*c*d^2*f*x^2 -
 3*I*a*c^2*d*f*x - I*a*c^3*f + (a*d^3*f*x^3 + 3*a*c*d^2*f*x^2 + 3*a*c^2*d*f
*x + a*c^3*f)*e^(f*x + e)), x) + 2*I)/(-I*a*d^2*f*x^2 - 2*I*a*c*d*f*x - I*a
*c^2*f + (a*d^2*f*x^2 + 2*a*c*d*f*x + a*c^2*f)*e^(f*x + e))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2\left(i\,a\sinh\left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+I*a*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)^2*(I*a*sinh(f*x + e) + a)), x)
```

maple [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2\left(a+ia\sinh\left(fx+e\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^2/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] int(1/(d*x+c)^2/(a+I*a*sinh(f*x+e)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$4i\,d\int \frac{1}{-i\,ad^3fx^3-3i\,acd^2fx^2-3i\,ac^2dfx-i\,ac^3f+\left(ad^3fx^3e^e+3\,acd^2fx^2e^e+3\,ac^2dfxe^e+ac^3fe^e\right)e^{(fx)}}\,dx+\frac{}{-i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+I*a*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 4*I*d*integrate(1/(-I*a*d^3*f*x^3 - 3*I*a*c*d^2*f*x^2 - 3*I*a*c^2*d*f*x - I
*a*c^3*f + (a*d^3*f*x^3*e^e + 3*a*c*d^2*f*x^2*e^e + 3*a*c^2*d*f*x*e^e + a*c
^3*f*e^e)*e^(f*x)), x) + 2*I/(-I*a*d^2*f*x^2 - 2*I*a*c*d*f*x - I*a*c^2*f +
(a*d^2*f*x^2*e^e + 2*a*c*d*f*x*e^e + a*c^2*f*e^e)*e^(f*x))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a + a\sinh\left(e + f\,x\right)\,1\mathrm{i}\right)\,\left(c + d\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a*sinh(e + f*x)*1i)*(c + d*x)^2),x)
```

```
[Out] int(1/((a + a*sinh(e + f*x)*1i)*(c + d*x)^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2e^{e}}{ac^{2}fe^{e} + 2acdfxe^{e} + ad^{2}fx^{2}e^{e} + \left(-iac^{2}f - 2iacdfx - iad^{2}fx^{2}\right)e^{-fx}} + \frac{4de^{e}\int\frac{e^{fx}}{c^{3}e^{e}e^{fx} - ic^{3} + 3c^{2}dxe^{e}e^{fx} - 3ic^{2}dx + 3cd^{2}x^{2}e^{e}e^{fx} -}}{af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)**2/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] 2*exp(e)/(a*c**2*f*exp(e) + 2*a*c*d*f*x*exp(e) + a*d**2*f*x**2*exp(e) + (-I
*a*c**2*f - 2*I*a*c*d*f*x - I*a*d**2*f*x**2)*exp(-f*x)) + 4*d*exp(e)*Integr
al(exp(f*x)/(c**3*exp(e)*exp(f*x) - I*c**3 + 3*c**2*d*x*exp(e)*exp(f*x) - 3
*I*c**2*d*x + 3*c*d**2*x**2*exp(e)*exp(f*x) - 3*I*c*d**2*x**2 + d**3*x**3*e
xp(e)*exp(f*x) - I*d**3*x**3), x)/(a*f)
```

3.113 $\int \frac{(c+dx)^3}{(a+ia\sinh(e+fx))^2}\,dx$

Optimal. Leaf size=305

$$-\frac{4d^2(c+dx)\text{Li}_2\left(-ie^{e+fx}\right)}{a^2f^3}-\frac{2d^2(c+dx)\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{a^2f^3}-\frac{2d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{a^2f^2}+\frac{d(c+dx)^2\text{sech}^2\left(\frac{e}{2}+\right.}{2a^2f^2}$$

```
[Out] 1/3*(d*x+c)^3/a^2/f-2*d*(d*x+c)^2*ln(1+I*exp(f*x+e))/a^2/f^2+4*d^3*ln(cosh(
1/2*e+1/4*I*Pi+1/2*f*x))/a^2/f^4-4*d^2*(d*x+c)*polylog(2,-I*exp(f*x+e))/a^2
/f^3+4*d^3*polylog(3,-I*exp(f*x+e))/a^2/f^4+1/2*d*(d*x+c)^2*sech(1/2*e+1/4*
I*Pi+1/2*f*x)^2/a^2/f^2-2*d^2*(d*x+c)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/a^2/f^3+
1/3*(d*x+c)^3*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/a^2/f+1/6*(d*x+c)^3*sech(1/2*e+1
/4*I*Pi+1/2*f*x)^2*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/a^2/f
```

Rubi [A] time = 0.40, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {3318, 4186, 4184, 3475, 3716, 2190, 2531, 2282, 6589}

$$-\frac{4d^2(c+dx)\text{PolyLog}\left(2,-ie^{e+fx}\right)}{a^2f^3}+\frac{4d^3\text{PolyLog}\left(3,-ie^{e+fx}\right)}{a^2f^4}-\frac{2d^2(c+dx)\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{a^2f^3}-\frac{2d(c+dx)^2\log\left(\right.}{a^2f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3/(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (c + d*x)^3/(3*a^2*f) - (2*d*(c + d*x)^2*Log[1 + I*E^(e + f*x)])/(a^2*f^2)
+ (4*d^3*Log[Cosh[e/2 + (I/4)*Pi + (f*x)/2]])/(a^2*f^4) - (4*d^2*(c + d*x)*
PolyLog[2, (-I)*E^(e + f*x)])/(a^2*f^3) + (4*d^3*PolyLog[3, (-I)*E^(e + f*x
)])/(a^2*f^4) + (d*(c + d*x)^2*Sech[e/2 + (I/4)*Pi + (f*x)/2]^2)/(2*a^2*f^2
) - (2*d^2*(c + d*x)*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/(a^2*f^3) + ((c + d*x)
^3*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/(3*a^2*f) + ((c + d*x)^3*Sech[e/2 + (I/4
)*Pi + (f*x)/2]^2*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/(6*a^2*f)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
```

```
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(c+dx)^3}{(a+ia\sinh(e+fx))^2}\,dx = \frac{\int (c+dx)^3\csc^4\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)dx}{4a^2}$$

$$= \frac{d(c+dx)^2\operatorname{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{2a^2f^2} + \frac{(c+dx)^3\operatorname{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right.}{6a^2f}$$

$$= \frac{d(c+dx)^2\operatorname{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{2a^2f^2} - \frac{2d^2(c+dx)\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{a^2f^3} + \frac{(c+dx)^3\tanh}{3a}$$

$$= \frac{(c+dx)^3}{3a^2f} + \frac{4d^3\log\left(\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)}{a^2f^4} + \frac{d(c+dx)^2\operatorname{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{2a^2f^2} - \frac{2d^2}{}$$

$$= \frac{(c+dx)^3}{3a^2f} - \frac{2d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{a^2f^2} + \frac{4d^3\log\left(\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)}{a^2f^4} + \frac{d(c+d}{}$$

$$= \frac{(c+dx)^3}{3a^2f} - \frac{2d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{a^2f^2} + \frac{4d^3\log\left(\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)}{a^2f^4} - \frac{4d^2(c}{}$$

$$= \frac{(c+dx)^3}{3a^2f} - \frac{2d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{a^2f^2} + \frac{4d^3\log\left(\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)}{a^2f^4} - \frac{4d^2(c}{}$$

$$= \frac{(c+dx)^3}{3a^2f} - \frac{2d(c+dx)^2\log\left(1+ie^{e+fx}\right)}{a^2f^2} + \frac{4d^3\log\left(\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)}{a^2f^4} - \frac{4d^2(c}{}$$

Mathematica [A] time = 6.19, size = 443, normalized size = 1.45

$$\frac{2d\left(\frac{3(1+ie^e)(2d^2-c^2f^2)\left(fx-\log\left(-e^{e+fx}+i\right)\right)}{f}+3c^2f^2x-6cd(1+ie^e)\mathrm{Li}_2\left(ie^{-e-fx}\right)+6cd(1+ie^e)fx\log\left(1-ie^{-e-fx}\right)+3cdf^2x^2-6d^2(1+ie^e)\left(x\mathrm{Li}_2\left(ie^{-e-fx}\right)+\frac{\mathrm{Li}_3\left(ie^{-e-\dots}\right)}{f}\right.\right.}{-1-ie^e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3/(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] ((2*d*(-6*d^2*x + 3*c^2*f^2*x + 3*c*d*f^2*x^2 + d^2*f^2*x^3 + 6*c*d*(1 + I*
E^e)*f*x*Log[1 - I*E^(-e - f*x)] + 3*d^2*(1 + I*E^e)*f*x^2*Log[1 - I*E^(-e
- f*x)] + (3*(1 + I*E^e)*(2*d^2 - c^2*f^2)*(f*x - Log[I - E^(e + f*x)]))/f
- 6*c*d*(1 + I*E^e)*PolyLog[2, I*E^(-e - f*x)] - 6*d^2*(1 + I*E^e)*(x*PolyL
og[2, I*E^(-e - f*x)] + PolyLog[3, I*E^(-e - f*x)]/f)))/(-1 - I*E^e) + ((c
+ d*x)*(3*d*f*(c + d*x)*Cosh[(f*x)/2] + (6*I)*d^2*Cosh[e + (f*x)/2] + I*(c^
2*f^2 + 2*c*d*f^2*x + d^2*(-6 + f^2*x^2))*Cosh[e + (3*f*x)/2] + 3*(c^2*f^2
+ 2*c*d*f^2*x + d^2*(-4 + f^2*x^2))*Sinh[(f*x)/2] + (3*I)*d*f*(c + d*x)*Sin
h[e + (f*x)/2]))/((Cosh[e/2] + I*Sinh[e/2])*(Cosh[(e + f*x)/2] + I*Sinh[(e
+ f*x)/2])^3))/(3*a^2*f^3)
```

fricas [C] time = 0.58, size = 912, normalized size = 2.99

$$2i\,d^3e^3+6i\,c^2def^2-2i\,c^3f^3-12i\,d^3e+\left(-6i\,cd^2e^2+12i\,cd^2\right)f+\left(-12i\,d^3fx-12i\,cd^2f-12\left(d^3fx+cd^2f\right)e^{(3\,fx\dots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+I*a*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] (2*I*d^3*e^3 + 6*I*c^2*d*e*f^2 - 2*I*c^3*f^3 - 12*I*d^3*e + (-6*I*c*d^2*e^2
 + 12*I*c*d^2)*f + (-12*I*d^3*f*x - 12*I*c*d^2*f - 12*(d^3*f*x + c*d^2*f)*e
^(3*f*x + 3*e) + (36*I*d^3*f*x + 36*I*c*d^2*f)*e^(2*f*x + 2*e) + 36*(d^3*f*
x + c*d^2*f)*e^(f*x + e))*dilog(-I*e^(f*x + e)) + 2*(d^3*f^3*x^3 + 3*c*d^2*
f^3*x^2 + d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - 6*d^3*e + 3*(c^2*d*f^3
- 2*d^3*f)*x)*e^(3*f*x + 3*e) + (-6*I*d^3*f^3*x^3 - 6*I*d^3*e^3 + 36*I*d^3*
e + (-18*I*c^2*d*e - 6*I*c^2*d)*f^2 + (-18*I*c*d^2*f^3 - 6*I*d^3*f^2)*x^2 +
 (18*I*c*d^2*e^2 - 12*I*c*d^2)*f + (-18*I*c^2*d*f^3 - 12*I*c*d^2*f^2 + 24*I
*d^3*f)*x)*e^(2*f*x + 2*e) - 6*(d^3*f^2*x^2 + d^3*e^3 - c^3*f^3 - 6*d^3*e +
 (3*c^2*d*e + c^2*d)*f^2 - (3*c*d^2*e^2 - 4*c*d^2)*f + 2*(c*d^2*f^2 - d^3*f
)*x)*e^(f*x + e) + (-6*I*d^3*e^2 + 12*I*c*d^2*e*f - 6*I*c^2*d*f^2 + 12*I*d^
3 - 6*(d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*d^3)*e^(3*f*x + 3*e) + (18*I*d
^3*e^2 - 36*I*c*d^2*e*f + 18*I*c^2*d*f^2 - 36*I*d^3)*e^(2*f*x + 2*e) + 18*(
```

```
d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*d^3)*e^(f*x + e))*log(e^(f*x + e) - I
) + (-6*I*d^3*f^2*x^2 - 12*I*c*d^2*f^2*x + 6*I*d^3*e^2 - 12*I*c*d^2*e*f - 6
*(d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*e^(3*f*x + 3*e) + (1
8*I*d^3*f^2*x^2 + 36*I*c*d^2*f^2*x - 18*I*d^3*e^2 + 36*I*c*d^2*e*f)*e^(2*f*
x + 2*e) + 18*(d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*e^(f*x
+ e))*log(I*e^(f*x + e) + 1) + (12*d^3*e^(3*f*x + 3*e) - 36*I*d^3*e^(2*f*x
+ 2*e) - 36*d^3*e^(f*x + e) + 12*I*d^3)*polylog(3, -I*e^(f*x + e)))/(3*a^2*
f^4*e^(3*f*x + 3*e) - 9*I*a^2*f^4*e^(2*f*x + 2*e) - 9*a^2*f^4*e^(f*x + e) +
 3*I*a^2*f^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^3}{\left(ia\sinh\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+I*a*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3/(I*a*sinh(f*x + e) + a)^2, x)
```

maple [B] time = 0.24, size = 723, normalized size = 2.37

$$\frac{-4ifcd^2x\,e^{2fx+2e}+4id^3x-4id^3x\,e^{2fx+2e}+2f^2d^3x^3e^{fx+e}-2fd^3x^2e^{fx+e}-2fc^2d\,e^{fx+e}-2ifd^3x^2e^{2fx+2e}-4fcd}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3/(a+I*a*sinh(f*x+e))^2,x)
```

```
[Out] 2/3*(-6*I*f*c*d^2*x*exp(2*f*x+2*e)+6*I*d^3*x-6*I*d^3*x*exp(2*f*x+2*e)+3*f^2
*d^3*x^3*exp(f*x+e)-3*f*d^3*x^2*exp(f*x+e)-3*f*c^2*d*exp(f*x+e)-3*I*f*d^3*x
^2*exp(2*f*x+2*e)-6*f*c*d^2*x*exp(f*x+e)+9*f^2*c*d^2*x^2*exp(f*x+e)+9*f^2*c
^2*d*x*exp(f*x+e)-3*I*f^2*c*d^2*x^2-3*I*f^2*c^2*d*x-3*I*f*c^2*d*exp(2*f*x+2
*e)-I*f^2*d^3*x^3+3*f^2*c^3*exp(f*x+e)-I*f^2*c^3-6*I*c*d^2*exp(2*f*x+2*e)+6
*I*c*d^2-12*d^3*x*exp(f*x+e)-12*c*d^2*exp(f*x+e))/(exp(f*x+e)-I)^3/f^3/a^2-
4/a^2/f^2*d^2*ln(1+I*exp(f*x+e))*c*x-4/a^2/f^3*d^2*ln(1+I*exp(f*x+e))*c*e+4
/a^2/f^2*d^2*c*e*x+4/a^2/f^3*d^2*ln(exp(f*x+e)-I)*c*e-4/a^2/f^3*d^2*ln(exp(
f*x+e))*c*e+2/3/a^2/f*d^3*x^3+2/a^2/f^2*d*ln(exp(f*x+e))*c^2-2/a^2/f^2*d*ln
(exp(f*x+e)-I)*c^2+2/a^2/f^4*d^3*ln(exp(f*x+e))*e^2-2/a^2/f^4*d^3*ln(exp(f*
x+e)-I)*e^2+2/a^2/f^4*d^3*ln(1+I*exp(f*x+e))*e^2-4/a^2/f^3*d^2*c*polylog(2,
-I*exp(f*x+e))+2/a^2/f*d^2*c*x^2+2/a^2/f^3*d^2*c*e^2-2/a^2/f^3*d^3*e^2*x-2/
a^2/f^2*d^3*ln(1+I*exp(f*x+e))*x^2-4/a^2/f^3*d^3*polylog(2,-I*exp(f*x+e))*x
-4/3/a^2/f^4*d^3*e^3+4/a^2/f^4*d^3*ln(exp(f*x+e)-I)+4*d^3*polylog(3,-I*exp(
f*x+e))/a^2/f^4-4/a^2/f^4*d^3*ln(exp(f*x+e))
```

maxima [B] time = 0.69, size = 635, normalized size = 2.08

$$c^2 d\left(\frac{3\left(2\, f x e^{\left(3\, f x+3\, e\right)}+\left(-6 i\, f x e^{\left(2\, e\right)}-2 i\, e^{\left(2\, e\right)}\right) e^{\left(2\, f x\right)}-2\, e^{\left(f x+e\right)}\right)}{3\, a^2 f^2 e^{\left(3\, f x+3\, e\right)}-9 i\, a^2 f^2 e^{\left(2\, f x+2\, e\right)}-9\, a^2 f^2 e^{\left(f x+e\right)}+3 i\, a^2 f^2}-\frac{2\,\log\left(-i\left(i\, e^{\left(f x+e\right)}+1\right) e^{\left(-e\right)}\right)}{a^2 f^2}\right)+2\, c^3\left(\frac{}{\left(9\, a^2 e^{\left(-f\right.}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+I*a*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] c^2*d*(3*(2*f*x*e^(3*f*x + 3*e) + (-6*I*f*x*e^(2*e) - 2*I*e^(2*e))*e^(2*f*x
) - 2*e^(f*x + e))/(3*a^2*f^2*e^(3*f*x + 3*e) - 9*I*a^2*f^2*e^(2*f*x + 2*e)
 - 9*a^2*f^2*e^(f*x + e) + 3*I*a^2*f^2) - 2*log(-I*(I*e^(f*x + e) + 1)*e^(-
e))/(a^2*f^2)) + 2*c^3*(3*e^(-f*x - e)/((9*a^2*e^(-f*x - e) - 9*I*a^2*e^(-2
*f*x - 2*e) - 3*a^2*e^(-3*f*x - 3*e) + 3*I*a^2)*f) + I/((9*a^2*e^(-f*x - e)
 - 9*I*a^2*e^(-2*f*x - 2*e) - 3*a^2*e^(-3*f*x - 3*e) + 3*I*a^2)*f)) + (-2*I
*d^3*f^2*x^3 - 6*I*c*d^2*f^2*x^2 + 12*I*d^3*x + 12*I*c*d^2 - (6*I*d^3*f*x^2
*e^(2*e) + 12*I*c*d^2*e^(2*e) + (12*I*c*d^2*f*e^(2*e) + 12*I*d^3*e^(2*e))*x
)*e^(2*f*x) + 6*(d^3*f^2*x^3*e^e - 4*c*d^2*e^e + (3*c*d^2*f^2*e^e - d^3*f*e
^e)*x^2 - 2*(c*d^2*f*e^e + 2*d^3*e^e)*x)*e^(f*x))/(3*a^2*f^3*e^(3*f*x + 3*e
) - 9*I*a^2*f^3*e^(2*f*x + 2*e) - 9*a^2*f^3*e^(f*x + e) + 3*I*a^2*f^3) - 4*
(f*x*log(I*e^(f*x + e) + 1) + dilog(-I*e^(f*x + e)))*c*d^2/(a^2*f^3) - 4*d^
3*x/(a^2*f^3) - 2*(f^2*x^2*log(I*e^(f*x + e) + 1) + 2*f*x*dilog(-I*e^(f*x +
 e)) - 2*polylog(3, -I*e^(f*x + e)))*d^3/(a^2*f^4) + 4*d^3*log(e^(f*x + e)
- I)/(a^2*f^4) + 2/3*(d^3*f^3*x^3 + 3*c*d^2*f^3*x^2)/(a^2*f^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c+d\,x\right)^3}{\left(a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1{}\mathrm{i}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^3/(a + a*sinh(e + f*x)*1i)^2,x)
```

```
[Out] int((c + d*x)^3/(a + a*sinh(e + f*x)*1i)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2ic^3f^2e^{3e}+6ic^2df^2xe^{3e}+6icd^2f^2x^2e^{3e}-12icd^2e^{3e}+2id^3f^2x^3e^{3e}-12id^3xe^{3e}+\left(-6ic^2dfe^e-12icd^2fxe^e+12icd\right.}{3ia^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3/(a+I*a*sinh(f*x+e))**2,x)
```

```
[Out] (2*I*c**3*f**2*exp(3*e) + 6*I*c**2*d*f**2*x*exp(3*e) + 6*I*c*d**2*f**2*x**2
*exp(3*e) - 12*I*c*d**2*exp(3*e) + 2*I*d**3*f**2*x**3*exp(3*e) - 12*I*d**3*
x*exp(3*e) + (-6*I*c**2*d*f*exp(e) - 12*I*c*d**2*f*x*exp(e) + 12*I*c*d**2*e
xp(e) - 6*I*d**3*f*x**2*exp(e) + 12*I*d**3*x*exp(e))*exp(-2*f*x) + (6*c**3*
f**2*exp(2*e) + 18*c**2*d*f**2*x*exp(2*e) + 6*c**2*d*f*exp(2*e) + 18*c*d**2
*f**2*x**2*exp(2*e) + 12*c*d**2*f*x*exp(2*e) - 24*c*d**2*exp(2*e) + 6*d**3*
f**2*x**3*exp(2*e) + 6*d**3*f*x**2*exp(2*e) - 24*d**3*x*exp(2*e))*exp(-f*x)
)/(3*I*a**2*f**3*exp(3*e) + 9*a**2*f**3*exp(2*e)*exp(-f*x) - 9*I*a**2*f**3*
exp(e)*exp(-2*f*x) - 3*a**2*f**3*exp(-3*f*x)) - 2*d*(Integral(-2*d**2*exp(f
*x)/(exp(e)*exp(f*x) - I), x) + Integral(c**2*f**2*exp(f*x)/(exp(e)*exp(f*x
) - I), x) + Integral(d**2*f**2*x**2*exp(f*x)/(exp(e)*exp(f*x) - I), x) + I
ntegral(2*c*d*f**2*x*exp(f*x)/(exp(e)*exp(f*x) - I), x))*exp(e)/(a**2*f**3)
```

3.114 $\int \frac{(c+dx)^2}{(a+ia\sinh(e+fx))^2}\,dx$

Optimal. Leaf size=241

$$-\frac{4d(c+dx)\log\left(1+ie^{e+fx}\right)}{3a^2f^2}+\frac{d(c+dx)\text{sech}^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{3a^2f^2}+\frac{(c+dx)^2\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{3a^2f}+\frac{(c+dx)^2\tanh\left(\frac{e}{2}+\right.}{}$$

```
[Out] 1/3*(d*x+c)^2/a^2/f-4/3*d*(d*x+c)*ln(1+I*exp(f*x+e))/a^2/f^2-4/3*d^2*polylo
g(2,-I*exp(f*x+e))/a^2/f^3+1/3*d*(d*x+c)*sech(1/2*e+1/4*I*Pi+1/2*f*x)^2/a^2
/f^2-2/3*d^2*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/a^2/f^3+1/3*(d*x+c)^2*tanh(1/2*e+
1/4*I*Pi+1/2*f*x)/a^2/f+1/6*(d*x+c)^2*sech(1/2*e+1/4*I*Pi+1/2*f*x)^2*tanh(1
/2*e+1/4*I*Pi+1/2*f*x)/a^2/f
```

Rubi [A] time = 0.28, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.391, Rules used = {3318, 4186, 3767, 8, 4184, 3716, 2190, 2279, 2391}

$$-\frac{4d^2\text{PolyLog}\left(2,-ie^{e+fx}\right)}{3a^2f^3}-\frac{4d(c+dx)\log\left(1+ie^{e+fx}\right)}{3a^2f^2}+\frac{d(c+dx)\text{sech}^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{3a^2f^2}+\frac{(c+dx)^2\tanh\left(\frac{e}{2}+\frac{fx}{2}\right.}{3a^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2/(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (c + d*x)^2/(3*a^2*f) - (4*d*(c + d*x)*Log[1 + I*E^(e + f*x)])/(3*a^2*f^2)
- (4*d^2*PolyLog[2, (-I)*E^(e + f*x)])/(3*a^2*f^3) + (d*(c + d*x)*Sech[e/2
+ (I/4)*Pi + (f*x)/2]^2)/(3*a^2*f^2) - (2*d^2*Tanh[e/2 + (I/4)*Pi + (f*x)/2
])/(3*a^2*f^3) + ((c + d*x)^2*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/(3*a^2*f) + (
(c + d*x)^2*Sech[e/2 + (I/4)*Pi + (f*x)/2]^2*Tanh[e/2 + (I/4)*Pi + (f*x)/2]
)/(6*a^2*f)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
```

```
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{(c+dx)^2}{(a+ia\sinh(e+fx))^2}\,dx = \frac{\int (c+dx)^2\csc^4\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)dx}{4a^2}$$

$$= \frac{d(c+dx)\text{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{3a^2f^2} + \frac{(c+dx)^2\text{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right.}{6a^2f}$$

$$= \frac{d(c+dx)\text{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{3a^2f^2} + \frac{(c+dx)^2\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{3a^2f} + \frac{(c+dx)^2\text{sech}^2\left(\right.}{}$$

$$= \frac{(c+dx)^2}{3a^2f} + \frac{d(c+dx)\text{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{3a^2f^2} - \frac{2d^2\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{3a^2f^3} + \frac{(c+dx)^2}{}$$

$$= \frac{(c+dx)^2}{3a^2f} - \frac{4d(c+dx)\log\left(1+ie^{e+fx}\right)}{3a^2f^2} + \frac{d(c+dx)\text{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{3a^2f^2} - \frac{2d^2\text{ta}}{}$$

$$= \frac{(c+dx)^2}{3a^2f} - \frac{4d(c+dx)\log\left(1+ie^{e+fx}\right)}{3a^2f^2} + \frac{d(c+dx)\text{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{3a^2f^2} - \frac{2d^2\text{ta}}{}$$

$$= \frac{(c+dx)^2}{3a^2f} - \frac{4d(c+dx)\log\left(1+ie^{e+fx}\right)}{3a^2f^2} - \frac{4d^2\text{Li}_2\left(-ie^{e+fx}\right)}{3a^2f^3} + \frac{d(c+dx)\text{sech}^2\left(\frac{e}{2}\right.}{3a^2f^2}$$

Mathematica [A] time = 3.61, size = 269, normalized size = 1.12

$$\frac{\frac{i\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2-2\right)\right)\cosh\left(e+\frac{3fx}{2}\right)+\sinh\left(\frac{fx}{2}\right)\left(3c^2f^2+6cdf^2x+d^2\left(3f^2x^2-4\right)\right)+2idf(c+dx)\sinh\left(e+\frac{fx}{2}\right)+2df(c+dx)\cosh\left(\frac{fx}{2}\right)+2id^2\cosh\left(e+\right.}{\left(\cosh\left(\frac{e}{2}\right)+i\sinh\left(\frac{e}{2}\right)\right)\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)^3}}{3a^2f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2/(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (((2*I)*f*(c + d*x)*(f*(c + d*x) + 2*d*(1 + I*E^e)*Log[1 - I*E^(-e - f*x)])
)/(-I + E^e) + 4*d^2*PolyLog[2, I*E^(-e - f*x)] + (2*d*f*(c + d*x)*Cosh[(f*
```

```
x)/2] + (2*I)*d^2*Cosh[e + (f*x)/2] + I*(c^2*f^2 + 2*c*d*f^2*x + d^2*(-2 +
f^2*x^2))*Cosh[e + (3*f*x)/2] + (3*c^2*f^2 + 6*c*d*f^2*x + d^2*(-4 + 3*f^2*
x^2))*Sinh[(f*x)/2] + (2*I)*d*f*(c + d*x)*Sinh[e + (f*x)/2])/((Cosh[e/2] +
I*Sinh[e/2])*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2])^3))/(3*a^2*f^3)
```

fricas [B] time = 0.53, size = 478, normalized size = 1.98

$$\frac{-2i\,d^2e^2+4i\,cdef-2i\,c^2f^2+4i\,d^2-\left(4\,d^2e^{\left(3\,fx+3\,e\right)}-12i\,d^2e^{\left(2\,fx+2\,e\right)}-12\,d^2e^{\left(fx+e\right)}+4i\,d^2\right)\mathrm{Li}_2\left(-i\,e^{\left(fx+e\right)}\right)+2\left(d^2\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+I*a*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] (-2*I*d^2*e^2 + 4*I*c*d*e*f - 2*I*c^2*f^2 + 4*I*d^2 - (4*d^2*e^(3*f*x + 3*e
) - 12*I*d^2*e^(2*f*x + 2*e) - 12*d^2*e^(f*x + e) + 4*I*d^2)*dilog(-I*e^(f*
x + e)) + 2*(d^2*f^2*x^2 + 2*c*d*f^2*x - d^2*e^2 + 2*c*d*e*f)*e^(3*f*x + 3*
e) + (-6*I*d^2*f^2*x^2 + 6*I*d^2*e^2 - 4*I*d^2 + (-12*I*c*d*e - 4*I*c*d)*f
+ (-12*I*c*d*f^2 - 4*I*d^2*f)*x)*e^(2*f*x + 2*e) + 2*(3*d^2*e^2 + 3*c^2*f^2
 - 2*d^2*f*x - 4*d^2 - 2*(3*c*d*e + c*d)*f)*e^(f*x + e) + (4*I*d^2*e - 4*I*
c*d*f + 4*(d^2*e - c*d*f)*e^(3*f*x + 3*e) + (-12*I*d^2*e + 12*I*c*d*f)*e^(2
*f*x + 2*e) - 12*(d^2*e - c*d*f)*e^(f*x + e))*log(e^(f*x + e) - I) + (-4*I*
d^2*f*x - 4*I*d^2*e - 4*(d^2*f*x + d^2*e)*e^(3*f*x + 3*e) + (12*I*d^2*f*x +
 12*I*d^2*e)*e^(2*f*x + 2*e) + 12*(d^2*f*x + d^2*e)*e^(f*x + e))*log(I*e^(f
*x + e) + 1))/(3*a^2*f^3*e^(3*f*x + 3*e) - 9*I*a^2*f^3*e^(2*f*x + 2*e) - 9*
a^2*f^3*e^(f*x + e) + 3*I*a^2*f^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^2}{\left(i\,a\sinh\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+I*a*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^2/(I*a*sinh(f*x + e) + a)^2, x)
```

maple [A] time = 0.22, size = 374, normalized size = 1.55

$$\frac{\frac{4id^2}{3}-\frac{2if^2d^2x^2}{3}-\frac{4f\,d^2x\,e^{fx+e}}{3}-\frac{4fcd\,e^{fx+e}}{3}-\frac{8d^2e^{fx+e}}{3}-\frac{2if^2c^2}{3}-\frac{4id^2e^{2fx+2e}}{3}-\frac{4if^2cdx}{3}-\frac{4if\,d^2x\,e^{2fx+2e}}{3}-\frac{4ifcd\,e^{2fx+2e}}{3}+2f^2d^2\cdots}{\left(e^{fx+e}-i\right)^3f^3a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2/(a+I*a*sinh(f*x+e))^2,x)
```

```
[Out] 2/3*(2*I*d^2-I*f^2*d^2*x^2-2*f*d^2*x*exp(f*x+e)-2*f*c*d*exp(f*x+e)-4*d^2*ex
p(f*x+e)-I*f^2*c^2-2*I*d^2*exp(2*f*x+2*e)-2*I*f^2*c*d*x-2*I*f*d^2*x*exp(2*f
*x+2*e)-2*I*f*c*d*exp(2*f*x+2*e)+3*f^2*d^2*x^2*exp(f*x+e)+6*f^2*c*d*x*exp(f
*x+e)+3*f^2*c^2*exp(f*x+e))/(exp(f*x+e)-I)^3/f^3/a^2-4/3/a^2/f^2*d*ln(exp(f
*x+e)-I)*c+4/3/a^2/f^2*d*ln(exp(f*x+e))*c+2/3/a^2/f*d^2*x^2+4/3/a^2/f^2*d^2
*e*x+2/3/a^2/f^3*d^2*e^2-4/3/a^2/f^2*d^2*ln(1+I*exp(f*x+e))*x-4/3/a^2/f^3*d
^2*ln(1+I*exp(f*x+e))*e-4/3*d^2*polylog(2,-I*exp(f*x+e))/a^2/f^3+4/3/a^2/f^
3*d^2*e*ln(exp(f*x+e)-I)-4/3/a^2/f^3*d^2*e*ln(exp(f*x+e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$d^2\left(\frac{-2i f^2x^2 - \left(4i fxe^{(2e)} + 4i e^{(2e)}\right)e^{(2fx)} + 2\left(3 f^2x^2e^e - 2 fxe^e - 4 e^e\right)e^{(fx)} + 4i}{3 a^2f^3e^{(3fx+3e)} - 9i a^2f^3e^{(2fx+2e)} - 9 a^2f^3e^{(fx+e)} + 3i a^2f^3} - 4i \int \frac{x}{3 a^2fe^{(fx+e)} - 3i a^2f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+I*a*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] d^2*((-2*I*f^2*x^2 - (4*I*f*x*e^(2*e) + 4*I*e^(2*e))*e^(2*f*x) + 2*(3*f^2*x
^2*e^e - 2*f*x*e^e - 4*e^e)*e^(f*x) + 4*I)/(3*a^2*f^3*e^(3*f*x + 3*e) - 9*I
*a^2*f^3*e^(2*f*x + 2*e) - 9*a^2*f^3*e^(f*x + e) + 3*I*a^2*f^3) - 4*I*integ
rate(x/(3*a^2*f*e^(f*x + e) - 3*I*a^2*f), x)) + 2/3*c*d*(3*(2*f*x*e^(3*f*x
+ 3*e) + (-6*I*f*x*e^(2*e) - 2*I*e^(2*e))*e^(2*f*x) - 2*e^(f*x + e))/(3*a^2
*f^2*e^(3*f*x + 3*e) - 9*I*a^2*f^2*e^(2*f*x + 2*e) - 9*a^2*f^2*e^(f*x + e)
+ 3*I*a^2*f^2) - 2*log(-I*(I*e^(f*x + e) + 1)*e^(-e))/(a^2*f^2)) + 2*c^2*(3
*e^(-f*x - e)/((9*a^2*e^(-f*x - e) - 9*I*a^2*e^(-2*f*x - 2*e) - 3*a^2*e^(-3
*f*x - 3*e) + 3*I*a^2)*f) + I/((9*a^2*e^(-f*x - e) - 9*I*a^2*e^(-2*f*x - 2*
e) - 3*a^2*e^(-3*f*x - 3*e) + 3*I*a^2)*f))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c+d\,x)^2}{\left(a+a\,\sinh\left(e+f\,x\right)\,1{}\mathrm{i}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^2/(a + a*sinh(e + f*x)*1i)^2,x)
```

```
[Out] int((c + d*x)^2/(a + a*sinh(e + f*x)*1i)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2ic^2f^2e^{3e} + 4icdf^2xe^{3e} + 2id^2f^2x^2e^{3e} - 4id^2e^{3e} + \left(-4icdfe^e - 4id^2fxe^e + 4id^2e^e\right)e^{-2fx} + \left(6c^2f^2e^{2e} + 12cdf^2xe^{2e}\right.}{3ia^2f^3e^{3e} + 9a^2f^3e^{2e}e^{-fx} - 9ia^2f^3e^ee^{-2fx} - 3a^2f^3e^{-3fx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2/(a+I*a*sinh(f*x+e))**2,x)
```

```
[Out] (2*I*c**2*f**2*exp(3*e) + 4*I*c*d*f**2*x*exp(3*e) + 2*I*d**2*f**2*x**2*exp(
3*e) - 4*I*d**2*exp(3*e) + (-4*I*c*d*f*exp(e) - 4*I*d**2*f*x*exp(e) + 4*I*d
**2*exp(e))*exp(-2*f*x) + (6*c**2*f**2*exp(2*e) + 12*c*d*f**2*x*exp(2*e) +
4*c*d*f*exp(2*e) + 6*d**2*f**2*x**2*exp(2*e) + 4*d**2*f*x*exp(2*e) - 8*d**2
*exp(2*e))*exp(-f*x))/(3*I*a**2*f**3*exp(3*e) + 9*a**2*f**3*exp(2*e)*exp(-f
*x) - 9*I*a**2*f**3*exp(e)*exp(-2*f*x) - 3*a**2*f**3*exp(-3*f*x)) - 4*d*(In
tegral(c*exp(f*x)/(exp(e)*exp(f*x) - I), x) + Integral(d*x*exp(f*x)/(exp(e)
*exp(f*x) - I), x))*exp(e)/(3*a**2*f)
```

3.115 $\int \frac{c+dx}{(a+ia\sinh(e+fx))^2}\,dx$

Optimal. Leaf size=158

$$\frac{(c+dx)\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{3a^2f}+\frac{(c+dx)\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\mathrm{sech}^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{6a^2f}+\frac{d\,\mathrm{sech}^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{6a^2f^2}-\frac{2d\log\left(\right.}{}$$

```
[Out] -2/3*d*ln(cosh(1/2*e+1/4*I*Pi+1/2*f*x))/a^2/f^2+1/6*d*sech(1/2*e+1/4*I*Pi+1
/2*f*x)^2/a^2/f^2+1/3*(d*x+c)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/a^2/f+1/6*(d*x+c
)*sech(1/2*e+1/4*I*Pi+1/2*f*x)^2*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/a^2/f
```

Rubi [A] time = 0.11, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {3318, 4185, 4184, 3475}

$$\frac{(c+dx)\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{3a^2f}+\frac{(c+dx)\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\mathrm{sech}^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{6a^2f}+\frac{d\,\mathrm{sech}^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{6a^2f^2}-\frac{2d\log\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)/(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (-2*d*Log[Cosh[e/2 + (I/4)*Pi + (f*x)/2]])/(3*a^2*f^2) + (d*Sech[e/2 + (I/4
)*Pi + (f*x)/2]^2)/(6*a^2*f^2) + ((c + d*x)*Tanh[e/2 + (I/4)*Pi + (f*x)/2])
/(3*a^2*f) + ((c + d*x)*Sech[e/2 + (I/4)*Pi + (f*x)/2]^2*Tanh[e/2 + (I/4)*P
i + (f*x)/2])/(6*a^2*f)
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
```

```
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rubi steps

$$\int \frac{c+dx}{(a+ia\sinh(e+fx))^2}\,dx = \frac{\int (c+dx)\csc^4\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)dx}{4a^2}$$
$$= \frac{d\,\mathrm{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{6a^2f^2} + \frac{(c+dx)\mathrm{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{6a^2f} - \frac{\int (c+$$
$$= \frac{d\,\mathrm{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{6a^2f^2} + \frac{(c+dx)\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{3a^2f} + \frac{(c+dx)\mathrm{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right.}{6a^2f}$$
$$= -\frac{2d\log\left(\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)}{3a^2f^2} + \frac{d\,\mathrm{sech}^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{6a^2f^2} + \frac{(c+dx)\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\right.}{3a^2f}$$

Mathematica [A] time = 1.05, size = 241, normalized size = 1.53

$$\frac{\left(\sinh\left(\frac{1}{2}(e+fx)\right)-i\cosh\left(\frac{1}{2}(e+fx)\right)\right)\left(\cosh\left(\frac{3}{2}(e+fx)\right)\left(2cf+2d\tan^{-1}\left(\tanh\left(\frac{1}{2}(e+fx)\right)\right)-id\log(\cosh(e+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)/(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (((-I)*Cosh[(e + f*x)/2] + Sinh[(e + f*x)/2])*(d*Cosh[(e + f*x)/2]*(-2*I +
3*e + 3*f*x - 6*ArcTan[Tanh[(e + f*x)/2]] + (3*I)*Log[Cosh[e + f*x]]) + Cos
h[(3*(e + f*x))/2]*(-(d*e) + 2*c*f + d*f*x + 2*d*ArcTan[Tanh[(e + f*x)/2]]
- I*d*Log[Cosh[e + f*x]]) + (2*I)*((-I)*d + 2*d*e - 3*c*f - d*f*x - 4*d*Arc
Tan[Tanh[(e + f*x)/2]] + d*Cosh[e + f*x]*(e + f*x - 2*ArcTan[Tanh[(e + f*x)
/2]] + I*Log[Cosh[e + f*x]]) + (2*I)*d*Log[Cosh[e + f*x]])*Sinh[(e + f*x)/2
]))/(6*a^2*f^2*(-I + Sinh[e + f*x])^2)
```

fricas [A] time = 0.44, size = 162, normalized size = 1.03

$$\frac{2\,dfxe^{\left(3\,fx+3\,e\right)}-2i\,cf+\left(-6i\,dfx-2i\,d\right)e^{\left(2\,fx+2\,e\right)}+2\left(3\,cf-d\right)e^{\left(fx+e\right)}-\left(2\,de^{\left(3\,fx+3\,e\right)}-6i\,de^{\left(2\,fx+2\,e\right)}-6\,de^{\left(fx+\right.}\right.}{3\,a^{2}f^{2}e^{\left(3\,fx+3\,e\right)}-9i\,a^{2}f^{2}e^{\left(2\,fx+2\,e\right)}-9\,a^{2}f^{2}e^{\left(fx+e\right)}+3i\,a^{2}f^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+I*a*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] (2*d*f*x*e^(3*f*x + 3*e) - 2*I*c*f + (-6*I*d*f*x - 2*I*d)*e^(2*f*x + 2*e) +
 2*(3*c*f - d)*e^(f*x + e) - (2*d*e^(3*f*x + 3*e) - 6*I*d*e^(2*f*x + 2*e) -
 6*d*e^(f*x + e) + 2*I*d)*log(e^(f*x + e) - I))/(3*a^2*f^2*e^(3*f*x + 3*e)
- 9*I*a^2*f^2*e^(2*f*x + 2*e) - 9*a^2*f^2*e^(f*x + e) + 3*I*a^2*f^2)
```

giac [A] time = 0.22, size = 211, normalized size = 1.34

$$\frac{2\,dfxe^{\left(3\,fx+3\,e\right)}-6i\,dfxe^{\left(2\,fx+2\,e\right)}+6\,cfe^{\left(fx+e\right)}-2\,de^{\left(3\,fx+3\,e\right)}\log\left(e^{\left(fx+e\right)}-i\right)+6i\,de^{\left(2\,fx+2\,e\right)}\log\left(e^{\left(fx+e\right)}-i\right)+6}{3\,a^{2}f^{2}e^{\left(3\,fx+3\,e\right)}-9i\,a^{2}f^{2}e^{\left(2\,fx+2\,e\right)}-9\,a^{2}f^{2}e^{(}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+I*a*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] (2*d*f*x*e^(3*f*x + 3*e) - 6*I*d*f*x*e^(2*f*x + 2*e) + 6*c*f*e^(f*x + e) -
2*d*e^(3*f*x + 3*e)*log(e^(f*x + e) - I) + 6*I*d*e^(2*f*x + 2*e)*log(e^(f*x
 + e) - I) + 6*d*e^(f*x + e)*log(e^(f*x + e) - I) - 2*I*c*f - 2*I*d*e^(2*f*
x + 2*e) - 2*d*e^(f*x + e) - 2*I*d*log(e^(f*x + e) - I))/(3*a^2*f^2*e^(3*f*
x + 3*e) - 9*I*a^2*f^2*e^(2*f*x + 2*e) - 9*a^2*f^2*e^(f*x + e) + 3*I*a^2*f^
2)
```

maple [A] time = 0.23, size = 113, normalized size = 0.72

$$\frac{2dx}{3f\,a^{2}}+\frac{2de}{3f^{2}a^{2}}-\frac{2i\left(3ifdx\,e^{fx+e}+3ifc\,e^{fx+e}-id\,e^{fx+e}+dfx+e^{2fx+2e}d+cf\right)}{3\left(e^{fx+e}-i\right)^{3}f^{2}a^{2}}-\frac{2d\ln\left(e^{fx+e}-i\right)}{3f^{2}a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(a+I*a*sinh(f*x+e))^2,x)
```

```
[Out] 2/3*d/f/a^2*x+2/3*d/f^2/a^2*e-2/3*I*(3*I*f*d*x*exp(f*x+e)+3*I*f*c*exp(f*x+e
)-I*d*exp(f*x+e)+d*f*x+exp(2*f*x+2*e)*d+c*f)/(exp(f*x+e)-I)^3/f^2/a^2-2/3*d
/f^2/a^2*ln(exp(f*x+e)-I)
```

maxima [B] time = 0.35, size = 257, normalized size = 1.63

$$\frac{1}{3}d\left(\frac{3\left(2\,fxe^{(3\,fx+3\,e)}+\left(-6i\,fxe^{(2\,e)}-2i\,e^{(2\,e)}\right)e^{(2\,fx)}-2\,e^{(fx+e)}\right)}{3\,a^2f^2e^{(3\,fx+3\,e)}-9i\,a^2f^2e^{(2\,fx+2\,e)}-9\,a^2f^2e^{(fx+e)}+3i\,a^2f^2}-\frac{2\,\log\left(-i\left(i\,e^{(fx+e)}+1\right)e^{(-e)}\right)}{a^2f^2}\right)+2\,c\left(\frac{\cdots}{\left(9\,a^2e^{(-fx-\cdots}\cdots}\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+I*a*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/3*d*(3*(2*f*x*e^(3*f*x + 3*e) + (-6*I*f*x*e^(2*e) - 2*I*e^(2*e))*e^(2*f*x
) - 2*e^(f*x + e))/(3*a^2*f^2*e^(3*f*x + 3*e) - 9*I*a^2*f^2*e^(2*f*x + 2*e)
 - 9*a^2*f^2*e^(f*x + e) + 3*I*a^2*f^2) - 2*log(-I*(I*e^(f*x + e) + 1)*e^(-
e))/(a^2*f^2)) + 2*c*(3*e^(-f*x - e)/((9*a^2*e^(-f*x - e) - 9*I*a^2*e^(-2*f
*x - 2*e) - 3*a^2*e^(-3*f*x - 3*e) + 3*I*a^2)*f) + I/((9*a^2*e^(-f*x - e) -
 9*I*a^2*e^(-2*f*x - 2*e) - 3*a^2*e^(-3*f*x - 3*e) + 3*I*a^2)*f))
```

mupad [B] time = 0.54, size = 160, normalized size = 1.01

$$-\frac{\frac{2\,d\,\ln\left(\mathrm{e}^{f\,x}\,\mathrm{e}^{e}-\mathrm{i}\right)}{3}+\mathrm{e}^{e+f\,x}\,\left(-\frac{d\,2\mathrm{i}}{3}+c\,f\,2\mathrm{i}+d\,\ln\left(\mathrm{e}^{f\,x}\,\mathrm{e}^{e}-\mathrm{i}\right)\,2\mathrm{i}\right)+\frac{2\,d\,\mathrm{e}^{2\,e+2\,f\,x}}{3}+f\,\left(\frac{2\,c}{3}+2\,d\,x\,\mathrm{e}^{2\,e+2\,f\,x}+\frac{d\,x\,\mathrm{e}^{3\,e+3\,f\,x}\,2\mathrm{i}}{3}\right)-\cdots}{a^2\,f^2\,{\left(1+\mathrm{e}^{e+f\,x}\,1\mathrm{i}\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/(a + a*sinh(e + f*x)*1i)^2,x)
```

```
[Out] -((2*d*log(exp(f*x)*exp(e) - 1i))/3 + exp(e + f*x)*(c*f*2i - (d*2i)/3 + d*l
og(exp(f*x)*exp(e) - 1i)*2i) + (2*d*exp(2*e + 2*f*x))/3 + f*((2*c)/3 + 2*d*
x*exp(2*e + 2*f*x) + (d*x*exp(3*e + 3*f*x)*2i)/3) - 2*d*exp(2*e + 2*f*x)*lo
g(exp(f*x)*exp(e) - 1i) - (d*exp(3*e + 3*f*x)*log(exp(f*x)*exp(e) - 1i)*2i)
/3)/(a^2*f^2*(exp(e + f*x)*1i + 1)^3)
```

sympy [A] time = 0.52, size = 184, normalized size = 1.16

$$\frac{2cfe^{3e}+2dfxe^{3e}-2de^{e}e^{-2fx}+\left(-6icfe^{2e}-6idfxe^{2e}-2ide^{2e}\right)e^{-fx}}{3a^2f^2e^{3e}-9ia^2f^2e^{2e}e^{-fx}-9a^2f^2e^{e}e^{-2fx}+3ia^2f^2e^{-3fx}}-\frac{2dx}{3a^2f}-\frac{2d\log\left(ie^{e}+e^{-fx}\right)}{3a^2f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+I*a*sinh(f*x+e))**2,x)
```

```
[Out] (2*c*f*exp(3*e) + 2*d*f*x*exp(3*e) - 2*d*exp(e)*exp(-2*f*x) + (-6*I*c*f*exp
(2*e) - 6*I*d*f*x*exp(2*e) - 2*I*d*exp(2*e))*exp(-f*x))/(3*a**2*f**2*exp(3*
e) - 9*I*a**2*f**2*exp(2*e)*exp(-f*x) - 9*a**2*f**2*exp(e)*exp(-2*f*x) + 3*
I*a**2*f**2*exp(-3*f*x)) - 2*d*x/(3*a**2*f) - 2*d*log(I*exp(e) + exp(-f*x))
/(3*a**2*f**2)
```

3.116 $\int \frac{1}{(c+dx)(a+ia\sinh(e+fx))^2}\,dx$

Optimal. Leaf size=26

$$\operatorname{Int}\left(\frac{1}{(c+dx)(a+ia\sinh(e+fx))^2},x\right)$$

[Out] Unintegrable(1/(d*x+c)/(a+I*a*sinh(f*x+e))^2,x)

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)(a+ia\sinh(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

[In] Int[1/((c + d*x)*(a + I*a*Sinh[e + f*x])^2),x]

[Out] Defer[Int][1/((c + d*x)*(a + I*a*Sinh[e + f*x])^2), x]

Rubi steps

$$\int \frac{1}{(c+dx)(a+ia\sinh(e+fx))^2}\,dx = \int \frac{1}{(c+dx)(a+ia\sinh(e+fx))^2}\,dx$$

Mathematica [A] time = 35.25, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)(a+ia\sinh(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[1/((c + d*x)*(a + I*a*Sinh[e + f*x])^2),x]

[Out] Integrate[1/((c + d*x)*(a + I*a*Sinh[e + f*x])^2), x]

fricas [A] time = 0.63, size = 0, normalized size = 0.00

$$\frac{-2i\,d^2f^2x^2 - 4i\,cdf^2x - 2i\,c^2f^2 + 4i\,d^2 + \left(2i\,d^2fx + 2i\,cdf - 4i\,d^2\right)e^{(2\,fx+2\,e)} + 2\left(3\,d^2f^2x^2 + 3\,c^2f^2 + cdf - 4\,d^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+I*a*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] (-2*I*d^2*f^2*x^2 - 4*I*c*d*f^2*x - 2*I*c^2*f^2 + 4*I*d^2 + (2*I*d^2*f*x +
2*I*c*d*f - 4*I*d^2)*e^(2*f*x + 2*e) + 2*(3*d^2*f^2*x^2 + 3*c^2*f^2 + c*d*f
 - 4*d^2 + (6*c*d*f^2 + d^2*f)*x)*e^(f*x + e) + (3*I*a^2*d^3*f^3*x^3 + 9*I*
a^2*c*d^2*f^3*x^2 + 9*I*a^2*c^2*d*f^3*x + 3*I*a^2*c^3*f^3 + 3*(a^2*d^3*f^3*
x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*e^(3*f*x + 3*e
) + (-9*I*a^2*d^3*f^3*x^3 - 27*I*a^2*c*d^2*f^3*x^2 - 27*I*a^2*c^2*d*f^3*x -
 9*I*a^2*c^3*f^3)*e^(2*f*x + 2*e) - 9*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^
2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*e^(f*x + e))*integral((2*I*d^3*f^2*x^2
 + 4*I*c*d^2*f^2*x + 2*I*c^2*d*f^2 - 12*I*d^3)/(-3*I*a^2*d^4*f^3*x^4 - 12*I
*a^2*c*d^3*f^3*x^3 - 18*I*a^2*c^2*d^2*f^3*x^2 - 12*I*a^2*c^3*d*f^3*x - 3*I*
a^2*c^4*f^3 + 3*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*
x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*e^(f*x + e)), x))/(3*I*a^2*d^3*f^3*x
^3 + 9*I*a^2*c*d^2*f^3*x^2 + 9*I*a^2*c^2*d*f^3*x + 3*I*a^2*c^3*f^3 + 3*(a^2
*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*e^(3*
f*x + 3*e) + (-9*I*a^2*d^3*f^3*x^3 - 27*I*a^2*c*d^2*f^3*x^2 - 27*I*a^2*c^2*
d*f^3*x - 9*I*a^2*c^3*f^3)*e^(2*f*x + 2*e) - 9*(a^2*d^3*f^3*x^3 + 3*a^2*c*d
^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*e^(f*x + e))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(i\,a\sinh\left(fx+e\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+I*a*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)*(I*a*sinh(f*x + e) + a)^2), x)
```

maple [A] time = 0.92, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(a+ia\sinh\left(fx+e\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)/(a+I*a*sinh(f*x+e))^2,x)
```

```
[Out] int(1/(d*x+c)/(a+I*a*sinh(f*x+e))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{-2i\,d^2f^2x^2-4i\,cdf^2x-2i\,c^2f^2+4i\,d^2+\left(2i\,d^2fxe\right.}{3i\,a^2d^3f^3x^3+9i\,a^2cd^2f^3x^2+9i\,a^2c^2df^3x+3i\,a^2c^3f^3+3\left(a^2d^3f^3x^3e^{(3e)}+3\,a^2cd^2f^3x^2e^{(3e)}+3\,a^2c^2dfxe^{(3e)}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+I*a*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] (-2*I*d^2*f^2*x^2 - 4*I*c*d*f^2*x - 2*I*c^2*f^2 + 4*I*d^2 + (2*I*d^2*f*x*e^
(2*e) + 2*I*c*d*f*e^(2*e) - 4*I*d^2*e^(2*e))*e^(2*f*x) + 2*(3*d^2*f^2*x^2*e
^e + 3*c^2*f^2*e^e + c*d*f*e^e - 4*d^2*e^e + (6*c*d*f^2*e^e + d^2*f*e^e)*x)
*e^(f*x))/(3*I*a^2*d^3*f^3*x^3 + 9*I*a^2*c*d^2*f^3*x^2 + 9*I*a^2*c^2*d*f^3*
x + 3*I*a^2*c^3*f^3 + 3*(a^2*d^3*f^3*x^3*e^(3*e) + 3*a^2*c*d^2*f^3*x^2*e^(3
*e) + 3*a^2*c^2*d*f^3*x*e^(3*e) + a^2*c^3*f^3*e^(3*e))*e^(3*f*x) + (-9*I*a^
2*d^3*f^3*x^3*e^(2*e) - 27*I*a^2*c*d^2*f^3*x^2*e^(2*e) - 27*I*a^2*c^2*d*f^3
*x*e^(2*e) - 9*I*a^2*c^3*f^3*e^(2*e))*e^(2*f*x) - 9*(a^2*d^3*f^3*x^3*e^e +
3*a^2*c*d^2*f^3*x^2*e^e + 3*a^2*c^2*d*f^3*x*e^e + a^2*c^3*f^3*e^e)*e^(f*x))
 - integrate(2*(d^3*f^2*x^2 + 2*c*d^2*f^2*x + c^2*d*f^2 - 6*d^3)/(3*a^2*d^4
*f^3*x^4 + 12*a^2*c*d^3*f^3*x^3 + 18*a^2*c^2*d^2*f^3*x^2 + 12*a^2*c^3*d*f^3
*x + 3*a^2*c^4*f^3 + (3*I*a^2*d^4*f^3*x^4*e^e + 12*I*a^2*c*d^3*f^3*x^3*e^e
+ 18*I*a^2*c^2*d^2*f^3*x^2*e^e + 12*I*a^2*c^3*d*f^3*x*e^e + 3*I*a^2*c^4*f^3
*e^e)*e^(f*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+a\sinh\left(e+f\,x\right)\,1\mathrm{i}\right)^2\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a*sinh(e + f*x)*1i)^2*(c + d*x)),x)
```

```
[Out] int(1/((a + a*sinh(e + f*x)*1i)^2*(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+I*a*sinh(f*x+e))**2,x)
```

```
[Out] Timed out
```

3.117 $\int \frac{1}{(c+dx)^2(a+ia\sinh(e+fx))^2}\,dx$

Optimal. Leaf size=26

$$\operatorname{Int}\left(\frac{1}{(c+dx)^2(a+ia\sinh(e+fx))^2},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)^2/(a+I*a*sinh(f*x+e))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)^2(a+ia\sinh(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)^2*(a + I*a*Sinh[e + f*x])^2),x]
```

```
[Out] Defer[Int][1/((c + d*x)^2*(a + I*a*Sinh[e + f*x])^2), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)^2(a+ia\sinh(e+fx))^2}\,dx=\int \frac{1}{(c+dx)^2(a+ia\sinh(e+fx))^2}\,dx$$

Mathematica [A] time = 37.72, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)^2(a+ia\sinh(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)^2*(a + I*a*Sinh[e + f*x])^2),x]
```

```
[Out] Integrate[1/((c + d*x)^2*(a + I*a*Sinh[e + f*x])^2), x]
```

fricas [A] time = 1.19, size = 0, normalized size = 0.00

$$-2i\,d^2f^2x^2-4i\,cdf^2x-2i\,c^2f^2+12i\,d^2+\left(4i\,d^2fx+4i\,cdf-12i\,d^2\right)e^{\left(2\,fx+2\,e\right)}+2\left(3\,d^2f^2x^2+3\,c^2f^2+2\,cdf-1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+I*a*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] (-2*I*d^2*f^2*x^2 - 4*I*c*d*f^2*x - 2*I*c^2*f^2 + 12*I*d^2 + (4*I*d^2*f*x +
 4*I*c*d*f - 12*I*d^2)*e^(2*f*x + 2*e) + 2*(3*d^2*f^2*x^2 + 3*c^2*f^2 + 2*c
*d*f - 12*d^2 + 2*(3*c*d*f^2 + d^2*f)*x)*e^(f*x + e) + (3*I*a^2*d^4*f^3*x^4
 + 12*I*a^2*c*d^3*f^3*x^3 + 18*I*a^2*c^2*d^2*f^3*x^2 + 12*I*a^2*c^3*d*f^3*x
 + 3*I*a^2*c^4*f^3 + 3*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d
^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*e^(3*f*x + 3*e) + (-9*I*a^2*d
^4*f^3*x^4 - 36*I*a^2*c*d^3*f^3*x^3 - 54*I*a^2*c^2*d^2*f^3*x^2 - 36*I*a^2*c
^3*d*f^3*x - 9*I*a^2*c^4*f^3)*e^(2*f*x + 2*e) - 9*(a^2*d^4*f^3*x^4 + 4*a^2*
c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*e^
(f*x + e))*integral((4*I*d^3*f^2*x^2 + 8*I*c*d^2*f^2*x + 4*I*c^2*d*f^2 - 48
*I*d^3)/(-3*I*a^2*d^5*f^3*x^5 - 15*I*a^2*c*d^4*f^3*x^4 - 30*I*a^2*c^2*d^3*f
^3*x^3 - 30*I*a^2*c^3*d^2*f^3*x^2 - 15*I*a^2*c^4*d*f^3*x - 3*I*a^2*c^5*f^3
+ 3*(a^2*d^5*f^3*x^5 + 5*a^2*c*d^4*f^3*x^4 + 10*a^2*c^2*d^3*f^3*x^3 + 10*a^
2*c^3*d^2*f^3*x^2 + 5*a^2*c^4*d*f^3*x + a^2*c^5*f^3)*e^(f*x + e)), x))/(3*I
*a^2*d^4*f^3*x^4 + 12*I*a^2*c*d^3*f^3*x^3 + 18*I*a^2*c^2*d^2*f^3*x^2 + 12*I
*a^2*c^3*d*f^3*x + 3*I*a^2*c^4*f^3 + 3*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x
^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*e^(3*f*x + 3*
e) + (-9*I*a^2*d^4*f^3*x^4 - 36*I*a^2*c*d^3*f^3*x^3 - 54*I*a^2*c^2*d^2*f^3*
x^2 - 36*I*a^2*c^3*d*f^3*x - 9*I*a^2*c^4*f^3)*e^(2*f*x + 2*e) - 9*(a^2*d^4*
f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x +
 a^2*c^4*f^3)*e^(f*x + e))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2 \left(i\,a \sinh\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+I*a*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)^2*(I*a*sinh(f*x + e) + a)^2), x)
```

maple [A] time = 1.38, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2 \left(a+ia\sinh\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^2/(a+I*a*sinh(f*x+e))^2,x)
```

```
[Out] int(1/(d*x+c)^2/(a+I*a*sinh(f*x+e))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{-2i\,d^2f^2x^2-4i\,}{3i\,a^2d^4f^3x^4+12i\,a^2cd^3f^3x^3+18i\,a^2c^2d^2f^3x^2+12i\,a^2c^3df^3x+3i\,a^2c^4f^3+3\left(a^2d^4f^3x^4e^{(3\,e)}+4\,a^2cd^3f^3x^3e^{(3\,e)}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+I*a*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] (-2*I*d^2*f^2*x^2 - 4*I*c*d*f^2*x - 2*I*c^2*f^2 + 12*I*d^2 + (4*I*d^2*f*x*e
^(2*e) + 4*I*c*d*f*e^(2*e) - 12*I*d^2*e^(2*e))*e^(2*f*x) + 2*(3*d^2*f^2*x^2
*e^e + 3*c^2*f^2*e^e + 2*c*d*f*e^e - 12*d^2*e^e + 2*(3*c*d*f^2*e^e + d^2*f*
e^e)*x)*e^(f*x))/(3*I*a^2*d^4*f^3*x^4 + 12*I*a^2*c*d^3*f^3*x^3 + 18*I*a^2*c
^2*d^2*f^3*x^2 + 12*I*a^2*c^3*d*f^3*x + 3*I*a^2*c^4*f^3 + 3*(a^2*d^4*f^3*x^
4*e^(3*e) + 4*a^2*c*d^3*f^3*x^3*e^(3*e) + 6*a^2*c^2*d^2*f^3*x^2*e^(3*e) + 4
*a^2*c^3*d*f^3*x*e^(3*e) + a^2*c^4*f^3*e^(3*e))*e^(3*f*x) + (-9*I*a^2*d^4*f
^3*x^4*e^(2*e) - 36*I*a^2*c*d^3*f^3*x^3*e^(2*e) - 54*I*a^2*c^2*d^2*f^3*x^2*
e^(2*e) - 36*I*a^2*c^3*d*f^3*x*e^(2*e) - 9*I*a^2*c^4*f^3*e^(2*e))*e^(2*f*x)
 - 9*(a^2*d^4*f^3*x^4*e^e + 4*a^2*c*d^3*f^3*x^3*e^e + 6*a^2*c^2*d^2*f^3*x^2
*e^e + 4*a^2*c^3*d*f^3*x*e^e + a^2*c^4*f^3*e^e)*e^(f*x)) - integrate(4*(d^3
*f^2*x^2 + 2*c*d^2*f^2*x + c^2*d*f^2 - 12*d^3)/(3*a^2*d^5*f^3*x^5 + 15*a^2*
c*d^4*f^3*x^4 + 30*a^2*c^2*d^3*f^3*x^3 + 30*a^2*c^3*d^2*f^3*x^2 + 15*a^2*c^
4*d*f^3*x + 3*a^2*c^5*f^3 + (3*I*a^2*d^5*f^3*x^5*e^e + 15*I*a^2*c*d^4*f^3*x
^4*e^e + 30*I*a^2*c^2*d^3*f^3*x^3*e^e + 30*I*a^2*c^3*d^2*f^3*x^2*e^e + 15*I
*a^2*c^4*d*f^3*x*e^e + 3*I*a^2*c^5*f^3*e^e)*e^(f*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{{\left(a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1{}\mathrm{i}\right)}^2\,{\left(c+d\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a*sinh(e + f*x)*1i)^2*(c + d*x)^2),x)
```

```
[Out] int(1/((a + a*sinh(e + f*x)*1i)^2*(c + d*x)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)**2/(a+I*a*sinh(f*x+e))**2,x)
```

```
[Out] Timed out
```

3.118 $\int x^4 \sqrt{a+ia\sinh(e+fx)}\,dx$

Optimal. Leaf size=181

$$\frac{768\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{f^5}-\frac{384x\sqrt{a+ia\sinh(e+fx)}}{f^4}+\frac{96x^2\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sin}}{f^3}$$

```
[Out] -384*x*(a+I*a*sinh(f*x+e))^(1/2)/f^4-16*x^3*(a+I*a*sinh(f*x+e))^(1/2)/f^2+7
68*(a+I*a*sinh(f*x+e))^(1/2)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/f^5+96*x^2*(a+I*a
*sinh(f*x+e))^(1/2)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/f^3+2*x^4*(a+I*a*sinh(f*x+
e))^(1/2)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/f
```

Rubi [A] time = 0.21, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3319, 3296, 2638}

$$-\frac{16x^3\sqrt{a+ia\sinh(e+fx)}}{f^2}+\frac{96x^2\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{f^3}-\frac{384x\sqrt{a+ia\sinh(e+fx)}}{f^4}+\frac{768\,\mathrm{t}}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] (-384*x*Sqrt[a + I*a*Sinh[e + f*x]])/f^4 - (16*x^3*Sqrt[a + I*a*Sinh[e + f*
x]])/f^2 + (768*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh[e/2 + (I/4)*Pi + (f*x)/2])
/f^5 + (96*x^2*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/
f^3 + (2*x^4*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/f
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
```

```
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^4\sqrt{a+ia\sinh(e+fx)}\,dx = \left(\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int x^4\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx$$

$$= \frac{2x^4\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f} - \frac{\left(8\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sin\cdots\right.}{\cdots}$$

$$= -\frac{16x^3\sqrt{a+ia\sinh(e+fx)}}{f^2} + \frac{2x^4\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f} - \cdots$$

$$= -\frac{16x^3\sqrt{a+ia\sinh(e+fx)}}{f^2} + \frac{96x^2\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f^3} + \cdots$$

$$= -\frac{384x\sqrt{a+ia\sinh(e+fx)}}{f^4} - \frac{16x^3\sqrt{a+ia\sinh(e+fx)}}{f^2} + \frac{96x^2\sqrt{a+ia\sinh(e\cdots}{\cdots}$$

$$= -\frac{384x\sqrt{a+ia\sinh(e+fx)}}{f^4} - \frac{16x^3\sqrt{a+ia\sinh(e+fx)}}{f^2} + \frac{768\sqrt{a+ia\sinh(e+\cdots}{\cdots}$$

Mathematica [A] time = 0.22, size = 141, normalized size = 0.78

$$\frac{2\sqrt{a+ia\sinh(e+fx)}\left(\left(f^4x^4-8if^3x^3+48f^2x^2-192ifx+384\right)\sinh\left(\frac{1}{2}(e+fx)\right)+i\left(f^4x^4+8if^3x^3+48f^2x^2\cdots\right.\right.}{f^5\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] (2*(I*(384 + (192*I)*f*x + 48*f^2*x^2 + (8*I)*f^3*x^3 + f^4*x^4)*Cosh[(e +
f*x)/2] + (384 - (192*I)*f*x + 48*f^2*x^2 - (8*I)*f^3*x^3 + f^4*x^4)*Sinh[(
e + f*x)/2])*Sqrt[a + I*a*Sinh[e + f*x]])/(f^5*(Cosh[(e + f*x)/2] + I*Sinh[
(e + f*x)/2]))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{i\,a\sinh\left(fx+e\right)+a}\,x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)*x^4, x)
```

maple [A] time = 0.10, size = 174, normalized size = 0.96

$$\frac{i\sqrt{2}\,\sqrt{a\left(ie^{2fx+2e}+2\,e^{fx+e}-i\right)e^{-fx-e}}\,\left(ix^4f^4+f^4x^4e^{fx+e}+8ix^3f^3-8f^3x^3e^{fx+e}+48ix^2f^2+48f^2x^2e^{fx+e}+1\right.}{\left(ie^{2fx+2e}+2\,e^{fx+e}-i\right)f^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+I*a*sinh(f*x+e))^(1/2),x)
```

```
[Out] I*2^(1/2)*(a*(I*exp(2*f*x+2*e)+2*exp(f*x+e)-I)*exp(-f*x-e))^(1/2)/(I*exp(2*
f*x+2*e)+2*exp(f*x+e)-I)*(I*x^4*f^4+f^4*x^4*exp(f*x+e)+8*I*x^3*f^3-8*f^3*x^
3*exp(f*x+e)+48*I*x^2*f^2+48*f^2*x^2*exp(f*x+e)+192*I*x*f-192*f*x*exp(f*x+e
)+384*I+384*exp(f*x+e))*(exp(f*x+e)-I)/f^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{i\,a\sinh\left(fx+e\right)+a}\,x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)*x^4, x)
```

mupad [B] time = 0.72, size = 149, normalized size = 0.82

$$\frac{\sqrt{2}\,\left(e^{e+fx}+1i\right)\sqrt{a\,e^{-e-fx}\left(e^{e+fx}-i\right)^2 1i}\,\left(384\,e^{e+fx}+f\,x\,192i+f^2\,x^2\,48i+f^3\,x^3\,8i+f^4\,x^4\,1i+48\,f^2\,x^2\,e^{e+f}\right.}{f^5\,\left(e^{2\,e+2\,f\,x}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + a*sinh(e + f*x)*1i)^(1/2),x)
```

```
[Out] (2^(1/2)*(exp(e + f*x) + 1i)*(a*exp(- e - f*x)*(exp(e + f*x) - 1i)^2*1i)^(1
/2)*(384*exp(e + f*x) + f*x*192i + f^2*x^2*48i + f^3*x^3*8i + f^4*x^4*1i +
48*f^2*x^2*exp(e + f*x) - 8*f^3*x^3*exp(e + f*x) + f^4*x^4*exp(e + f*x) - 1
92*f*x*exp(e + f*x) + 384i))/(f^5*(exp(2*e + 2*f*x) + 1))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^4 \sqrt{ia \left(\sinh \left(e + fx\right) - i\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+I*a*sinh(f*x+e))**(1/2),x)
```

```
[Out] Integral(x**4*sqrt(I*a*(sinh(e + f*x) - I)), x)
```

3.119 $\int x^3\sqrt{a+ia\sinh(e+fx)}\,dx$

Optimal. Leaf size=136

$$-\frac{96\sqrt{a+ia\sinh(e+fx)}}{f^4}+\frac{48x\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{f^3}-\frac{12x^2\sqrt{a+ia\sinh(e+fx)}}{f^2}+\frac{2x^3\tanh}{}$$

```
[Out] -96*(a+I*a*sinh(f*x+e))^(1/2)/f^4-12*x^2*(a+I*a*sinh(f*x+e))^(1/2)/f^2+48*x
*(a+I*a*sinh(f*x+e))^(1/2)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/f^3+2*x^3*(a+I*a*si
nh(f*x+e))^(1/2)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/f
```

Rubi [A] time = 0.17, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3319, 3296, 2638}

$$-\frac{12x^2\sqrt{a+ia\sinh(e+fx)}}{f^2}-\frac{96\sqrt{a+ia\sinh(e+fx)}}{f^4}+\frac{48x\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{f^3}+\frac{2x^3\tanh}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] (-96*Sqrt[a + I*a*Sinh[e + f*x]])/f^4 - (12*x^2*Sqrt[a + I*a*Sinh[e + f*x]]
)/f^2 + (48*x*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/f
^3 + (2*x^3*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/f
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^3\sqrt{a+ia\sinh(e+fx)}\,dx = \left(\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int x^3\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx$$

$$= \frac{2x^3\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f} - \frac{\left(6\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sin}\right.}{}$$

$$= -\frac{12x^2\sqrt{a+ia\sinh(e+fx)}}{f^2} + \frac{2x^3\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f} - \frac{(2}{}$$

$$= -\frac{12x^2\sqrt{a+ia\sinh(e+fx)}}{f^2} + \frac{48x\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f^3} + \frac{2}{}$$

$$= -\frac{96\sqrt{a+ia\sinh(e+fx)}}{f^4} - \frac{12x^2\sqrt{a+ia\sinh(e+fx)}}{f^2} + \frac{48x\sqrt{a+ia\sinh(e+f}}{f}$$

Mathematica [A] time = 0.29, size = 125, normalized size = 0.92

$$\frac{2\sqrt{a+ia\sinh(e+fx)}\left(\left(f^3x^3-6if^2x^2+24fx-48i\right)\sinh\left(\frac{1}{2}(e+fx)\right)+i\left(f^3x^3+6if^2x^2+24fx+48i\right)\cosh\left(\frac{1}{2}\right.\right.}{f^4\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] (2*(I*(48*I + 24*f*x + (6*I)*f^2*x^2 + f^3*x^3)*Cosh[(e + f*x)/2] + (-48*I
+ 24*f*x - (6*I)*f^2*x^2 + f^3*x^3)*Sinh[(e + f*x)/2])*Sqrt[a + I*a*Sinh[e
+ f*x]])/(f^4*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2]))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{i\,a\sinh\left(fx+e\right)+a}\,x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)*x^3, x)
```

maple [A] time = 0.07, size = 151, normalized size = 1.11

$$\frac{i\sqrt{2}\,\sqrt{a\left(ie^{2fx+2e}+2\,e^{fx+e}-i\right)e^{-fx-e}}\,\left(ix^3f^3+f^3x^3e^{fx+e}+6ix^2f^2-6f^2x^2e^{fx+e}+24ixf+24fx\,e^{fx+e}+48i-\right.}{\left(ie^{2fx+2e}+2\,e^{fx+e}-i\right)f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+I*a*sinh(f*x+e))^(1/2),x)
```

```
[Out] I*2^(1/2)*(a*(I*exp(2*f*x+2*e)+2*exp(f*x+e)-I)*exp(-f*x-e))^(1/2)/(I*exp(2*
f*x+2*e)+2*exp(f*x+e)-I)*(I*x^3*f^3+f^3*x^3*exp(f*x+e)+6*I*x^2*f^2-6*f^2*x^
2*exp(f*x+e)+24*I*x*f+24*f*x*exp(f*x+e)+48*I-48*exp(f*x+e))*(exp(f*x+e)-I)/
f^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{i\,a\sinh\left(fx+e\right)+a}\,x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)*x^3, x)
```

mupad [B] time = 0.36, size = 126, normalized size = 0.93

$$\frac{\sqrt{2}\,\left(e^{e+f\,x}+1\mathrm{i}\right)\,\sqrt{a\,e^{-e-f\,x}\,{\left(e^{e+f\,x}-\mathrm{i}\right)}^2\,1\mathrm{i}}\,\left(f^3\,x^3\,e^{e+f\,x}+f\,x\,24\mathrm{i}+f^2\,x^2\,6\mathrm{i}+f^3\,x^3\,1\mathrm{i}-6\,f^2\,x^2\,e^{e+f\,x}-48\,e^{e+f\,x}\right.}{f^4\,\left(e^{2\,e+2\,f\,x}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + a*sinh(e + f*x)*1i)^(1/2),x)
```

```
[Out] (2^(1/2)*(exp(e + f*x) + 1i)*(a*exp(- e - f*x)*(exp(e + f*x) - 1i)^2*1i)^(1
/2)*(f*x*24i - 48*exp(e + f*x) + f^2*x^2*6i + f^3*x^3*1i - 6*f^2*x^2*exp(e
+ f*x) + f^3*x^3*exp(e + f*x) + 24*f*x*exp(e + f*x) + 48i))/(f^4*(exp(2*e +
 2*f*x) + 1))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3 \sqrt{ia\left(\sinh\left(e+fx\right)-i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+I*a*sinh(f*x+e))**(1/2),x)
```

```
[Out] Integral(x**3*sqrt(I*a*(sinh(e + f*x) - I)), x)
```

3.120 $\int x^2\sqrt{a+ia\sinh(e+fx)}\,dx$

Optimal. Leaf size=111

$$\frac{16\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{f^3}-\frac{8x\sqrt{a+ia\sinh(e+fx)}}{f^2}+\frac{2x^2\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{f}$$

```
[Out] -8*x*(a+I*a*sinh(f*x+e))^(1/2)/f^2+16*(a+I*a*sinh(f*x+e))^(1/2)*tanh(1/2*e+
1/4*I*Pi+1/2*f*x)/f^3+2*x^2*(a+I*a*sinh(f*x+e))^(1/2)*tanh(1/2*e+1/4*I*Pi+1
/2*f*x)/f
```

Rubi [A] time = 0.14, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3319, 3296, 2638}

$$-\frac{8x\sqrt{a+ia\sinh(e+fx)}}{f^2}+\frac{16\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{f^3}+\frac{2x^2\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{f}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] (-8*x*Sqrt[a + I*a*Sinh[e + f*x]])/f^2 + (16*Sqrt[a + I*a*Sinh[e + f*x]]*Ta
nh[e/2 + (I/4)*Pi + (f*x)/2])/f^3 + (2*x^2*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh
[e/2 + (I/4)*Pi + (f*x)/2])/f
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^2\sqrt{a+ia\sinh(e+fx)}\,dx = \left(\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int x^2\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx$$

$$= \frac{2x^2\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f} - \frac{\left(4\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sin\right.}{}$$

$$= -\frac{8x\sqrt{a+ia\sinh(e+fx)}}{f^2} + \frac{2x^2\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f} - \frac{(8ic}{}$$

$$= -\frac{8x\sqrt{a+ia\sinh(e+fx)}}{f^2} + \frac{16\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f^3} + \frac{2x^2\sqrt{}}{}$$

Mathematica [A] time = 0.22, size = 105, normalized size = 0.95

$$\frac{2\sqrt{a+ia\sinh(e+fx)}\left(\left(f^2x^2-4ifx+8\right)\sinh\left(\frac{1}{2}(e+fx)\right)+i\left(f^2x^2+4ifx+8\right)\cosh\left(\frac{1}{2}(e+fx)\right)\right)}{f^3\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] (2*(I*(8 + (4*I)*f*x + f^2*x^2)*Cosh[(e + f*x)/2] + (8 - (4*I)*f*x + f^2*x^
2)*Sinh[(e + f*x)/2])*Sqrt[a + I*a*Sinh[e + f*x]])/(f^3*(Cosh[(e + f*x)/2]
+ I*Sinh[(e + f*x)/2]))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{i\,a\sinh\left(fx+e\right)+a}\,x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)*x^2, x)
```

maple [A] time = 0.07, size = 128, normalized size = 1.15

$$\frac{i\sqrt{2}\,\sqrt{a\left(i\mathrm{e}^{2fx+2e}+2\,\mathrm{e}^{fx+e}-i\right)\mathrm{e}^{-fx-e}}\,\left(ix^{2}f^{2}+f^{2}x^{2}\mathrm{e}^{fx+e}+4ixf-4fx\,\mathrm{e}^{fx+e}+8i+8\,\mathrm{e}^{fx+e}\right)\left(\mathrm{e}^{fx+e}-i\right)}{\left(i\mathrm{e}^{2fx+2e}+2\,\mathrm{e}^{fx+e}-i\right)f^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+I*a*sinh(f*x+e))^(1/2),x)
```

```
[Out] I*2^(1/2)*(a*(I*exp(2*f*x+2*e)+2*exp(f*x+e)-I)*exp(-f*x-e))^(1/2)/(I*exp(2*
f*x+2*e)+2*exp(f*x+e)-I)*(I*x^2*f^2+f^2*x^2*exp(f*x+e)+4*I*x*f-4*f*x*exp(f*
x+e)+8*I+8*exp(f*x+e))*(exp(f*x+e)-I)/f^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{i\,a\sinh\left(fx+e\right)+a}\,x^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)*x^2, x)
```

mupad [B] time = 0.29, size = 92, normalized size = 0.83

$$\frac{\sqrt{2}\,\sqrt{a\,\mathrm{e}^{-e-f\,x}\,{\left(\mathrm{e}^{e+f\,x}-\mathrm{i}\right)}^2\,1\mathrm{i}}\,\left(8\,\mathrm{e}^{e+f\,x}+f\,x\,4\mathrm{i}+f^2\,x^2\,1\mathrm{i}+f^2\,x^2\,\mathrm{e}^{e+f\,x}-4\,f\,x\,\mathrm{e}^{e+f\,x}+8\mathrm{i}\right)}{f^3\,\left(\mathrm{e}^{e+f\,x}-\mathrm{i}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + a*sinh(e + f*x)*1i)^(1/2),x)
```

```
[Out] (2^(1/2)*(a*exp(- e - f*x)*(exp(e + f*x) - 1i)^2*1i)^(1/2)*(8*exp(e + f*x)
+ f*x*4i + f^2*x^2*1i + f^2*x^2*exp(e + f*x) - 4*f*x*exp(e + f*x) + 8i))/(f
^3*(exp(e + f*x) - 1i))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{2}\sqrt{ia\left(\sinh\left(e+fx\right)-i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+I*a*sinh(f*x+e))**(1/2),x)
```

```
[Out] Integral(x**2*sqrt(I*a*(sinh(e + f*x) - I)), x)
```

3.121 $\int x\sqrt{a+ia\sinh(e+fx)}\,dx$

Optimal. Leaf size=66

$$\frac{2x\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{f}-\frac{4\sqrt{a+ia\sinh(e+fx)}}{f^2}$$

```
[Out] -4*(a+I*a*sinh(f*x+e))^(1/2)/f^2+2*x*(a+I*a*sinh(f*x+e))^(1/2)*tanh(1/2*e+1
/4*I*Pi+1/2*f*x)/f
```

Rubi [A] time = 0.08, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {3319, 3296, 2638}

$$\frac{2x\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{f}-\frac{4\sqrt{a+ia\sinh(e+fx)}}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] (-4*Sqrt[a + I*a*Sinh[e + f*x]])/f^2 + (2*x*Sqrt[a + I*a*Sinh[e + f*x]]*Tan
h[e/2 + (I/4)*Pi + (f*x)/2])/f
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x\sqrt{a+ia\sinh(e+fx)}\,dx = \left(\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int x\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx$$

$$= \frac{2x\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f} - \frac{\left(2\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh\cdots}\right.}{f\cdots}$$

$$= -\frac{4\sqrt{a+ia\sinh(e+fx)}}{f^2} + \frac{2x\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f}$$

Mathematica [A] time = 0.16, size = 87, normalized size = 1.32

$$\frac{2\sqrt{a+ia\sinh(e+fx)}\left((fx-2i)\sinh\left(\frac{1}{2}(e+fx)\right)+(-2+ifx)\cosh\left(\frac{1}{2}(e+fx)\right)\right)}{f^2\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] (2*((-2 + I*f*x)*Cosh[(e + f*x)/2] + (-2*I + f*x)*Sinh[(e + f*x)/2])*Sqrt[a
 + I*a*Sinh[e + f*x]])/(f^2*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2]))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{i\,a\sinh\left(fx+e\right)+a}\,x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)*x, x)
```

maple [A] time = 0.06, size = 105, normalized size = 1.59

$$\frac{i\sqrt{2}\,\sqrt{a\left(i\mathrm{e}^{2fx+2e}+2\,\mathrm{e}^{fx+e}-i\right)\mathrm{e}^{-fx-e}}\,\left(ixf+fx\,\mathrm{e}^{fx+e}+2i-2\,\mathrm{e}^{fx+e}\right)\left(\mathrm{e}^{fx+e}-i\right)}{\left(i\mathrm{e}^{2fx+2e}+2\,\mathrm{e}^{fx+e}-i\right)f^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+I*a*sinh(f*x+e))^(1/2),x)
```

```
[Out] I*2^(1/2)*(a*(I*exp(2*f*x+2*e)+2*exp(f*x+e)-I)*exp(-f*x-e))^(1/2)/(I*exp(2*
f*x+2*e)+2*exp(f*x+e)-I)*(I*x*f+f*x*exp(f*x+e)+2*I-2*exp(f*x+e))*(exp(f*x+e
)-I)/f^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{i\,a\sinh\left(fx+e\right)+a}\,x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)*x, x)
```

mupad [B] time = 0.27, size = 80, normalized size = 1.21

$$\frac{\sqrt{2}\,\left(\mathrm{e}^{e+f\,x}+1\mathrm{i}\right)\,\left(f\,x\,\mathrm{e}^{e+f\,x}+f\,x\,1\mathrm{i}-2\,\mathrm{e}^{e+f\,x}+2\mathrm{i}\right)\,\sqrt{a\,\mathrm{e}^{-e-f\,x}\,{\left(\mathrm{e}^{e+f\,x}-\mathrm{i}\right)}^2\,1\mathrm{i}}}{f^2\,\left(\mathrm{e}^{2\,e+2\,f\,x}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + a*sinh(e + f*x)*1i)^(1/2),x)
```

```
[Out] (2^(1/2)*(exp(e + f*x) + 1i)*(f*x*1i - 2*exp(e + f*x) + f*x*exp(e + f*x) +
2i)*(a*exp(- e - f*x)*(exp(e + f*x) - 1i)^2*1i)^(1/2))/(f^2*(exp(2*e + 2*f*
x) + 1))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\sqrt{ia\left(\sinh\left(e+fx\right)-i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(f*x+e))**(1/2),x)
```

```
[Out] Integral(x*sqrt(I*a*(sinh(e + f*x) - I)), x)
```

3.122 $\int \frac{\sqrt{a+ia\sinh(e+fx)}}{x}\,dx$

Optimal. Leaf size=125

$$i\sinh\left(\frac{1}{4}(2e-i\pi)\right)\text{Chi}\left(\frac{fx}{2}\right)\text{sech}\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}+i\cosh\left(\frac{1}{4}(2e-i\pi)\right)\text{Shi}\left(\frac{fx}{2}\right)\text{sech}\left(\frac{e}{2}+\right.$$

```
[Out] sinh(1/2*e+1/4*I*Pi)*sech(1/2*e+1/4*I*Pi+1/2*f*x)*Shi(1/2*f*x)*(a+I*a*sinh(
f*x+e))^(1/2)+Chi(1/2*f*x)*sech(1/2*e+1/4*I*Pi+1/2*f*x)*cosh(1/2*e+1/4*I*Pi
)*(a+I*a*sinh(f*x+e))^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {3319, 3303, 3298, 3301}

$$i\sinh\left(\frac{1}{4}(2e-i\pi)\right)\text{Chi}\left(\frac{fx}{2}\right)\text{sech}\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}+i\cosh\left(\frac{1}{4}(2e-i\pi)\right)\text{Shi}\left(\frac{fx}{2}\right)\text{sech}\left(\frac{e}{2}+\right.$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + I*a*Sinh[e + f*x]]/x,x]
```

```
[Out] I*CoshIntegral[(f*x)/2]*Sech[e/2 + (I/4)*Pi + (f*x)/2]*Sinh[(2*e - I*Pi)/4]
*Sqrt[a + I*a*Sinh[e + f*x]] + I*Cosh[(2*e - I*Pi)/4]*Sech[e/2 + (I/4)*Pi +
 (f*x)/2]*Sqrt[a + I*a*Sinh[e + f*x]]*SinhIntegral[(f*x)/2]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+ia\sinh(e+fx)}}{x}\,dx = \left(\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int \frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)}{x}\,dx$$

$$= \left(\cosh\left(\frac{1}{4}(2e-i\pi)\right)\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int \frac{\sinh\left(\frac{fx}{2}\right)}{x}\,dx +$$

$$= i\operatorname{Chi}\left(\frac{fx}{2}\right)\operatorname{sech}\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sinh\left(\frac{1}{4}(2e-i\pi)\right)\sqrt{a+ia\sinh(e+fx)} + i\cosh$$

Mathematica [A] time = 0.16, size = 96, normalized size = 0.77

$$\frac{\sqrt{a+ia\sinh(e+fx)}\left(\operatorname{Chi}\left(\frac{fx}{2}\right)\left(\cosh\left(\frac{e}{2}\right)+i\sinh\left(\frac{e}{2}\right)\right)+\left(\sinh\left(\frac{e}{2}\right)+i\cosh\left(\frac{e}{2}\right)\right)\operatorname{Shi}\left(\frac{fx}{2}\right)\right)}{\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + I*a*Sinh[e + f*x]]/x,x]
```

```
[Out] (Sqrt[a + I*a*Sinh[e + f*x]]*(CoshIntegral[(f*x)/2]*(Cosh[e/2] + I*Sinh[e/2
]) + (I*Cosh[e/2] + Sinh[e/2])*SinhIntegral[(f*x)/2]))/(Cosh[(e + f*x)/2] +
 I*Sinh[(e + f*x)/2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/2)/x,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{i\,a\sinh\left(fx+e\right)+a}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/2)/x,x, algorithm="giac")
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)/x, x)
```

maple [**F**] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+ia\sinh\left(fx+e\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))^(1/2)/x,x)
[Out] int((a+I*a*sinh(f*x+e))^(1/2)/x,x)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{i\,a\sinh\left(fx+e\right)+a}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/2)/x,x, algorithm="maxima")
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)/x, x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{a+a\sinh\left(e+f\,x\right)\,1{}\mathrm{i}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^(1/2)/x,x)
[Out] int((a + a*sinh(e + f*x)*1i)^(1/2)/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ia\left(\sinh\left(e+fx\right)-i\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))**(1/2)/x,x)
```

```
[Out] Integral(sqrt(I*a*(sinh(e + f*x) - I))/x, x)
```

3.123 $\int \frac{\sqrt{a+ia\sinh(e+fx)}}{x^2}\,dx$

Optimal. Leaf size=149

$$\frac{1}{2}f\sinh\left(\frac{1}{4}(2e+i\pi)\right)\text{Chi}\left(\frac{fx}{2}\right)\text{sech}\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}+\frac{1}{2}f\cosh\left(\frac{1}{4}(2e+i\pi)\right)\text{Shi}\left(\frac{fx}{2}\right)\text{sech}$$

```
[Out] -(a+I*a*sinh(f*x+e))^(1/2)/x+1/2*f*cosh(1/2*e+1/4*I*Pi)*sech(1/2*e+1/4*I*Pi
+1/2*f*x)*Shi(1/2*f*x)*(a+I*a*sinh(f*x+e))^(1/2)+1/2*f*Chi(1/2*f*x)*sech(1/
2*e+1/4*I*Pi+1/2*f*x)*sinh(1/2*e+1/4*I*Pi)*(a+I*a*sinh(f*x+e))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3319, 3297, 3303, 3298, 3301}

$$\frac{1}{2}f\sinh\left(\frac{1}{4}(2e+i\pi)\right)\text{Chi}\left(\frac{fx}{2}\right)\text{sech}\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}+\frac{1}{2}f\cosh\left(\frac{1}{4}(2e+i\pi)\right)\text{Shi}\left(\frac{fx}{2}\right)\text{sech}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + I*a*Sinh[e + f*x]]/x^2,x]
```

```
[Out] -(Sqrt[a + I*a*Sinh[e + f*x]]/x) + (f*CoshIntegral[(f*x)/2]*Sech[e/2 + (I/4
)*Pi + (f*x)/2]*Sinh[(2*e + I*Pi)/4]*Sqrt[a + I*a*Sinh[e + f*x]])/2 + (f*Co
sh[(2*e + I*Pi)/4]*Sech[e/2 + (I/4)*Pi + (f*x)/2]*Sqrt[a + I*a*Sinh[e + f*x
]]*SinhIntegral[(f*x)/2])/2
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
```

```
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+ia\sinh(e+fx)}}{x^2}\,dx = \left(\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int \frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)}{x^2}\,dx$$

$$= -\frac{\sqrt{a+ia\sinh(e+fx)}}{x}+\frac{1}{2}\left(f\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int \frac{\text{cos}}{}$$

$$= -\frac{\sqrt{a+ia\sinh(e+fx)}}{x}-\frac{1}{2}\left(if\cosh\left(\frac{1}{4}(2e+i\pi)\right)\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\,\text{s}}\right.$$

$$= -\frac{\sqrt{a+ia\sinh(e+fx)}}{x}+\frac{1}{2}f\operatorname{Chi}\left(\frac{fx}{2}\right)\operatorname{sech}\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sinh\left(\frac{1}{4}(2e+i\pi)\right)\sqrt{}$$

Mathematica [A] time = 0.26, size = 133, normalized size = 0.89

$$\frac{\sqrt{a+ia\sinh(e+fx)}\left(fx\operatorname{Chi}\left(\frac{fx}{2}\right)\left(\sinh\left(\frac{e}{2}\right)+i\cosh\left(\frac{e}{2}\right)\right)+fx\left(\cosh\left(\frac{e}{2}\right)+i\sinh\left(\frac{e}{2}\right)\right)\operatorname{Shi}\left(\frac{fx}{2}\right)-2\left(\cosh\left(\frac{1}{2}(e\right.\right.\right.}{2x\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + I*a*Sinh[e + f*x]]/x^2,x]
```

```
[Out] (Sqrt[a + I*a*Sinh[e + f*x]]*(f*x*CoshIntegral[(f*x)/2]*(I*Cosh[e/2] + Sinh
[e/2]) - 2*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2]) + f*x*(Cosh[e/2] + I*S
inh[e/2])*SinhIntegral[(f*x)/2]))/(2*x*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x
)/2]))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/2)/x^2,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{i\,a \sinh\left(fx+e\right)+a}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/2)/x^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)/x^2, x)
```

maple [F] time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+ia\sinh\left(fx+e\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))^(1/2)/x^2,x)
```

```
[Out] int((a+I*a*sinh(f*x+e))^(1/2)/x^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{i\,a \sinh\left(fx+e\right)+a}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/2)/x^2,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{a+a\sinh\left(e+f\,x\right)\,1\mathrm{i}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^(1/2)/x^2,x)
[Out] int((a + a*sinh(e + f*x)*1i)^(1/2)/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ia\left(\sinh\left(e+fx\right)-i\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))**(1/2)/x**2,x)
[Out] Integral(sqrt(I*a*(sinh(e + f*x) - I))/x**2, x)
```

3.124 $\int \frac{\sqrt{a+ia\sinh(e+fx)}}{x^3}\,dx$

Optimal. Leaf size=204

$$\frac{1}{8}if^2\sinh\left(\frac{1}{4}(2e-i\pi)\right)\text{Chi}\left(\frac{fx}{2}\right)\text{sech}\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}+\frac{1}{8}if^2\cosh\left(\frac{1}{4}(2e-i\pi)\right)\text{Shi}\left(\frac{fx}{2}\right)\text{s}$$

```
[Out] -1/2*(a+I*a*sinh(f*x+e))^(1/2)/x^2+1/8*f^2*sinh(1/2*e+1/4*I*Pi)*sech(1/2*e+
1/4*I*Pi+1/2*f*x)*Shi(1/2*f*x)*(a+I*a*sinh(f*x+e))^(1/2)+1/8*f^2*Chi(1/2*f*
x)*sech(1/2*e+1/4*I*Pi+1/2*f*x)*cosh(1/2*e+1/4*I*Pi)*(a+I*a*sinh(f*x+e))^(1
/2)-1/4*f*(a+I*a*sinh(f*x+e))^(1/2)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/x
```

Rubi [A] time = 0.20, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3319, 3297, 3303, 3298, 3301}

$$\frac{1}{8}if^2\sinh\left(\frac{1}{4}(2e-i\pi)\right)\text{Chi}\left(\frac{fx}{2}\right)\text{sech}\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}+\frac{1}{8}if^2\cosh\left(\frac{1}{4}(2e-i\pi)\right)\text{Shi}\left(\frac{fx}{2}\right)\text{s}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + I*a*Sinh[e + f*x]]/x^3,x]
```

```
[Out] -Sqrt[a + I*a*Sinh[e + f*x]]/(2*x^2) + (I/8)*f^2*CoshIntegral[(f*x)/2]*Sech
[e/2 + (I/4)*Pi + (f*x)/2]*Sinh[(2*e - I*Pi)/4]*Sqrt[a + I*a*Sinh[e + f*x]]
 + (I/8)*f^2*Cosh[(2*e - I*Pi)/4]*Sech[e/2 + (I/4)*Pi + (f*x)/2]*Sqrt[a + I
*a*Sinh[e + f*x]]*SinhIntegral[(f*x)/2] - (f*Sqrt[a + I*a*Sinh[e + f*x]]*Ta
nh[e/2 + (I/4)*Pi + (f*x)/2])/(4*x)
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+ia\sinh(e+fx)}}{x^3}\,dx = \left(\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int \frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)}{x^3}\,dx$$

$$= -\frac{\sqrt{a+ia\sinh(e+fx)}}{2x^2}+\frac{1}{4}\left(f\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int \frac{\cos}{}$$

$$= -\frac{\sqrt{a+ia\sinh(e+fx)}}{2x^2}-\frac{f\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{4x}-\frac{1}{8}\left(if^2\operatorname{csc}\right.$$

$$= -\frac{\sqrt{a+ia\sinh(e+fx)}}{2x^2}-\frac{f\sqrt{a+ia\sinh(e+fx)}\,\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{4x}+\frac{1}{8}\left(f^2\cos\right.$$

$$= -\frac{\sqrt{a+ia\sinh(e+fx)}}{2x^2}+\frac{1}{8}if^2\operatorname{Chi}\left(\frac{fx}{2}\right)\operatorname{sech}\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sinh\left(\frac{1}{4}(2e-i\pi)\right)$$

Mathematica [A] time = 0.35, size = 170, normalized size = 0.83

$$\frac{\sqrt{a+ia\sinh(e+fx)}\left(f^2x^2\operatorname{Chi}\left(\frac{fx}{2}\right)\left(\cosh\left(\frac{e}{2}\right)+i\sinh\left(\frac{e}{2}\right)\right)+f^2x^2\left(\sinh\left(\frac{e}{2}\right)+i\cosh\left(\frac{e}{2}\right)\right)\operatorname{Shi}\left(\frac{fx}{2}\right)-2fx\sinh\right.}{8x^2\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + I*a*Sinh[e + f*x]]/x^3,x]
```

```
[Out] (Sqrt[a + I*a*Sinh[e + f*x]]*(-4*Cosh[(e + f*x)/2] - (2*I)*f*x*Cosh[(e + f*
x)/2] + f^2*x^2*CoshIntegral[(f*x)/2]*(Cosh[e/2] + I*Sinh[e/2]) - (4*I)*Sin
h[(e + f*x)/2] - 2*f*x*Sinh[(e + f*x)/2] + f^2*x^2*(I*Cosh[e/2] + Sinh[e/2]
)*SinhIntegral[(f*x)/2]))/(8*x^2*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2]))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/2)/x^3,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{i a \sinh\left(fx + e\right) + a}}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/2)/x^3,x, algorithm="giac")
```

```
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)/x^3, x)
```

maple [F] time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a + ia \sinh\left(fx + e\right)}}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))^(1/2)/x^3,x)
```

```
[Out] int((a+I*a*sinh(f*x+e))^(1/2)/x^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{i a \sinh\left(fx + e\right) + a}}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/2)/x^3,x, algorithm="maxima")
[Out] integrate(sqrt(I*a*sinh(f*x + e) + a)/x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{a + a \sinh\left(e + f x\right) 1\mathrm{i}}}{x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^(1/2)/x^3,x)
[Out] int((a + a*sinh(e + f*x)*1i)^(1/2)/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ia \left(\sinh\left(e + f x\right) - i\right)}}{x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))**(1/2)/x**3,x)
[Out] Integral(sqrt(I*a*(sinh(e + f*x) - I))/x**3, x)
```

3.125 $\int x^3(a+ia\sinh(e+fx))^{3/2}\,dx$

Optimal. Leaf size=377

$$-\frac{1280a\sqrt{a+ia\sinh(e+fx)}}{9f^4}-\frac{64a\cosh^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{27f^4}+\frac{640ax\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia}}{9f^3}$$

```
[Out] -1280/9*a*(a+I*a*sinh(f*x+e))^(1/2)/f^4-16*a*x^2*(a+I*a*sinh(f*x+e))^(1/2)/
f^2-64/27*a*cosh(1/2*e+1/4*I*Pi+1/2*f*x)^2*(a+I*a*sinh(f*x+e))^(1/2)/f^4-8/
3*a*x^2*cosh(1/2*e+1/4*I*Pi+1/2*f*x)^2*(a+I*a*sinh(f*x+e))^(1/2)/f^2+32/9*a
*x*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*sinh(1/2*e+1/4*I*Pi+1/2*f*x)*(a+I*a*sinh(f*
x+e))^(1/2)/f^3+4/3*a*x^3*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*sinh(1/2*e+1/4*I*Pi+
1/2*f*x)*(a+I*a*sinh(f*x+e))^(1/2)/f+640/9*a*x*(a+I*a*sinh(f*x+e))^(1/2)*ta
nh(1/2*e+1/4*I*Pi+1/2*f*x)/f^3+8/3*a*x^3*(a+I*a*sinh(f*x+e))^(1/2)*tanh(1/2
*e+1/4*I*Pi+1/2*f*x)/f
```

Rubi [A] time = 0.35, antiderivative size = 377, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3319, 3311, 3296, 2638, 3310}

$$-\frac{16ax^2\sqrt{a+ia\sinh(e+fx)}}{f^2}-\frac{8ax^2\cosh^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{3f^2}-\frac{1280a\sqrt{a+ia\sinh(e+fx)}}{9f^4}+\frac{640}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] (-1280*a*Sqrt[a + I*a*Sinh[e + f*x]])/(9*f^4) - (16*a*x^2*Sqrt[a + I*a*Sinh
[e + f*x]])/f^2 - (64*a*Cosh[e/2 + (I/4)*Pi + (f*x)/2]^2*Sqrt[a + I*a*Sinh[
e + f*x]])/(27*f^4) - (8*a*x^2*Cosh[e/2 + (I/4)*Pi + (f*x)/2]^2*Sqrt[a + I*
a*Sinh[e + f*x]])/(3*f^2) + (32*a*x*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*Sinh[e/2
 + (I/4)*Pi + (f*x)/2]*Sqrt[a + I*a*Sinh[e + f*x]])/(9*f^3) + (4*a*x^3*Cosh
[e/2 + (I/4)*Pi + (f*x)/2]*Sinh[e/2 + (I/4)*Pi + (f*x)/2]*Sqrt[a + I*a*Sinh
[e + f*x]])/(3*f) + (640*a*x*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh[e/2 + (I/4)*P
i + (f*x)/2])/(9*f^3) + (8*a*x^3*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh[e/2 + (I/
4)*Pi + (f*x)/2])/(3*f)
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^3(a+ia\sinh(e+fx))^{3/2}\,dx = -\left(\left(2a\text{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int x^3\sinh^3\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\right.$$
$$= -\frac{8ax^2\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{3f^2} + \frac{4ax^3\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\text{si}}{}$$
$$= -\frac{64a\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{27f^4} - \frac{8ax^2\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{}}{3f^2}$$
$$= -\frac{16ax^2\sqrt{a+ia\sinh(e+fx)}}{f^2} - \frac{64a\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{27f^4}$$
$$= -\frac{128a\sqrt{a+ia\sinh(e+fx)}}{9f^4} - \frac{16ax^2\sqrt{a+ia\sinh(e+fx)}}{f^2} - \frac{64a\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}\right.}{}$$
$$= -\frac{1280a\sqrt{a+ia\sinh(e+fx)}}{9f^4} - \frac{16ax^2\sqrt{a+ia\sinh(e+fx)}}{f^2} - \frac{64a\cosh^2\left(\frac{e}{2}+\right.}{}$$

Mathematica [A] time = 1.38, size = 269, normalized size = 0.71

$$-\frac{a(\sinh(e+fx)-i)\sqrt{a+ia\sinh(e+fx)}\left(-81if^3x^3\sinh\left(\frac{1}{2}(e+fx)\right)+9if^3x^3\sinh\left(\frac{3}{2}(e+fx)\right)-486f^2x^2\sinh\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] -1/27*(a*(-I + Sinh[e + f*x])*Sqrt[a + I*a*Sinh[e + f*x]]*(81*(48*I + 24*f*
x + (6*I)*f^2*x^2 + f^3*x^3)*Cosh[(e + f*x)/2] + (-16*I + 24*f*x - (18*I)*f
^2*x^2 + 9*f^3*x^3)*Cosh[(3*(e + f*x))/2] - 3888*Sinh[(e + f*x)/2] - (1944*
I)*f*x*Sinh[(e + f*x)/2] - 486*f^2*x^2*Sinh[(e + f*x)/2] - (81*I)*f^3*x^3*S
inh[(e + f*x)/2] - 16*Sinh[(3*(e + f*x))/2] + (24*I)*f*x*Sinh[(3*(e + f*x))
/2] - 18*f^2*x^2*Sinh[(3*(e + f*x))/2] + (9*I)*f^3*x^3*Sinh[(3*(e + f*x))/2
]))/(f^4*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2])^3)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}x^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(3/2)*x^3, x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int x^{3}\left(a+ia\sinh\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+I*a*sinh(f*x+e))^(3/2),x)
```

```
[Out] int(x^3*(a+I*a*sinh(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}x^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(3/2)*x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,{\left(a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1{}\mathrm{i}\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + a*sinh(e + f*x)*1i)^(3/2),x)
```

```
[Out] int(x^3*(a + a*sinh(e + f*x)*1i)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3 \left(ia\left(\sinh\left(e+fx\right)-i\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+I*a*sinh(f*x+e))**(3/2),x)
```

```
[Out] Integral(x**3*(I*a*(sinh(e + f*x) - I))**(3/2), x)
```

3.126 $\int x^2(a + ia\sinh(e + fx))^{3/2}\,dx$

Optimal. Leaf size=303

$$\frac{32a\sinh^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{27f^3}+\frac{224a\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+f}}{9f^3}$$

```
[Out] -32/3*a*x*(a+I*a*sinh(f*x+e))^(1/2)/f^2-16/9*a*x*cosh(1/2*e+1/4*I*Pi+1/2*f*
x)^2*(a+I*a*sinh(f*x+e))^(1/2)/f^2+4/3*a*x^2*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*s
inh(1/2*e+1/4*I*Pi+1/2*f*x)*(a+I*a*sinh(f*x+e))^(1/2)/f+224/9*a*(a+I*a*sinh
(f*x+e))^(1/2)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/f^3+8/3*a*x^2*(a+I*a*sinh(f*x+e
))^(1/2)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/f+32/27*a*sinh(1/2*e+1/4*I*Pi+1/2*f*x
)^2*(a+I*a*sinh(f*x+e))^(1/2)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/f^3
```

Rubi [A] time = 0.25, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3319, 3311, 3296, 2638, 2633}

$$-\frac{32ax\sqrt{a+ia\sinh(e+fx)}}{3f^2}+\frac{32a\sinh^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{27f^3}+\frac{224a\tanh\left(\frac{e}{2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] (-32*a*x*Sqrt[a + I*a*Sinh[e + f*x]])/(3*f^2) - (16*a*x*Cosh[e/2 + (I/4)*Pi
 + (f*x)/2]^2*Sqrt[a + I*a*Sinh[e + f*x]])/(9*f^2) + (4*a*x^2*Cosh[e/2 + (I
/4)*Pi + (f*x)/2]*Sinh[e/2 + (I/4)*Pi + (f*x)/2]*Sqrt[a + I*a*Sinh[e + f*x]
])/(3*f) + (224*a*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh[e/2 + (I/4)*Pi + (f*x)/2
])/(9*f^3) + (8*a*x^2*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh[e/2 + (I/4)*Pi + (f*
x)/2])/(3*f) + (32*a*Sinh[e/2 + (I/4)*Pi + (f*x)/2]^2*Sqrt[a + I*a*Sinh[e +
 f*x]]*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/(27*f^3)
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^2(a+ia\sinh(e+fx))^{3/2}\,dx = -\left(\left(2a\text{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int x^2\sinh^3\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)$$

$$= -\frac{16ax\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{9f^2}+\frac{4ax^2\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\text{si}}{}$$

$$= -\frac{16ax\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{9f^2}+\frac{4ax^2\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\text{si}}{}$$

$$= -\frac{32ax\sqrt{a+ia\sinh(e+fx)}}{3f^2}-\frac{16ax\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{9f^2}$$

$$= -\frac{32ax\sqrt{a+ia\sinh(e+fx)}}{3f^2}-\frac{16ax\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{9f^2}$$

Mathematica [A] time = 1.06, size = 173, normalized size = 0.57

$$-\frac{a(\sinh(e+fx)-i)\sqrt{a+ia\sinh(e+fx)}\left(81\left(f^2x^2+4ifx+8\right)\cosh\left(\frac{1}{2}(e+fx)\right)+\left(9f^2x^2-12ifx+8\right)\cosh\left(\right.\right.}{27f^3\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sin\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] -1/27*(a*(81*(8 + (4*I)*f*x + f^2*x^2)*Cosh[(e + f*x)/2] + (8 - (12*I)*f*x
+ 9*f^2*x^2)*Cosh[(3*(e + f*x))/2] + (2*I)*(-4*(80 - (42*I)*f*x + 9*f^2*x^2
) + (8 + (12*I)*f*x + 9*f^2*x^2)*Cosh[e + f*x])*Sinh[(e + f*x)/2])*(-I + Si
nh[e + f*x])*Sqrt[a + I*a*Sinh[e + f*x]])/(f^3*(Cosh[(e + f*x)/2] + I*Sinh[
(e + f*x)/2])^3)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(3/2)*x^2, x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int x^2\left(a+ia\sinh\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+I*a*sinh(f*x+e))^(3/2),x)
```

```
[Out] int(x^2*(a+I*a*sinh(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((I*a*sinh(f*x + e) + a)^(3/2)*x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\left(a+a\sinh\left(e+f\,x\right)\,1{}\mathrm{i}\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + a*sinh(e + f*x)*1i)^(3/2),x)
[Out] int(x^2*(a + a*sinh(e + f*x)*1i)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{2}\left(ia\left(\sinh\left(e+fx\right)-i\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+I*a*sinh(f*x+e))**(3/2),x)
[Out] Integral(x**2*(I*a*(sinh(e + f*x) - I))**(3/2), x)
```

3.127 $\int x(a + ia\sinh(e + fx))^{3/2}\,dx$

Optimal. Leaf size=185

$$-\frac{16a\sqrt{a+ia\sinh(e+fx)}}{3f^2}-\frac{8a\cosh^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{9f^2}+\frac{8ax\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh}}{3f}$$

```
[Out] -16/3*a*(a+I*a*sinh(f*x+e))^(1/2)/f^2-8/9*a*cosh(1/2*e+1/4*I*Pi+1/2*f*x)^2*
(a+I*a*sinh(f*x+e))^(1/2)/f^2+4/3*a*x*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*sinh(1/2
*e+1/4*I*Pi+1/2*f*x)*(a+I*a*sinh(f*x+e))^(1/2)/f+8/3*a*x*(a+I*a*sinh(f*x+e)
)^(1/2)*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/f
```

Rubi [A] time = 0.13, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {3319, 3310, 3296, 2638}

$$-\frac{16a\sqrt{a+ia\sinh(e+fx)}}{3f^2}-\frac{8a\cosh^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}}{9f^2}+\frac{8ax\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh}}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] (-16*a*Sqrt[a + I*a*Sinh[e + f*x]])/(3*f^2) - (8*a*Cosh[e/2 + (I/4)*Pi + (f
*x)/2]^2*Sqrt[a + I*a*Sinh[e + f*x]])/(9*f^2) + (4*a*x*Cosh[e/2 + (I/4)*Pi
+ (f*x)/2]*Sinh[e/2 + (I/4)*Pi + (f*x)/2]*Sqrt[a + I*a*Sinh[e + f*x]])/(3*f
) + (8*a*x*Sqrt[a + I*a*Sinh[e + f*x]]*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/(3*f
)
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
```

```
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x(a+ia\sinh(e+fx))^{3/2}\,dx = -\left(\left(2a\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int x\sinh^3\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx$$

$$= -\frac{8a\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{9f^2} + \frac{4ax\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sinh\left(\right.}{}$$

$$= -\frac{8a\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{9f^2} + \frac{4ax\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sinh\left(\right.}{}$$

$$= -\frac{16a\sqrt{a+ia\sinh(e+fx)}}{3f^2} - \frac{8a\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{9f^2} + \frac{4a}{}$$

Mathematica [A] time = 0.72, size = 138, normalized size = 0.75

$$-\frac{a(\sinh(e+fx)-i)\sqrt{a+ia\sinh(e+fx)}\left(27(fx+2i)\cosh\left(\frac{1}{2}(e+fx)\right)+(3fx-2i)\cosh\left(\frac{3}{2}(e+fx)\right)+2i\sinh\right.}{9f^2\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] -1/9*(a*(27*(2*I + f*x)*Cosh[(e + f*x)/2] + (-2*I + 3*f*x)*Cosh[(3*(e + f*x
))/2] + (2*I)*(28*I - 12*f*x + (2*I + 3*f*x)*Cosh[e + f*x])*Sinh[(e + f*x)/
2])*(-I + Sinh[e + f*x])*Sqrt[a + I*a*Sinh[e + f*x]])/(f^2*(Cosh[(e + f*x)/
2] + I*Sinh[(e + f*x)/2])^3)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(i\,a \sinh\left(f x + e\right) + a\right)^{\frac{3}{2}} x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(3/2)*x, x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int x\left(a + ia \sinh\left(f x + e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+I*a*sinh(f*x+e))^(3/2),x)
```

```
[Out] int(x*(a+I*a*sinh(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(i\,a \sinh\left(f x + e\right) + a\right)^{\frac{3}{2}} x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(3/2)*x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\left(a + a \sinh\left(e + f\,x\right)\,1\mathrm{i}\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + a*sinh(e + f*x)*1i)^(3/2),x)
```

```
[Out] int(x*(a + a*sinh(e + f*x)*1i)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(ia\left(\sinh\left(e+fx\right)-i\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(f*x+e))**(3/2),x)
```

```
[Out] Integral(x*(I*a*(sinh(e + f*x) - I))**(3/2), x)
```

3.128 $\int \frac{(a+ia\sinh(e+fx))^{3/2}}{x}\,dx$

Optimal. Leaf size=261

$$\frac{3}{2}ia\sinh\left(\frac{1}{4}(2e-i\pi)\right)\text{Chi}\left(\frac{fx}{2}\right)\text{sech}\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}+\frac{1}{2}ia\sinh\left(\frac{1}{4}(6e+i\pi)\right)\text{Chi}\left(\frac{3fx}{2}\right)\text{s}$$

```
[Out] 3/2*a*sinh(1/2*e+1/4*I*Pi)*sech(1/2*e+1/4*I*Pi+1/2*f*x)*Shi(1/2*f*x)*(a+I*a
*sinh(f*x+e))^(1/2)+1/2*I*a*cosh(3/2*e+1/4*I*Pi)*sech(1/2*e+1/4*I*Pi+1/2*f*
x)*Shi(3/2*f*x)*(a+I*a*sinh(f*x+e))^(1/2)+3/2*a*Chi(1/2*f*x)*sech(1/2*e+1/4
*I*Pi+1/2*f*x)*cosh(1/2*e+1/4*I*Pi)*(a+I*a*sinh(f*x+e))^(1/2)+1/2*I*a*Chi(3
/2*f*x)*sech(1/2*e+1/4*I*Pi+1/2*f*x)*sinh(3/2*e+1/4*I*Pi)*(a+I*a*sinh(f*x+e
))^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 261, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3319, 3312, 3303, 3298, 3301}

$$\frac{3}{2}ia\sinh\left(\frac{1}{4}(2e-i\pi)\right)\text{Chi}\left(\frac{fx}{2}\right)\text{sech}\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}+\frac{1}{2}ia\sinh\left(\frac{1}{4}(6e+i\pi)\right)\text{Chi}\left(\frac{3fx}{2}\right)\text{s}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[e + f*x])^(3/2)/x,x]
```

```
[Out] ((3*I)/2)*a*CoshIntegral[(f*x)/2]*Sech[e/2 + (I/4)*Pi + (f*x)/2]*Sinh[(2*e
- I*Pi)/4]*Sqrt[a + I*a*Sinh[e + f*x]] + (I/2)*a*CoshIntegral[(3*f*x)/2]*Se
ch[e/2 + (I/4)*Pi + (f*x)/2]*Sinh[(6*e + I*Pi)/4]*Sqrt[a + I*a*Sinh[e + f*x
]] + ((3*I)/2)*a*Cosh[(2*e - I*Pi)/4]*Sech[e/2 + (I/4)*Pi + (f*x)/2]*Sqrt[a
 + I*a*Sinh[e + f*x]]*SinhIntegral[(f*x)/2] + (I/2)*a*Cosh[(6*e + I*Pi)/4]*
Sech[e/2 + (I/4)*Pi + (f*x)/2]*Sqrt[a + I*a*Sinh[e + f*x]]*SinhIntegral[(3*
f*x)/2]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+ia\sinh(e+fx))^{3/2}}{x}\,dx = -\left(\left(2a\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int \frac{\sinh^3\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)}{x}\,dx\right)$$

$$= -\left(\left(2ia\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int\left(\frac{3i\sinh\left(\frac{1}{4}(2e-i\pi)+\frac{fx}{2}\right)}{4x}\right.\right.$$

$$= \frac{1}{2}\left(a\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int \frac{\sinh\left(\frac{1}{4}(6e+i\pi)+\frac{3fx}{2}\right)}{x}\,dx +$$

$$= \frac{1}{2}\left(3a\cosh\left(\frac{1}{4}(2e-i\pi)\right)\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int \frac{\sinh\left(\frac{fx}{2}\right.}{x}$$

$$= \frac{3}{2}ia\operatorname{Chi}\left(\frac{fx}{2}\right)\operatorname{sech}\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sinh\left(\frac{1}{4}(2e-i\pi)\right)\sqrt{a+ia\sinh(e+fx)}+\frac{1}{2}ia$$

Mathematica [A] time = 0.74, size = 146, normalized size = 0.56

$$\frac{a\sqrt{a+ia\sinh(e+fx)}\left(3\text{Chi}\left(\frac{fx}{2}\right)\left(\cosh\left(\frac{e}{2}\right)+i\sinh\left(\frac{e}{2}\right)\right)-\text{Chi}\left(\frac{3fx}{2}\right)\left(\cosh\left(\frac{3e}{2}\right)-i\sinh\left(\frac{3e}{2}\right)\right)+\left(\sinh\left(\frac{e}{2}\right)+i\right.\right.}{2\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[e + f*x])^(3/2)/x,x]
```

```
[Out] (a*Sqrt[a + I*a*Sinh[e + f*x]]*(3*CoshIntegral[(f*x)/2]*(Cosh[e/2] + I*Sinh
[e/2]) - CoshIntegral[(3*f*x)/2]*(Cosh[(3*e)/2] - I*Sinh[(3*e)/2]) + (I*Cos
h[e/2] + Sinh[e/2])*(3*SinhIntegral[(f*x)/2] + (1 + (2*I)*Sinh[e])*SinhInte
gral[(3*f*x)/2])))/(2*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2]))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(3/2)/x,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(3/2)/x,x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(3/2)/x, x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{\left(a+ia\sinh\left(fx+e\right)\right)^{\frac{3}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))^(3/2)/x,x)
```

```
[Out] int((a+I*a*sinh(f*x+e))^(3/2)/x,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(3/2)/x,x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(3/2)/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+a\sinh\left(e+f\,x\right)\,1\mathrm{i}\right)^{3/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^(3/2)/x,x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)^(3/2)/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(ia\left(\sinh\left(e+fx\right)-i\right)\right)^{\frac{3}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))**(3/2)/x,x)
```

```
[Out] Integral((I*a*(sinh(e + f*x) - I))**(3/2)/x, x)
```

3.129 $\int \frac{(a+ia\sinh(e+fx))^{3/2}}{x^2}\,dx$

Optimal. Leaf size=302

$$-\frac{3}{4}af\sinh\left(\frac{1}{4}(6e-i\pi)\right)\mathrm{Chi}\left(\frac{3fx}{2}\right)\mathrm{sech}\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}+\frac{3}{4}af\sinh\left(\frac{1}{4}(2e+i\pi)\right)\mathrm{Chi}\left(\frac{fx}{2}\right.$$

```
[Out] -2*a*cosh(1/2*e+1/4*I*Pi+1/2*f*x)^2*(a+I*a*sinh(f*x+e))^(1/2)/x+3/4*a*f*cos
h(1/2*e+1/4*I*Pi)*sech(1/2*e+1/4*I*Pi+1/2*f*x)*Shi(1/2*f*x)*(a+I*a*sinh(f*x
+e))^(1/2)+3/4*I*a*f*sinh(3/2*e+1/4*I*Pi)*sech(1/2*e+1/4*I*Pi+1/2*f*x)*Shi(
3/2*f*x)*(a+I*a*sinh(f*x+e))^(1/2)+3/4*I*a*f*Chi(3/2*f*x)*sech(1/2*e+1/4*I*
Pi+1/2*f*x)*cosh(3/2*e+1/4*I*Pi)*(a+I*a*sinh(f*x+e))^(1/2)+3/4*a*f*Chi(1/2*
f*x)*sech(1/2*e+1/4*I*Pi+1/2*f*x)*sinh(1/2*e+1/4*I*Pi)*(a+I*a*sinh(f*x+e))^
(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3319, 3313, 3303, 3298, 3301}

$$-\frac{3}{4}af\sinh\left(\frac{1}{4}(6e-i\pi)\right)\mathrm{Chi}\left(\frac{3fx}{2}\right)\mathrm{sech}\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(e+fx)}+\frac{3}{4}af\sinh\left(\frac{1}{4}(2e+i\pi)\right)\mathrm{Chi}\left(\frac{fx}{2}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[e + f*x])^(3/2)/x^2,x]
```

```
[Out] (-2*a*Cosh[e/2 + (I/4)*Pi + (f*x)/2]^2*Sqrt[a + I*a*Sinh[e + f*x]])/x - (3*
a*f*CoshIntegral[(3*f*x)/2]*Sech[e/2 + (I/4)*Pi + (f*x)/2]*Sinh[(6*e - I*Pi
)/4]*Sqrt[a + I*a*Sinh[e + f*x]])/4 + (3*a*f*CoshIntegral[(f*x)/2]*Sech[e/2
 + (I/4)*Pi + (f*x)/2]*Sinh[(2*e + I*Pi)/4]*Sqrt[a + I*a*Sinh[e + f*x]])/4
+ (3*a*f*Cosh[(2*e + I*Pi)/4]*Sech[e/2 + (I/4)*Pi + (f*x)/2]*Sqrt[a + I*a*S
inh[e + f*x]]*SinhIntegral[(f*x)/2])/4 - (3*a*f*Cosh[(6*e - I*Pi)/4]*Sech[e
/2 + (I/4)*Pi + (f*x)/2]*Sqrt[a + I*a*Sinh[e + f*x]]*SinhIntegral[(3*f*x)/2
])/4
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+ia\sinh(e+fx))^{3/2}}{x^2}\,dx = -\left(\left(2a\text{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}\right)\int \frac{\sinh^3\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)}{x^2}\,dx\right)$$

$$= -\frac{2a\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{x} + \left(3af\text{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a}\right.$$

$$= -\frac{2a\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{x} + \frac{1}{4}\left(3af\text{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\right.$$

$$= -\frac{2a\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{x} + \frac{1}{4}\left(3iaf\cosh\left(\frac{1}{4}(6e-i\pi)\right)\text{cs}\right.$$

$$= -\frac{2a\cosh^2\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\sqrt{a+ia\sinh(e+fx)}}{x} - \frac{3}{4}af\text{Chi}\left(\frac{3fx}{2}\right)\text{sech}\left(\frac{e}{2}+\frac{i\pi}{4}\right.$$

Mathematica [A] time = 0.85, size = 243, normalized size = 0.80

$$\frac{a(\sinh(e+fx)-i)\sqrt{a+ia\sinh(e+fx)}\left(-3fx\text{Chi}\left(\frac{fx}{2}\right)\left(\cosh\left(\frac{e}{2}\right)-i\sinh\left(\frac{e}{2}\right)\right)-3fx\text{Chi}\left(\frac{3fx}{2}\right)\left(\cosh\left(\frac{3e}{2}\right)+i\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[e + f*x])^(3/2)/x^2,x]
```

```
[Out] (a*(-I + Sinh[e + f*x])*Sqrt[a + I*a*Sinh[e + f*x]]*((-6*I)*Cosh[(e + f*x)/
2] + (2*I)*Cosh[(3*(e + f*x))/2] - 3*f*x*CoshIntegral[(f*x)/2]*(Cosh[e/2] -
 I*Sinh[e/2]) - 3*f*x*CoshIntegral[(3*f*x)/2]*(Cosh[(3*e)/2] + I*Sinh[(3*e)
/2]) + 6*Sinh[(e + f*x)/2] + 2*Sinh[(3*(e + f*x))/2] + (3*I)*f*x*Cosh[e/2]*
SinhIntegral[(f*x)/2] - 3*f*x*Sinh[e/2]*SinhIntegral[(f*x)/2] - (3*I)*f*x*C
osh[(3*e)/2]*SinhIntegral[(3*f*x)/2] - 3*f*x*Sinh[(3*e)/2]*SinhIntegral[(3*
f*x)/2]))/(4*x*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2])^3)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(3/2)/x^2,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(3/2)/x^2,x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(3/2)/x^2, x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{\left(a+ia\sinh\left(fx+e\right)\right)^{\frac{3}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))^(3/2)/x^2,x)
```

```
[Out] int((a+I*a*sinh(f*x+e))^(3/2)/x^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(3/2)/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+a\sinh\left(e+f\,x\right)\,1\mathrm{i}\right)^{3/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^(3/2)/x^2,x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)^(3/2)/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(ia\left(\sinh\left(e+fx\right)-i\right)\right)^{\frac{3}{2}}}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))**(3/2)/x**2,x)
```

```
[Out] Integral((I*a*(sinh(e + f*x) - I))**(3/2)/x**2, x)
```

3.130 $\int x^3(a + ia\sinh(c + dx))^{5/2}\, dx$

Optimal. Leaf size=638

$$-\frac{265216a^2\sqrt{a + ia\sinh(c + dx)}}{1125d^4} - \frac{384a^2\cosh^4\left(\frac{c}{2} + \frac{dx}{2} + \frac{i\pi}{4}\right)\sqrt{a + ia\sinh(c + dx)}}{625d^4} - \frac{17408a^2\cosh^2\left(\frac{c}{2} + \frac{dx}{2} + \frac{i\pi}{4}\right)}{3375d^4}$$

```
[Out] -265216/1125*a^2*(a+I*a*sinh(d*x+c))^(1/2)/d^4-128/5*a^2*x^2*(a+I*a*sinh(d*
x+c))^(1/2)/d^2-17408/3375*a^2*cosh(1/2*c+1/4*I*Pi+1/2*d*x)^2*(a+I*a*sinh(d
*x+c))^(1/2)/d^4-64/15*a^2*x^2*cosh(1/2*c+1/4*I*Pi+1/2*d*x)^2*(a+I*a*sinh(d
*x+c))^(1/2)/d^2-384/625*a^2*cosh(1/2*c+1/4*I*Pi+1/2*d*x)^4*(a+I*a*sinh(d*x
+c))^(1/2)/d^4-48/25*a^2*x^2*cosh(1/2*c+1/4*I*Pi+1/2*d*x)^4*(a+I*a*sinh(d*x
+c))^(1/2)/d^2+8704/1125*a^2*x*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*sinh(1/2*c+1/4*
I*Pi+1/2*d*x)*(a+I*a*sinh(d*x+c))^(1/2)/d^3+32/15*a^2*x^3*cosh(1/2*c+1/4*I*
Pi+1/2*d*x)*sinh(1/2*c+1/4*I*Pi+1/2*d*x)*(a+I*a*sinh(d*x+c))^(1/2)/d+192/12
5*a^2*x*cosh(1/2*c+1/4*I*Pi+1/2*d*x)^3*sinh(1/2*c+1/4*I*Pi+1/2*d*x)*(a+I*a*
sinh(d*x+c))^(1/2)/d^3+8/5*a^2*x^3*cosh(1/2*c+1/4*I*Pi+1/2*d*x)^3*sinh(1/2*
c+1/4*I*Pi+1/2*d*x)*(a+I*a*sinh(d*x+c))^(1/2)/d+132608/1125*a^2*x*(a+I*a*si
nh(d*x+c))^(1/2)*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/d^3+64/15*a^2*x^3*(a+I*a*sinh
(d*x+c))^(1/2)*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/d
```

Rubi [A] time = 0.64, antiderivative size = 638, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3319, 3311, 3296, 2638, 3310}

$$-\frac{128a^2x^2\sqrt{a + ia\sinh(c + dx)}}{5d^2} - \frac{48a^2x^2\cosh^4\left(\frac{c}{2} + \frac{dx}{2} + \frac{i\pi}{4}\right)\sqrt{a + ia\sinh(c + dx)}}{25d^2} - \frac{64a^2x^2\cosh^2\left(\frac{c}{2} + \frac{dx}{2} + \frac{i\pi}{4}\right)}{15d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] (-265216*a^2*Sqrt[a + I*a*Sinh[c + d*x]])/(1125*d^4) - (128*a^2*x^2*Sqrt[a
 + I*a*Sinh[c + d*x]])/(5*d^2) - (17408*a^2*Cosh[c/2 + (I/4)*Pi + (d*x)/2]^2
*Sqrt[a + I*a*Sinh[c + d*x]])/(3375*d^4) - (64*a^2*x^2*Cosh[c/2 + (I/4)*Pi
 + (d*x)/2]^2*Sqrt[a + I*a*Sinh[c + d*x]])/(15*d^2) - (384*a^2*Cosh[c/2 + (I
/4)*Pi + (d*x)/2]^4*Sqrt[a + I*a*Sinh[c + d*x]])/(625*d^4) - (48*a^2*x^2*Co
sh[c/2 + (I/4)*Pi + (d*x)/2]^4*Sqrt[a + I*a*Sinh[c + d*x]])/(25*d^2) + (870
4*a^2*x*Cosh[c/2 + (I/4)*Pi + (d*x)/2]*Sinh[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[
a + I*a*Sinh[c + d*x]])/(1125*d^3) + (32*a^2*x^3*Cosh[c/2 + (I/4)*Pi + (d*x
)/2]*Sinh[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a + I*a*Sinh[c + d*x]])/(15*d) + (
192*a^2*x*Cosh[c/2 + (I/4)*Pi + (d*x)/2]^3*Sinh[c/2 + (I/4)*Pi + (d*x)/2]*S
qrt[a + I*a*Sinh[c + d*x]])/(125*d^3) + (8*a^2*x^3*Cosh[c/2 + (I/4)*Pi + (d
*x)/2]^3*Sinh[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a + I*a*Sinh[c + d*x]])/(5*d)
```

```
+ (132608*a^2*x*Sqrt[a + I*a*Sinh[c + d*x]]*Tanh[c/2 + (I/4)*Pi + (d*x)/2])
/(1125*d^3) + (64*a^2*x^3*Sqrt[a + I*a*Sinh[c + d*x]]*Tanh[c/2 + (I/4)*Pi +
 (d*x)/2])/(15*d)
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^3(a+ia\sinh(c+dx))^{5/2}\,dx = \left(4a^2\operatorname{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}\right)\int x^3\sinh^5\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)dx$$

$$= -\frac{48a^2x^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{25d^2} + \frac{8a^2x^3\cosh^3\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right.}{}$$

$$= -\frac{64a^2x^2\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{15d^2} - \frac{384a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right.}{625}$$

$$= -\frac{17408a^2\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{3375d^4} - \frac{64a^2x^2\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\right.}{1}$$

$$= -\frac{128a^2x^2\sqrt{a+ia\sinh(c+dx)}}{5d^2} - \frac{17408a^2\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c}{3375d^4}$$

$$= -\frac{34816a^2\sqrt{a+ia\sinh(c+dx)}}{1125d^4} - \frac{128a^2x^2\sqrt{a+ia\sinh(c+dx)}}{5d^2} - \frac{17408a^2\cos}{}$$

$$= -\frac{265216a^2\sqrt{a+ia\sinh(c+dx)}}{1125d^4} - \frac{128a^2x^2\sqrt{a+ia\sinh(c+dx)}}{5d^2} - \frac{17408a^2\mathrm{co}}{}$$

Mathematica [B] time = 7.41, size = 2918, normalized size = 4.57

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] (2*(((-1/135000 - I/135000)*Cosh[5*(c/2 + (d*x)/2)])/d^3 + ((1/135000 + I/1
35000)*Sinh[5*(c/2 + (d*x)/2)])/d^3)*(1296*I - (3240*I)*c + (4050*I)*c^2 -
(3375*I)*c^3 + (6480*I)*(c/2 + (d*x)/2) - (16200*I)*c*(c/2 + (d*x)/2) + (20
250*I)*c^2*(c/2 + (d*x)/2) + (16200*I)*(c/2 + (d*x)/2)^2 - (40500*I)*c*(c/2
 + (d*x)/2)^2 + (27000*I)*(c/2 + (d*x)/2)^3 - 50000*Cosh[2*(c/2 + (d*x)/2)]
 + 75000*c*Cosh[2*(c/2 + (d*x)/2)] - 56250*c^2*Cosh[2*(c/2 + (d*x)/2)] + 28
125*c^3*Cosh[2*(c/2 + (d*x)/2)] - 150000*(c/2 + (d*x)/2)*Cosh[2*(c/2 + (d*x
)/2)] + 225000*c*(c/2 + (d*x)/2)*Cosh[2*(c/2 + (d*x)/2)] - 168750*c^2*(c/2
+ (d*x)/2)*Cosh[2*(c/2 + (d*x)/2)] - 225000*(c/2 + (d*x)/2)^2*Cosh[2*(c/2 +
 (d*x)/2)] + 337500*c*(c/2 + (d*x)/2)^2*Cosh[2*(c/2 + (d*x)/2)] - 225000*(c
/2 + (d*x)/2)^3*Cosh[2*(c/2 + (d*x)/2)] - (8100000*I)*Cosh[4*(c/2 + (d*x)/2
)] + (4050000*I)*c*Cosh[4*(c/2 + (d*x)/2)] - (1012500*I)*c^2*Cosh[4*(c/2 +
(d*x)/2)] + (168750*I)*c^3*Cosh[4*(c/2 + (d*x)/2)] - (8100000*I)*(c/2 + (d*
```

x)/2)*Cosh[4*(c/2 + (d*x)/2)] + (4050000*I)*c*(c/2 + (d*x)/2)*Cosh[4*(c/2 + (d*x)/2)] - (1012500*I)*c^2*(c/2 + (d*x)/2)*Cosh[4*(c/2 + (d*x)/2)] - (4050000*I)*(c/2 + (d*x)/2)^2*Cosh[4*(c/2 + (d*x)/2)] + (2025000*I)*c*(c/2 + (d*x)/2)^2*Cosh[4*(c/2 + (d*x)/2)] - (1350000*I)*(c/2 + (d*x)/2)^3*Cosh[4*(c/2 + (d*x)/2)] + 8100000*Cosh[6*(c/2 + (d*x)/2)] + 4050000*c*Cosh[6*(c/2 + (d*x)/2)] + 1012500*c^2*Cosh[6*(c/2 + (d*x)/2)] + 168750*c^3*Cosh[6*(c/2 + (d*x)/2)] - 8100000*(c/2 + (d*x)/2)*Cosh[6*(c/2 + (d*x)/2)] - 4050000*c*(c/2 + (d*x)/2)*Cosh[6*(c/2 + (d*x)/2)] - 1012500*c^2*(c/2 + (d*x)/2)*Cosh[6*(c/2 + (d*x)/2)] + 4050000*(c/2 + (d*x)/2)^2*Cosh[6*(c/2 + (d*x)/2)] + 2025000*c*(c/2 + (d*x)/2)^2*Cosh[6*(c/2 + (d*x)/2)] - 1350000*(c/2 + (d*x)/2)^3*Cosh[6*(c/2 + (d*x)/2)] + (50000*I)*Cosh[8*(c/2 + (d*x)/2)] + (75000*I)*c*Cosh[8*(c/2 + (d*x)/2)] + (56250*I)*c^2*Cosh[8*(c/2 + (d*x)/2)] + (28125*I)*c^3*Cosh[8*(c/2 + (d*x)/2)] - (150000*I)*(c/2 + (d*x)/2)*Cosh[8*(c/2 + (d*x)/2)] - (225000*I)*c*(c/2 + (d*x)/2)*Cosh[8*(c/2 + (d*x)/2)] - (168750*I)*c^2*(c/2 + (d*x)/2)*Cosh[8*(c/2 + (d*x)/2)] + (225000*I)*(c/2 + (d*x)/2)^2*Cosh[8*(c/2 + (d*x)/2)] + (337500*I)*c*(c/2 + (d*x)/2)^2*Cosh[8*(c/2 + (d*x)/2)] - (225000*I)*(c/2 + (d*x)/2)^3*Cosh[8*(c/2 + (d*x)/2)] - 1296*Cosh[10*(c/2 + (d*x)/2)] - 3240*c*Cosh[10*(c/2 + (d*x)/2)] - 4050*c^2*Cosh[10*(c/2 + (d*x)/2)] - 3375*c^3*Cosh[10*(c/2 + (d*x)/2)] + 6480*(c/2 + (d*x)/2)*Cosh[10*(c/2 + (d*x)/2)] + 16200*c*(c/2 + (d*x)/2)*Cosh[10*(c/2 + (d*x)/2)] + 20250*c^2*(c/2 + (d*x)/2)*Cosh[10*(c/2 + (d*x)/2)] - 16200*(c/2 + (d*x)/2)^2*Cosh[10*(c/2 + (d*x)/2)] - 40500*c*(c/2 + (d*x)/2)^2*Cosh[10*(c/2 + (d*x)/2)] + 27000*(c/2 + (d*x)/2)^3*Cosh[10*(c/2 + (d*x)/2)] - 50000*Sinh[2*(c/2 + (d*x)/2)] + 75000*c*Sinh[2*(c/2 + (d*x)/2)] - 56250*c^2*Sinh[2*(c/2 + (d*x)/2)] + 28125*c^3*Sinh[2*(c/2 + (d*x)/2)] - 150000*(c/2 + (d*x)/2)*Sinh[2*(c/2 + (d*x)/2)] + 225000*c*(c/2 + (d*x)/2)*Sinh[2*(c/2 + (d*x)/2)] - 168750*c^2*(c/2 + (d*x)/2)*Sinh[2*(c/2 + (d*x)/2)] - 225000*(c/2 + (d*x)/2)^2*Sinh[2*(c/2 + (d*x)/2)] + 337500*c*(c/2 + (d*x)/2)^2*Sinh[2*(c/2 + (d*x)/2)] - 225000*(c/2 + (d*x)/2)^3*Sinh[2*(c/2 + (d*x)/2)] - (8100000*I)*Sinh[4*(c/2 + (d*x)/2)] + (4050000*I)*c*Sinh[4*(c/2 + (d*x)/2)] - (1012500*I)*c^2*Sinh[4*(c/2 + (d*x)/2)] + (168750*I)*c^3*Sinh[4*(c/2 + (d*x)/2)] - (8100000*I)*(c/2 + (d*x)/2)*Sinh[4*(c/2 + (d*x)/2)] + (4050000*I)*c*(c/2 + (d*x)/2)*Sinh[4*(c/2 + (d*x)/2)] - (1012500*I)*c^2*(c/2 + (d*x)/2)*Sinh[4*(c/2 + (d*x)/2)] - (4050000*I)*(c/2 + (d*x)/2)^2*Sinh[4*(c/2 + (d*x)/2)] + (2025000*I)*c*(c/2 + (d*x)/2)^2*Sinh[4*(c/2 + (d*x)/2)] - (1350000*I)*(c/2 + (d*x)/2)^3*Sinh[4*(c/2 + (d*x)/2)] + 8100000*Sinh[6*(c/2 + (d*x)/2)] + 4050000*c*Sinh[6*(c/2 + (d*x)/2)] + 1012500*c^2*Sinh[6*(c/2 + (d*x)/2)] + 168750*c^3*Sinh[6*(c/2 + (d*x)/2)] - 8100000*(c/2 + (d*x)/2)*Sinh[6*(c/2 + (d*x)/2)] - 4050000*c*(c/2 + (d*x)/2)*Sinh[6*(c/2 + (d*x)/2)] - 1012500*c^2*(c/2 + (d*x)/2)*Sinh[6*(c/2 + (d*x)/2)] + 4050000*(c/2 + (d*x)/2)^2*Sinh[6*(c/2 + (d*x)/2)] + 2025000*c*(c/2 + (d*x)/2)^2*Sinh[6*(c/2 + (d*x)/2)] - 1350000*(c/2 + (d*x)/2)^3*Sinh[6*(c/2 + (d*x)/2)] + (50000*I)*Sinh[8*(c/2 + (d*x)/2)] + (75000*I)*c*Sinh[8*(c/2 + (d*x)/2)] + (56250*I)*c^2*Sinh[8*(c/2 + (d*x)/2)] + (28125*I)*c^3*Sinh[8*(c/2 + (d*x)/2)] - (150000*I)*(c/2 + (d*x)/2)*Sinh[8*(c/2 + (d*x)/2)] - (225000*I)*c*(c/2 + (d*x)/2)*Sinh[8*(c/2 + (d*x)/2)] - (16

```
8750*I)*c^2*(c/2 + (d*x)/2)*Sinh[8*(c/2 + (d*x)/2)] + (225000*I)*(c/2 + (d*
x)/2)^2*Sinh[8*(c/2 + (d*x)/2)] + (337500*I)*c*(c/2 + (d*x)/2)^2*Sinh[8*(c/
2 + (d*x)/2)] - (225000*I)*(c/2 + (d*x)/2)^3*Sinh[8*(c/2 + (d*x)/2)] - 1296
*Sinh[10*(c/2 + (d*x)/2)] - 3240*c*Sinh[10*(c/2 + (d*x)/2)] - 4050*c^2*Sinh
[10*(c/2 + (d*x)/2)] - 3375*c^3*Sinh[10*(c/2 + (d*x)/2)] + 6480*(c/2 + (d*x
)/2)*Sinh[10*(c/2 + (d*x)/2)] + 16200*c*(c/2 + (d*x)/2)*Sinh[10*(c/2 + (d*x
)/2)] + 20250*c^2*(c/2 + (d*x)/2)*Sinh[10*(c/2 + (d*x)/2)] - 16200*(c/2 + (
d*x)/2)^2*Sinh[10*(c/2 + (d*x)/2)] - 40500*c*(c/2 + (d*x)/2)^2*Sinh[10*(c/2
 + (d*x)/2)] + 27000*(c/2 + (d*x)/2)^3*Sinh[10*(c/2 + (d*x)/2)])*(a + I*a*S
inh[c + d*x])^(5/2))/(d*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2])^5)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (i\,a\sinh\left(dx+c\right)+a)^{\frac{5}{2}}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)*x^3, x)
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int x^{3}\left(a+ia\sinh\left(dx+c\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+I*a*sinh(d*x+c))^(5/2),x)
```

```
[Out] int(x^3*(a+I*a*sinh(d*x+c))^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (i\,a\sinh\left(dx+c\right)+a)^{\frac{5}{2}}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)*x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3 \left(a + a \sinh\left(c + d x\right) 1\mathrm{i}\right)^{5/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + a*sinh(c + d*x)*1i)^(5/2),x)
```

```
[Out] int(x^3*(a + a*sinh(c + d*x)*1i)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+I*a*sinh(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

3.131 $\int x^2(a+ia\sinh(c+dx))^{5/2}\,dx$

Optimal. Leaf size=506

$$\frac{64a^2\sinh^4\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}}{125d^3}+\frac{2432a^2\sinh^2\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i}{4}\right.}{675d^3}$$

```
[Out] -256/15*a^2*x*(a+I*a*sinh(d*x+c))^(1/2)/d^2-128/45*a^2*x*cosh(1/2*c+1/4*I*P
i+1/2*d*x)^2*(a+I*a*sinh(d*x+c))^(1/2)/d^2-32/25*a^2*x*cosh(1/2*c+1/4*I*Pi+
1/2*d*x)^4*(a+I*a*sinh(d*x+c))^(1/2)/d^2+32/15*a^2*x^2*cosh(1/2*c+1/4*I*Pi+
1/2*d*x)*sinh(1/2*c+1/4*I*Pi+1/2*d*x)*(a+I*a*sinh(d*x+c))^(1/2)/d+8/5*a^2*x
^2*cosh(1/2*c+1/4*I*Pi+1/2*d*x)^3*sinh(1/2*c+1/4*I*Pi+1/2*d*x)*(a+I*a*sinh(
d*x+c))^(1/2)/d+9536/225*a^2*(a+I*a*sinh(d*x+c))^(1/2)*tanh(1/2*c+1/4*I*Pi+
1/2*d*x)/d^3+64/15*a^2*x^2*(a+I*a*sinh(d*x+c))^(1/2)*tanh(1/2*c+1/4*I*Pi+1/
2*d*x)/d+2432/675*a^2*sinh(1/2*c+1/4*I*Pi+1/2*d*x)^2*(a+I*a*sinh(d*x+c))^(1
/2)*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/d^3+64/125*a^2*sinh(1/2*c+1/4*I*Pi+1/2*d*x
)^4*(a+I*a*sinh(d*x+c))^(1/2)*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/d^3
```

Rubi [A] time = 0.39, antiderivative size = 506, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3319, 3311, 3296, 2638, 2633}

$$-\frac{256a^2x\sqrt{a+ia\sinh(c+dx)}}{15d^2}+\frac{64a^2\sinh^4\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}}{125d^3}+\frac{2432a^2\sinh}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] (-256*a^2*x*Sqrt[a + I*a*Sinh[c + d*x]])/(15*d^2) - (128*a^2*x*Cosh[c/2 + (
I/4)*Pi + (d*x)/2]^2*Sqrt[a + I*a*Sinh[c + d*x]])/(45*d^2) - (32*a^2*x*Cosh
[c/2 + (I/4)*Pi + (d*x)/2]^4*Sqrt[a + I*a*Sinh[c + d*x]])/(25*d^2) + (32*a^
2*x^2*Cosh[c/2 + (I/4)*Pi + (d*x)/2]*Sinh[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a
+ I*a*Sinh[c + d*x]])/(15*d) + (8*a^2*x^2*Cosh[c/2 + (I/4)*Pi + (d*x)/2]^3*
Sinh[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a + I*a*Sinh[c + d*x]])/(5*d) + (9536*a
^2*Sqrt[a + I*a*Sinh[c + d*x]]*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(225*d^3) +
(64*a^2*x^2*Sqrt[a + I*a*Sinh[c + d*x]]*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(15
*d) + (2432*a^2*Sinh[c/2 + (I/4)*Pi + (d*x)/2]^2*Sqrt[a + I*a*Sinh[c + d*x]
]*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(675*d^3) + (64*a^2*Sinh[c/2 + (I/4)*Pi +
 (d*x)/2]^4*Sqrt[a + I*a*Sinh[c + d*x]]*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(12
5*d^3)
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^2(a+ia\sinh(c+dx))^{5/2}\,dx = \left(4a^2\text{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}\right)\int x^2\sinh^5\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)dx$$

$$= -\frac{32a^2x\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{25d^2} + \frac{8a^2x^2\cosh^3\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right.}{}$$

$$= -\frac{128a^2x\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{45d^2} - \frac{32a^2x\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right.}{25d}$$

$$= -\frac{128a^2x\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{45d^2} - \frac{32a^2x\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right.}{25d}$$

$$= -\frac{256a^2x\sqrt{a+ia\sinh(c+dx)}}{15d^2} - \frac{128a^2x\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+}}{45d^2}$$

$$= -\frac{256a^2x\sqrt{a+ia\sinh(c+dx)}}{15d^2} - \frac{128a^2x\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+}}{45d^2}$$

Mathematica [A] time = 1.63, size = 300, normalized size = 0.59

$$\frac{a^2\sqrt{a+ia\sinh(c+dx)}\left(33750d^2x^2\sinh\left(\frac{1}{2}(c+dx)\right)-5625d^2x^2\sinh\left(\frac{3}{2}(c+dx)\right)-675d^2x^2\sinh\left(\frac{5}{2}(c+dx)\right)-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] (a^2*Sqrt[a + I*a*Sinh[c + d*x]]*((33750*I)*(8 + (4*I)*d*x + d^2*x^2)*Cosh[
(c + d*x)/2] + 625*(8*I + 12*d*x + (9*I)*d^2*x^2)*Cosh[(3*(c + d*x))/2] - (
216*I)*Cosh[(5*(c + d*x))/2] + 540*d*x*Cosh[(5*(c + d*x))/2] - (675*I)*d^2*
x^2*Cosh[(5*(c + d*x))/2] + 270000*Sinh[(c + d*x)/2] - (135000*I)*d*x*Sinh[
(c + d*x)/2] + 33750*d^2*x^2*Sinh[(c + d*x)/2] - 5000*Sinh[(3*(c + d*x))/2]
 - (7500*I)*d*x*Sinh[(3*(c + d*x))/2] - 5625*d^2*x^2*Sinh[(3*(c + d*x))/2]
- 216*Sinh[(5*(c + d*x))/2] + (540*I)*d*x*Sinh[(5*(c + d*x))/2] - 675*d^2*x
^2*Sinh[(5*(c + d*x))/2]))/(6750*d^3*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/
2]))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (i\,a\sinh(dx+c)+a)^{\frac{5}{2}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)*x^2, x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int x^2\left(a+ia\sinh(dx+c)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+I*a*sinh(d*x+c))^(5/2),x)
```

```
[Out] int(x^2*(a+I*a*sinh(d*x+c))^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (i\,a\sinh(dx+c)+a)^{\frac{5}{2}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)*x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,(a+a\sinh(c+d\,x)\,1\mathrm{i})^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + a*sinh(c + d*x)*1i)^(5/2),x)
```

```
[Out] int(x^2*(a + a*sinh(c + d*x)*1i)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+I*a*sinh(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

3.132 $\int x(a+ia\sinh(c+dx))^{5/2}\,dx$

Optimal. Leaf size=312

$$-\frac{128a^2\sqrt{a+ia\sinh(c+dx)}}{15d^2}-\frac{16a^2\cosh^4\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}}{25d^2}-\frac{64a^2\cosh^2\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+i}}{45d^2}$$

```
[Out] -128/15*a^2*(a+I*a*sinh(d*x+c))^(1/2)/d^2-64/45*a^2*cosh(1/2*c+1/4*I*Pi+1/2
*d*x)^2*(a+I*a*sinh(d*x+c))^(1/2)/d^2-16/25*a^2*cosh(1/2*c+1/4*I*Pi+1/2*d*x
)^4*(a+I*a*sinh(d*x+c))^(1/2)/d^2+32/15*a^2*x*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*
sinh(1/2*c+1/4*I*Pi+1/2*d*x)*(a+I*a*sinh(d*x+c))^(1/2)/d+8/5*a^2*x*cosh(1/2
*c+1/4*I*Pi+1/2*d*x)^3*sinh(1/2*c+1/4*I*Pi+1/2*d*x)*(a+I*a*sinh(d*x+c))^(1/
2)/d+64/15*a^2*x*(a+I*a*sinh(d*x+c))^(1/2)*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/d
```

Rubi [A] time = 0.21, antiderivative size = 312, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {3319, 3310, 3296, 2638}

$$-\frac{128a^2\sqrt{a+ia\sinh(c+dx)}}{15d^2}-\frac{16a^2\cosh^4\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}}{25d^2}-\frac{64a^2\cosh^2\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+i}}{45d^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] (-128*a^2*Sqrt[a + I*a*Sinh[c + d*x]])/(15*d^2) - (64*a^2*Cosh[c/2 + (I/4)*
Pi + (d*x)/2]^2*Sqrt[a + I*a*Sinh[c + d*x]])/(45*d^2) - (16*a^2*Cosh[c/2 +
(I/4)*Pi + (d*x)/2]^4*Sqrt[a + I*a*Sinh[c + d*x]])/(25*d^2) + (32*a^2*x*Cos
h[c/2 + (I/4)*Pi + (d*x)/2]*Sinh[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a + I*a*Sin
h[c + d*x]])/(15*d) + (8*a^2*x*Cosh[c/2 + (I/4)*Pi + (d*x)/2]^3*Sinh[c/2 +
(I/4)*Pi + (d*x)/2]*Sqrt[a + I*a*Sinh[c + d*x]])/(5*d) + (64*a^2*x*Sqrt[a +
 I*a*Sinh[c + d*x]]*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(15*d)
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x(a+ia\sinh(c+dx))^{5/2}\,dx = \left(4a^2\operatorname{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}\right)\int x\sinh^5\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)dx$$

$$= -\frac{16a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{25d^2}+\frac{8a^2x\cosh^3\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sin}{}$$

$$= -\frac{64a^2\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{45d^2}-\frac{16a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a}}{25d^2}$$

$$= -\frac{64a^2\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{45d^2}-\frac{16a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a}}{25d^2}$$

$$= -\frac{128a^2\sqrt{a+ia\sinh(c+dx)}}{15d^2}-\frac{64a^2\cosh^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{45d^2}$$

Mathematica [A] time = 1.27, size = 218, normalized size = 0.70

$$\frac{a^2(\sinh(c+dx)-i)^2\sqrt{a+ia\sinh(c+dx)}\left(-2250dx\sinh\left(\frac{1}{2}(c+dx)\right)+4500i\sinh\left(\frac{1}{2}(c+dx)\right)+375dx\sinh\left(\frac{3}{2}(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] (a^2*(-I + Sinh[c + d*x])^2*Sqrt[a + I*a*Sinh[c + d*x]]*(2250*(2 - I*d*x)*C
osh[(c + d*x)/2] + (-250 - (375*I)*d*x)*Cosh[(3*(c + d*x))/2] - 18*Cosh[(5*
(c + d*x))/2] + (45*I)*d*x*Cosh[(5*(c + d*x))/2] + (4500*I)*Sinh[(c + d*x)/
2] - 2250*d*x*Sinh[(c + d*x)/2] + (250*I)*Sinh[(3*(c + d*x))/2] + 375*d*x*S
inh[(3*(c + d*x))/2] - (18*I)*Sinh[(5*(c + d*x))/2] + 45*d*x*Sinh[(5*(c + d
*x))/2]))/(450*d^2*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^5)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (i\,a \sinh (dx + c) + a)^{\frac{5}{2}} x\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)*x, x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int x\,(a + ia \sinh (dx + c))^{\frac{5}{2}}\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+I*a*sinh(d*x+c))^(5/2),x)
```

```
[Out] int(x*(a+I*a*sinh(d*x+c))^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (i\,a \sinh (dx + c) + a)^{\frac{5}{2}} x\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)*x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,(a+a\sinh(c+d\,x)\,1\mathrm{i})^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + a*sinh(c + d*x)*1i)^(5/2),x)
```

```
[Out] int(x*(a + a*sinh(c + d*x)*1i)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\,(ia\,(\sinh(c+dx)-i))^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+I*a*sinh(d*x+c))**(5/2),x)
```

```
[Out] Integral(x*(I*a*(sinh(c + d*x) - I))**(5/2), x)
```

3.133 $\int \frac{(a+ia\sinh(c+dx))^{5/2}}{x}\,dx$

Optimal. Leaf size=403

$$-\frac{1}{4}ia^2\sinh\left(\frac{5c}{2}-\frac{i\pi}{4}\right)\text{Chi}\left(\frac{5dx}{2}\right)\text{sech}\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}+\frac{5}{2}ia^2\sinh\left(\frac{1}{4}(2c-i\pi)\right)\text{Chi}\left(\frac{dx}{2}\right)\text{s}$$

```
[Out] 5/2*a^2*sinh(1/2*c+1/4*I*Pi)*sech(1/2*c+1/4*I*Pi+1/2*d*x)*Shi(1/2*d*x)*(a+I
*a*sinh(d*x+c))^(1/2)+5/4*I*a^2*cosh(3/2*c+1/4*I*Pi)*sech(1/2*c+1/4*I*Pi+1/
2*d*x)*Shi(3/2*d*x)*(a+I*a*sinh(d*x+c))^(1/2)-1/4*a^2*sinh(5/2*c+1/4*I*Pi)*
sech(1/2*c+1/4*I*Pi+1/2*d*x)*Shi(5/2*d*x)*(a+I*a*sinh(d*x+c))^(1/2)-1/4*a^2
*Chi(5/2*d*x)*sech(1/2*c+1/4*I*Pi+1/2*d*x)*cosh(5/2*c+1/4*I*Pi)*(a+I*a*sinh
(d*x+c))^(1/2)+5/2*a^2*Chi(1/2*d*x)*sech(1/2*c+1/4*I*Pi+1/2*d*x)*cosh(1/2*c
+1/4*I*Pi)*(a+I*a*sinh(d*x+c))^(1/2)+5/4*I*a^2*Chi(3/2*d*x)*sech(1/2*c+1/4*
I*Pi+1/2*d*x)*sinh(3/2*c+1/4*I*Pi)*(a+I*a*sinh(d*x+c))^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 403, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {3319, 3312, 3303, 3298, 3301}

$$-\frac{1}{4}ia^2\sinh\left(\frac{5c}{2}-\frac{i\pi}{4}\right)\text{Chi}\left(\frac{5dx}{2}\right)\text{sech}\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}+\frac{5}{2}ia^2\sinh\left(\frac{1}{4}(2c-i\pi)\right)\text{Chi}\left(\frac{dx}{2}\right)\text{s}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[c + d*x])^(5/2)/x,x]
```

```
[Out] (-I/4)*a^2*CoshIntegral[(5*d*x)/2]*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sinh[(5*c
)/2 - (I/4)*Pi]*Sqrt[a + I*a*Sinh[c + d*x]] + ((5*I)/2)*a^2*CoshIntegral[(d
*x)/2]*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sinh[(2*c - I*Pi)/4]*Sqrt[a + I*a*Sin
h[c + d*x]] + ((5*I)/4)*a^2*CoshIntegral[(3*d*x)/2]*Sech[c/2 + (I/4)*Pi + (
d*x)/2]*Sinh[(6*c + I*Pi)/4]*Sqrt[a + I*a*Sinh[c + d*x]] + ((5*I)/2)*a^2*Co
sh[(2*c - I*Pi)/4]*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a + I*a*Sinh[c + d*x
]]*SinhIntegral[(d*x)/2] + ((5*I)/4)*a^2*Cosh[(6*c + I*Pi)/4]*Sech[c/2 + (I
/4)*Pi + (d*x)/2]*Sqrt[a + I*a*Sinh[c + d*x]]*SinhIntegral[(3*d*x)/2] - (I/
4)*a^2*Cosh[(5*c)/2 - (I/4)*Pi]*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a + I*a
*Sinh[c + d*x]]*SinhIntegral[(5*d*x)/2]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+ia\sinh(c+dx))^{5/2}}{x}\,dx = \left(4a^2\text{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}\right)\int \frac{\sinh^5\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)}{x}\,dx$$

$$= -\left(\left(4ia^2\text{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}\right)\int \left(\frac{5i\sinh\left(\frac{1}{4}(2c-i\pi)+\frac{dx}{2}\right.}{8x}\right.\right.$$

$$= -\left(\frac{1}{4}\left(a^2\text{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}\right)\int \frac{\sinh\left(\frac{1}{4}(10c-i\pi)+\frac{5dx}{2}\right.}{x}\right.$$

$$= -\left(\frac{1}{4}\left(a^2\cosh\left(\frac{5c}{2}-\frac{i\pi}{4}\right)\text{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}\right)\int \frac{\sinh\left(\frac{5}{}\right.}{x}\right.$$

$$= -\frac{1}{4}ia^2\text{Chi}\left(\frac{5dx}{2}\right)\text{sech}\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sinh\left(\frac{5c}{2}-\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}+\frac{5}{2}$$

Mathematica [A] time = 1.37, size = 242, normalized size = 0.60

$$\frac{a^2(\sinh(c+dx)-i)^2\sqrt{a+ia\sinh(c+dx)}\left(i\sinh\left(\frac{5c}{2}\right)\text{Chi}\left(\frac{5dx}{2}\right)+\cosh\left(\frac{5c}{2}\right)\text{Chi}\left(\frac{5dx}{2}\right)-10\left(\cosh\left(\frac{c}{2}\right)+i\sinh\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[c + d*x])^(5/2)/x,x]
```

```
[Out] (a^2*(-I + Sinh[c + d*x])^2*Sqrt[a + I*a*Sinh[c + d*x]]*(Cosh[(5*c)/2]*Cosh
Integral[(5*d*x)/2] - 10*CoshIntegral[(d*x)/2]*(Cosh[c/2] + I*Sinh[c/2]) +
5*CoshIntegral[(3*d*x)/2]*(Cosh[(3*c)/2] - I*Sinh[(3*c)/2]) + I*CoshIntegra
l[(5*d*x)/2]*Sinh[(5*c)/2] - (10*I)*Cosh[c/2]*SinhIntegral[(d*x)/2] - 10*Si
nh[c/2]*SinhIntegral[(d*x)/2] - (5*I)*Cosh[(3*c)/2]*SinhIntegral[(3*d*x)/2]
 + 5*Sinh[(3*c)/2]*SinhIntegral[(3*d*x)/2] + I*Cosh[(5*c)/2]*SinhIntegral[(
5*d*x)/2] + Sinh[(5*c)/2]*SinhIntegral[(5*d*x)/2]))/(4*(Cosh[(c + d*x)/2] +
 I*Sinh[(c + d*x)/2])^5)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))^(5/2)/x,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(i a \sinh (dx + c) + a)^{\frac{5}{2}}}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))^(5/2)/x,x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)/x, x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{(a + ia \sinh (dx + c))^{\frac{5}{2}}}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(d*x+c))^(5/2)/x,x)
```

```
[Out] int((a+I*a*sinh(d*x+c))^(5/2)/x,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(i a \sinh (dx + c) + a)^{\frac{5}{2}}}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))^(5/2)/x,x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + a \sinh (c + d\,x)\,1\mathrm{i})^{5/2}}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(c + d*x)*1i)^(5/2)/x,x)
```

```
[Out] int((a + a*sinh(c + d*x)*1i)^(5/2)/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ia(\sinh(c+dx)-i))^{\frac{5}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))**(5/2)/x,x)
```

```
[Out] Integral((I*a*(sinh(c + d*x) - I))**(5/2)/x, x)
```

3.134 $\int \frac{(a+ia\sinh(c+dx))^{5/2}}{x^2}\,dx$

Optimal. Leaf size=444

$$-\frac{5}{8}a^2 d\sinh\left(\frac{5c}{2}+\frac{i\pi}{4}\right)\text{Chi}\left(\frac{5dx}{2}\right)\text{sech}\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}-\frac{15}{8}a^2 d\sinh\left(\frac{1}{4}(6c-i\pi)\right)\text{Chi}\left(\frac{3dx}{2}\right.$$

```
[Out] -4*a^2*cosh(1/2*c+1/4*I*Pi+1/2*d*x)^4*(a+I*a*sinh(d*x+c))^(1/2)/x+5/4*a^2*d
*cosh(1/2*c+1/4*I*Pi)*sech(1/2*c+1/4*I*Pi+1/2*d*x)*Shi(1/2*d*x)*(a+I*a*sinh
(d*x+c))^(1/2)+15/8*I*a^2*d*sinh(3/2*c+1/4*I*Pi)*sech(1/2*c+1/4*I*Pi+1/2*d*
x)*Shi(3/2*d*x)*(a+I*a*sinh(d*x+c))^(1/2)-5/8*a^2*d*cosh(5/2*c+1/4*I*Pi)*se
ch(1/2*c+1/4*I*Pi+1/2*d*x)*Shi(5/2*d*x)*(a+I*a*sinh(d*x+c))^(1/2)-5/8*a^2*d
*Chi(5/2*d*x)*sech(1/2*c+1/4*I*Pi+1/2*d*x)*sinh(5/2*c+1/4*I*Pi)*(a+I*a*sinh
(d*x+c))^(1/2)+15/8*I*a^2*d*Chi(3/2*d*x)*sech(1/2*c+1/4*I*Pi+1/2*d*x)*cosh(
3/2*c+1/4*I*Pi)*(a+I*a*sinh(d*x+c))^(1/2)+5/4*a^2*d*Chi(1/2*d*x)*sech(1/2*c
+1/4*I*Pi+1/2*d*x)*sinh(1/2*c+1/4*I*Pi)*(a+I*a*sinh(d*x+c))^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 444, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {3319, 3313, 3303, 3298, 3301}

$$-\frac{5}{8}a^2 d\sinh\left(\frac{5c}{2}+\frac{i\pi}{4}\right)\text{Chi}\left(\frac{5dx}{2}\right)\text{sech}\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}-\frac{15}{8}a^2 d\sinh\left(\frac{1}{4}(6c-i\pi)\right)\text{Chi}\left(\frac{3dx}{2}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[c + d*x])^(5/2)/x^2,x]
```

```
[Out] (-4*a^2*Cosh[c/2 + (I/4)*Pi + (d*x)/2]^4*Sqrt[a + I*a*Sinh[c + d*x]])/x - (
5*a^2*d*CoshIntegral[(5*d*x)/2]*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sinh[(5*c)/2
 + (I/4)*Pi]*Sqrt[a + I*a*Sinh[c + d*x]])/8 - (15*a^2*d*CoshIntegral[(3*d*x
)/2]*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sinh[(6*c - I*Pi)/4]*Sqrt[a + I*a*Sinh[
c + d*x]])/8 + (5*a^2*d*CoshIntegral[(d*x)/2]*Sech[c/2 + (I/4)*Pi + (d*x)/2
]*Sinh[(2*c + I*Pi)/4]*Sqrt[a + I*a*Sinh[c + d*x]])/4 + (5*a^2*d*Cosh[(2*c
+ I*Pi)/4]*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a + I*a*Sinh[c + d*x]]*SinhI
ntegral[(d*x)/2])/4 - (15*a^2*d*Cosh[(6*c - I*Pi)/4]*Sech[c/2 + (I/4)*Pi +
(d*x)/2]*Sqrt[a + I*a*Sinh[c + d*x]]*SinhIntegral[(3*d*x)/2])/8 - (5*a^2*d*
Cosh[(5*c)/2 + (I/4)*Pi]*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a + I*a*Sinh[c
 + d*x]]*SinhIntegral[(5*d*x)/2])/8
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
```

```
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+ia\sinh(c+dx))^{5/2}}{x^2}\,dx = \left(4a^2\text{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}\right)\int \frac{\sinh^5\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)}{x^2}\,dx$$

$$= -\frac{4a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{x} + \left(10a^2d\text{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a}\right.$$

$$= -\frac{4a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{x} - \frac{1}{8}\left(5a^2d\text{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{}\right.$$

$$= -\frac{4a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{x} + \frac{1}{8}\left(5ia^2d\cosh\left(\frac{5c}{2}+\frac{i\pi}{4}\right)\text{csch}\right.$$

$$= -\frac{4a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{x} - \frac{5}{8}a^2d\text{Chi}\left(\frac{5dx}{2}\right)\text{sech}\left(\frac{c}{2}+\frac{i\pi}{4}\right.$$

Mathematica [A] time = 2.21, size = 347, normalized size = 0.78

$$\frac{a^2(\sinh(c+dx)-i)^2\sqrt{a+ia\sinh(c+dx)}\left(5dx\sinh\left(\frac{5c}{2}\right)\text{Chi}\left(\frac{5dx}{2}\right)+5idx\cosh\left(\frac{5c}{2}\right)\text{Chi}\left(\frac{5dx}{2}\right)-10idx\left(\cosh\left(\frac{c}{2}\right)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[c + d*x])^(5/2)/x^2,x]
```

```
[Out] (a^2*(-I + Sinh[c + d*x])^2*Sqrt[a + I*a*Sinh[c + d*x]]*(20*Cosh[(c + d*x)/
2] - 10*Cosh[(3*(c + d*x))/2] - 2*Cosh[(5*(c + d*x))/2] + (5*I)*d*x*Cosh[(5
*c)/2]*CoshIntegral[(5*d*x)/2] - (10*I)*d*x*CoshIntegral[(d*x)/2]*(Cosh[c/2
] - I*Sinh[c/2]) + 15*d*x*CoshIntegral[(3*d*x)/2]*((-I)*Cosh[(3*c)/2] + Sin
h[(3*c)/2]) + 5*d*x*CoshIntegral[(5*d*x)/2]*Sinh[(5*c)/2] + (20*I)*Sinh[(c
+ d*x)/2] + (10*I)*Sinh[(3*(c + d*x))/2] - (2*I)*Sinh[(5*(c + d*x))/2] - 10
*d*x*Cosh[c/2]*SinhIntegral[(d*x)/2] - (10*I)*d*x*Sinh[c/2]*SinhIntegral[(d
*x)/2] + 15*d*x*Cosh[(3*c)/2]*SinhIntegral[(3*d*x)/2] - (15*I)*d*x*Sinh[(3*
c)/2]*SinhIntegral[(3*d*x)/2] + 5*d*x*Cosh[(5*c)/2]*SinhIntegral[(5*d*x)/2]
 + (5*I)*d*x*Sinh[(5*c)/2]*SinhIntegral[(5*d*x)/2]))/(8*x*(Cosh[(c + d*x)/2
] + I*Sinh[(c + d*x)/2])^5)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(i\,a\sinh{(dx+c)}+a)^{\frac{5}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)/x^2, x)
```

maple [F]   time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{(a+ia\sinh{(dx+c)})^{\frac{5}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(d*x+c))^(5/2)/x^2,x)
```

```
[Out] int((a+I*a*sinh(d*x+c))^(5/2)/x^2,x)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(i\,a\sinh{(dx+c)}+a)^{\frac{5}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)/x^2, x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+a\sinh{(c+d\,x)}\,1\mathrm{i})^{5/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(c + d*x)*1i)^(5/2)/x^2,x)
```

```
[Out] int((a + a*sinh(c + d*x)*1i)^(5/2)/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ia(\sinh(c+dx)-i))^{\frac{5}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))**(5/2)/x**2,x)
```

```
[Out] Integral((I*a*(sinh(c + d*x) - I))**(5/2)/x**2, x)
```

3.135 $\int \frac{(a+ia\sinh(c+dx))^{5/2}}{x^3}\,dx$

Optimal. Leaf size=536

$$-\frac{25}{32}ia^2d^2\sinh\left(\frac{5c}{2}-\frac{i\pi}{4}\right)\text{Chi}\left(\frac{5dx}{2}\right)\text{sech}\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}+\frac{5}{16}ia^2d^2\sinh\left(\frac{1}{4}(2c-i\pi)\right)\text{Chi}$$

```
[Out] -2*a^2*cosh(1/2*c+1/4*I*Pi+1/2*d*x)^4*(a+I*a*sinh(d*x+c))^(1/2)/x^2+5/16*a^
2*d^2*sinh(1/2*c+1/4*I*Pi)*sech(1/2*c+1/4*I*Pi+1/2*d*x)*Shi(1/2*d*x)*(a+I*a
*sinh(d*x+c))^(1/2)+45/32*I*a^2*d^2*cosh(3/2*c+1/4*I*Pi)*sech(1/2*c+1/4*I*P
i+1/2*d*x)*Shi(3/2*d*x)*(a+I*a*sinh(d*x+c))^(1/2)-25/32*a^2*d^2*sinh(5/2*c+
1/4*I*Pi)*sech(1/2*c+1/4*I*Pi+1/2*d*x)*Shi(5/2*d*x)*(a+I*a*sinh(d*x+c))^(1/
2)-25/32*a^2*d^2*Chi(5/2*d*x)*sech(1/2*c+1/4*I*Pi+1/2*d*x)*cosh(5/2*c+1/4*I
*Pi)*(a+I*a*sinh(d*x+c))^(1/2)+5/16*a^2*d^2*Chi(1/2*d*x)*sech(1/2*c+1/4*I*P
i+1/2*d*x)*cosh(1/2*c+1/4*I*Pi)*(a+I*a*sinh(d*x+c))^(1/2)+45/32*I*a^2*d^2*C
hi(3/2*d*x)*sech(1/2*c+1/4*I*Pi+1/2*d*x)*sinh(3/2*c+1/4*I*Pi)*(a+I*a*sinh(d
*x+c))^(1/2)-5*a^2*d*cosh(1/2*c+1/4*I*Pi+1/2*d*x)^3*sinh(1/2*c+1/4*I*Pi+1/2
*d*x)*(a+I*a*sinh(d*x+c))^(1/2)/x
```

Rubi [A] time = 0.64, antiderivative size = 536, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3319, 3314, 3312, 3303, 3298, 3301}

$$-\frac{25}{32}ia^2d^2\sinh\left(\frac{5c}{2}-\frac{i\pi}{4}\right)\text{Chi}\left(\frac{5dx}{2}\right)\text{sech}\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\sqrt{a+ia\sinh(c+dx)}+\frac{5}{16}ia^2d^2\sinh\left(\frac{1}{4}(2c-i\pi)\right)\text{Chi}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Sinh[c + d*x])^(5/2)/x^3,x]
```

```
[Out] (-2*a^2*Cosh[c/2 + (I/4)*Pi + (d*x)/2]^4*Sqrt[a + I*a*Sinh[c + d*x]])/x^2 -
 ((25*I)/32)*a^2*d^2*CoshIntegral[(5*d*x)/2]*Sech[c/2 + (I/4)*Pi + (d*x)/2]
*Sinh[(5*c)/2 - (I/4)*Pi]*Sqrt[a + I*a*Sinh[c + d*x]] + ((5*I)/16)*a^2*d^2*
CoshIntegral[(d*x)/2]*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sinh[(2*c - I*Pi)/4]*S
qrt[a + I*a*Sinh[c + d*x]] + ((45*I)/32)*a^2*d^2*CoshIntegral[(3*d*x)/2]*Se
ch[c/2 + (I/4)*Pi + (d*x)/2]*Sinh[(6*c + I*Pi)/4]*Sqrt[a + I*a*Sinh[c + d*x
]] - (5*a^2*d*Cosh[c/2 + (I/4)*Pi + (d*x)/2]^3*Sinh[c/2 + (I/4)*Pi + (d*x)/
2]*Sqrt[a + I*a*Sinh[c + d*x]])/x + ((5*I)/16)*a^2*d^2*Cosh[(2*c - I*Pi)/4]
*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a + I*a*Sinh[c + d*x]]*SinhIntegral[(d
*x)/2] + ((45*I)/32)*a^2*d^2*Cosh[(6*c + I*Pi)/4]*Sech[c/2 + (I/4)*Pi + (d*
x)/2]*Sqrt[a + I*a*Sinh[c + d*x]]*SinhIntegral[(3*d*x)/2] - ((25*I)/32)*a^2
*d^2*Cosh[(5*c)/2 - (I/4)*Pi]*Sech[c/2 + (I/4)*Pi + (d*x)/2]*Sqrt[a + I*a*S
inh[c + d*x]]*SinhIntegral[(5*d*x)/2]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+ia\sinh(c+dx))^{5/2}}{x^3}\,dx = \left(4a^2\operatorname{csch}\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}\right)\int \frac{\sinh^5\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)}{x^3}\,dx$$

$$= -\frac{2a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{x^2} - \frac{5a^2d\cosh^3\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sin}{}$$

$$= -\frac{2a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{x^2} - \frac{5a^2d\cosh^3\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sin}{}$$

$$= -\frac{2a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{x^2} - \frac{5a^2d\cosh^3\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sin}{}$$

$$= -\frac{2a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{x^2} - \frac{5a^2d\cosh^3\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sin}{}$$

$$= -\frac{2a^2\cosh^4\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\sqrt{a+ia\sinh(c+dx)}}{x^2} - \frac{25}{32}ia^2d^2\text{Chi}\left(\frac{5dx}{2}\right)\operatorname{sech}\left(\frac{c}{2}+\right.$$

Mathematica [B] time = 7.48, size = 4751, normalized size = 8.86

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Sinh[c + d*x])^(5/2)/x^3,x]
```

```
[Out] (2*((1/128 + I/128)*Cosh[5*(c/2 + (d*x)/2)] - (1/128 + I/128)*Sinh[5*(c/2 +
 (d*x)/2)])*(a + I*a*Sinh[c + d*x])^(5/2)*((-4*I)*d^3 - (10*I)*c*d^3 + (20*
I)*d^3*(c/2 + (d*x)/2) + 20*d^3*Cosh[2*(c/2 + (d*x)/2)] + 30*c*d^3*Cosh[2*(
c/2 + (d*x)/2)] - 60*d^3*(c/2 + (d*x)/2)*Cosh[2*(c/2 + (d*x)/2)] + (40*I)*d
^3*Cosh[4*(c/2 + (d*x)/2)] + (20*I)*c*d^3*Cosh[4*(c/2 + (d*x)/2)] - (40*I)*
d^3*(c/2 + (d*x)/2)*Cosh[4*(c/2 + (d*x)/2)] - 40*d^3*Cosh[6*(c/2 + (d*x)/2)
] + 20*c*d^3*Cosh[6*(c/2 + (d*x)/2)] - 40*d^3*(c/2 + (d*x)/2)*Cosh[6*(c/2 +
 (d*x)/2)] - (20*I)*d^3*Cosh[8*(c/2 + (d*x)/2)] + (30*I)*c*d^3*Cosh[8*(c/2
+ (d*x)/2)] - (60*I)*d^3*(c/2 + (d*x)/2)*Cosh[8*(c/2 + (d*x)/2)] + 4*d^3*Co
sh[10*(c/2 + (d*x)/2)] - 10*c*d^3*Cosh[10*(c/2 + (d*x)/2)] + 20*d^3*(c/2 +
(d*x)/2)*Cosh[10*(c/2 + (d*x)/2)] - (10*I)*c^2*d^3*Cosh[c/2 - 5*(c/2 + (d*x
)/2)]*CoshIntegral[(d*x)/2] + (40*I)*c*d^3*(c/2 + (d*x)/2)*Cosh[c/2 - 5*(c/
2 + (d*x)/2)]*CoshIntegral[(d*x)/2] - (40*I)*d^3*(c/2 + (d*x)/2)^2*Cosh[c/2
 - 5*(c/2 + (d*x)/2)]*CoshIntegral[(d*x)/2] + 10*c^2*d^3*Cosh[c/2 + 5*(c/2
```

+ (d*x)/2)]*CoshIntegral[(d*x)/2] - 40*c*d^3*(c/2 + (d*x)/2)*Cosh[c/2 + 5*(
c/2 + (d*x)/2)]*CoshIntegral[(d*x)/2] + 40*d^3*(c/2 + (d*x)/2)^2*Cosh[c/2 +
5*(c/2 + (d*x)/2)]*CoshIntegral[(d*x)/2] - 45*c^2*d^3*Cosh[(3*c)/2 - 5*(c/
2 + (d*x)/2)]*CoshIntegral[(-3*c)/2 + 3*(c/2 + (d*x)/2)] + 180*c*d^3*(c/2 +
(d*x)/2)*Cosh[(3*c)/2 - 5*(c/2 + (d*x)/2)]*CoshIntegral[(-3*c)/2 + 3*(c/2
+ (d*x)/2)] - 180*d^3*(c/2 + (d*x)/2)^2*Cosh[(3*c)/2 - 5*(c/2 + (d*x)/2)]*C
oshIntegral[(-3*c)/2 + 3*(c/2 + (d*x)/2)] + (45*I)*c^2*d^3*Cosh[(3*c)/2 + 5
*(c/2 + (d*x)/2)]*CoshIntegral[(-3*c)/2 + 3*(c/2 + (d*x)/2)] - (180*I)*c*d^
3*(c/2 + (d*x)/2)*Cosh[(3*c)/2 + 5*(c/2 + (d*x)/2)]*CoshIntegral[(-3*c)/2 +
3*(c/2 + (d*x)/2)] + (180*I)*d^3*(c/2 + (d*x)/2)^2*Cosh[(3*c)/2 + 5*(c/2 +
(d*x)/2)]*CoshIntegral[(-3*c)/2 + 3*(c/2 + (d*x)/2)] + (25*I)*c^2*d^3*Cosh
[(5*c)/2 - 5*(c/2 + (d*x)/2)]*CoshIntegral[(-5*c)/2 + 5*(c/2 + (d*x)/2)] -
(100*I)*c*d^3*(c/2 + (d*x)/2)*Cosh[(5*c)/2 - 5*(c/2 + (d*x)/2)]*CoshIntegra
l[(-5*c)/2 + 5*(c/2 + (d*x)/2)] + (100*I)*d^3*(c/2 + (d*x)/2)^2*Cosh[(5*c)/
2 - 5*(c/2 + (d*x)/2)]*CoshIntegral[(-5*c)/2 + 5*(c/2 + (d*x)/2)] - 25*c^2*
d^3*Cosh[(5*c)/2 + 5*(c/2 + (d*x)/2)]*CoshIntegral[(-5*c)/2 + 5*(c/2 + (d*x
)/2)] + 100*c*d^3*(c/2 + (d*x)/2)*Cosh[(5*c)/2 + 5*(c/2 + (d*x)/2)]*CoshInt
egral[(-5*c)/2 + 5*(c/2 + (d*x)/2)] - 100*d^3*(c/2 + (d*x)/2)^2*Cosh[(5*c)/
2 + 5*(c/2 + (d*x)/2)]*CoshIntegral[(-5*c)/2 + 5*(c/2 + (d*x)/2)] + 20*d^3*
Sinh[2*(c/2 + (d*x)/2)] + 30*c*d^3*Sinh[2*(c/2 + (d*x)/2)] - 60*d^3*(c/2 +
(d*x)/2)*Sinh[2*(c/2 + (d*x)/2)] + (40*I)*d^3*Sinh[4*(c/2 + (d*x)/2)] + (20
*I)*c*d^3*Sinh[4*(c/2 + (d*x)/2)] - (40*I)*d^3*(c/2 + (d*x)/2)*Sinh[4*(c/2
+ (d*x)/2)] - 40*d^3*Sinh[6*(c/2 + (d*x)/2)] + 20*c*d^3*Sinh[6*(c/2 + (d*x)
/2)] - 40*d^3*(c/2 + (d*x)/2)*Sinh[6*(c/2 + (d*x)/2)] - (20*I)*d^3*Sinh[8*(
c/2 + (d*x)/2)] + (30*I)*c*d^3*Sinh[8*(c/2 + (d*x)/2)] - (60*I)*d^3*(c/2 +
(d*x)/2)*Sinh[8*(c/2 + (d*x)/2)] + 4*d^3*Sinh[10*(c/2 + (d*x)/2)] - 10*c*d^
3*Sinh[10*(c/2 + (d*x)/2)] + 20*d^3*(c/2 + (d*x)/2)*Sinh[10*(c/2 + (d*x)/2)
] + (10*I)*c^2*d^3*CoshIntegral[(d*x)/2]*Sinh[c/2 - 5*(c/2 + (d*x)/2)] - (4
0*I)*c*d^3*(c/2 + (d*x)/2)*CoshIntegral[(d*x)/2]*Sinh[c/2 - 5*(c/2 + (d*x)/
2)] + (40*I)*d^3*(c/2 + (d*x)/2)^2*CoshIntegral[(d*x)/2]*Sinh[c/2 - 5*(c/2
+ (d*x)/2)] + 45*c^2*d^3*CoshIntegral[(-3*c)/2 + 3*(c/2 + (d*x)/2)]*Sinh[(3
c)/2 - 5(c/2 + (d*x)/2)] - 180*c*d^3*(c/2 + (d*x)/2)*CoshIntegral[(-3*c)/
2 + 3*(c/2 + (d*x)/2)]*Sinh[(3*c)/2 - 5*(c/2 + (d*x)/2)] + 180*d^3*(c/2 + (
d*x)/2)^2*CoshIntegral[(-3*c)/2 + 3*(c/2 + (d*x)/2)]*Sinh[(3*c)/2 - 5*(c/2
+ (d*x)/2)] - (25*I)*c^2*d^3*CoshIntegral[(-5*c)/2 + 5*(c/2 + (d*x)/2)]*Sin
h[(5*c)/2 - 5*(c/2 + (d*x)/2)] + (100*I)*c*d^3*(c/2 + (d*x)/2)*CoshIntegral
[(-5*c)/2 + 5*(c/2 + (d*x)/2)]*Sinh[(5*c)/2 - 5*(c/2 + (d*x)/2)] - (100*I)*
d^3*(c/2 + (d*x)/2)^2*CoshIntegral[(-5*c)/2 + 5*(c/2 + (d*x)/2)]*Sinh[(5*c)
/2 - 5*(c/2 + (d*x)/2)] + 10*c^2*d^3*CoshIntegral[(d*x)/2]*Sinh[c/2 + 5*(c/
2 + (d*x)/2)] - 40*c*d^3*(c/2 + (d*x)/2)*CoshIntegral[(d*x)/2]*Sinh[c/2 + 5
*(c/2 + (d*x)/2)] + 40*d^3*(c/2 + (d*x)/2)^2*CoshIntegral[(d*x)/2]*Sinh[c/2
+ 5*(c/2 + (d*x)/2)] + (45*I)*c^2*d^3*CoshIntegral[(-3*c)/2 + 3*(c/2 + (d*
x)/2)]*Sinh[(3*c)/2 + 5*(c/2 + (d*x)/2)] - (180*I)*c*d^3*(c/2 + (d*x)/2)*Co
shIntegral[(-3*c)/2 + 3*(c/2 + (d*x)/2)]*Sinh[(3*c)/2 + 5*(c/2 + (d*x)/2)]
+ (180*I)*d^3*(c/2 + (d*x)/2)^2*CoshIntegral[(-3*c)/2 + 3*(c/2 + (d*x)/2)]*

```
Sinh[(3*c)/2 + 5*(c/2 + (d*x)/2)] - 25*c^2*d^3*CoshIntegral[(-5*c)/2 + 5*(c
/2 + (d*x)/2)]*Sinh[(5*c)/2 + 5*(c/2 + (d*x)/2)] + 100*c*d^3*(c/2 + (d*x)/2
)*CoshIntegral[(-5*c)/2 + 5*(c/2 + (d*x)/2)]*Sinh[(5*c)/2 + 5*(c/2 + (d*x)/
2)] - 100*d^3*(c/2 + (d*x)/2)^2*CoshIntegral[(-5*c)/2 + 5*(c/2 + (d*x)/2)]*
Sinh[(5*c)/2 + 5*(c/2 + (d*x)/2)] + (10*I)*c^2*d^3*Cosh[c/2 - 5*(c/2 + (d*x
)/2)]*SinhIntegral[(d*x)/2] - (40*I)*c*d^3*(c/2 + (d*x)/2)*Cosh[c/2 - 5*(c/
2 + (d*x)/2)]*SinhIntegral[(d*x)/2] + (40*I)*d^3*(c/2 + (d*x)/2)^2*Cosh[c/2
 - 5*(c/2 + (d*x)/2)]*SinhIntegral[(d*x)/2] + 10*c^2*d^3*Cosh[c/2 + 5*(c/2
+ (d*x)/2)]*SinhIntegral[(d*x)/2] - 40*c*d^3*(c/2 + (d*x)/2)*Cosh[c/2 + 5*(
c/2 + (d*x)/2)]*SinhIntegral[(d*x)/2] + 40*d^3*(c/2 + (d*x)/2)^2*Cosh[c/2 +
 5*(c/2 + (d*x)/2)]*SinhIntegral[(d*x)/2] - (10*I)*c^2*d^3*Sinh[c/2 - 5*(c/
2 + (d*x)/2)]*SinhIntegral[(d*x)/2] + (40*I)*c*d^3*(c/2 + (d*x)/2)*Sinh[c/2
 - 5*(c/2 + (d*x)/2)]*SinhIntegral[(d*x)/2] - (40*I)*d^3*(c/2 + (d*x)/2)^2*
Sinh[c/2 - 5*(c/2 + (d*x)/2)]*SinhIntegral[(d*x)/2] + 10*c^2*d^3*Sinh[c/2 +
 5*(c/2 + (d*x)/2)]*SinhIntegral[(d*x)/2] - 40*c*d^3*(c/2 + (d*x)/2)*Sinh[c
/2 + 5*(c/2 + (d*x)/2)]*SinhIntegral[(d*x)/2] + 40*d^3*(c/2 + (d*x)/2)^2*Si
nh[c/2 + 5*(c/2 + (d*x)/2)]*SinhIntegral[(d*x)/2] + (25*I)*c^2*d^3*Cosh[(5*
c)/2 - 5*(c/2 + (d*x)/2)]*SinhIntegral[(5*c)/2 - 5*(c/2 + (d*x)/2)] - (100*
I)*c*d^3*(c/2 + (d*x)/2)*Cosh[(5*c)/2 - 5*(c/2 + (d*x)/2)]*SinhIntegral[(5*
c)/2 - 5*(c/2 + (d*x)/2)] + (100*I)*d^3*(c/2 + (d*x)/2)^2*Cosh[(5*c)/2 - 5*
(c/2 + (d*x)/2)]*SinhIntegral[(5*c)/2 - 5*(c/2 + (d*x)/2)] + 25*c^2*d^3*Cos
h[(5*c)/2 + 5*(c/2 + (d*x)/2)]*SinhIntegral[(5*c)/2 - 5*(c/2 + (d*x)/2)] -
100*c*d^3*(c/2 + (d*x)/2)*Cosh[(5*c)/2 + 5*(c/2 + (d*x)/2)]*SinhIntegral[(5
*c)/2 - 5*(c/2 + (d*x)/2)] + 100*d^3*(c/2 + (d*x)/2)^2*Cosh[(5*c)/2 + 5*(c/
2 + (d*x)/2)]*SinhIntegral[(5*c)/2 - 5*(c/2 + (d*x)/2)] - (25*I)*c^2*d^3*Si
nh[(5*c)/2 - 5*(c/2 + (d*x)/2)]*SinhIntegral[(5*c)/2 - 5*(c/2 + (d*x)/2)] +
 (100*I)*c*d^3*(c/2 + (d*x)/2)*Sinh[(5*c)/2 - 5*(c/2 + (d*x)/2)]*SinhIntegr
al[(5*c)/2 - 5*(c/2 + (d*x)/2)] - (100*I)*d^3*(c/2 + (d*x)/2)^2*Sinh[(5*c)/
2 - 5*(c/2 + (d*x)/2)]*SinhIntegral[(5*c)/2 - 5*(c/2 + (d*x)/2)] + 25*c^2*d
^3*Sinh[(5*c)/2 + 5*(c/2 + (d*x)/2)]*SinhIntegral[(5*c)/2 - 5*(c/2 + (d*x)/
2)] - 100*c*d^3*(c/2 + (d*x)/2)*Sinh[(5*c)/2 + 5*(c/2 + (d*x)/2)]*SinhInteg
ral[(5*c)/2 - 5*(c/2 + (d*x)/2)] + 100*d^3*(c/2 + (d*x)/2)^2*Sinh[(5*c)/2 +
 5*(c/2 + (d*x)/2)]*SinhIntegral[(5*c)/2 - 5*(c/2 + (d*x)/2)] - 45*c^2*d^3*
Cosh[(3*c)/2 - 5*(c/2 + (d*x)/2)]*SinhIntegral[(3*c)/2 - 3*(c/2 + (d*x)/2)]
 + 180*c*d^3*(c/2 + (d*x)/2)*Cosh[(3*c)/2 - 5*(c/2 + (d*x)/2)]*SinhIntegral
[(3*c)/2 - 3*(c/2 + (d*x)/2)] - 180*d^3*(c/2 + (d*x)/2)^2*Cosh[(3*c)/2 - 5*
(c/2 + (d*x)/2)]*SinhIntegral[(3*c)/2 - 3*(c/2 + (d*x)/2)] - (45*I)*c^2*d^3
*Cosh[(3*c)/2 + 5*(c/2 + (d*x)/2)]*SinhIntegral[(3*c)/2 - 3*(c/2 + (d*x)/2)
] + (180*I)*c*d^3*(c/2 + (d*x)/2)*Cosh[(3*c)/2 + 5*(c/2 + (d*x)/2)]*SinhInt
egral[(3*c)/2 - 3*(c/2 + (d*x)/2)] - (180*I)*d^3*(c/2 + (d*x)/2)^2*Cosh[(3*
c)/2 + 5*(c/2 + (d*x)/2)]*SinhIntegral[(3*c)/2 - 3*(c/2 + (d*x)/2)] + 45*c^
2*d^3*Sinh[(3*c)/2 - 5*(c/2 + (d*x)/2)]*SinhIntegral[(3*c)/2 - 3*(c/2 + (d*
x)/2)] - 180*c*d^3*(c/2 + (d*x)/2)*Sinh[(3*c)/2 - 5*(c/2 + (d*x)/2)]*SinhIn
tegral[(3*c)/2 - 3*(c/2 + (d*x)/2)] + 180*d^3*(c/2 + (d*x)/2)^2*Sinh[(3*c)/
2 - 5*(c/2 + (d*x)/2)]*SinhIntegral[(3*c)/2 - 3*(c/2 + (d*x)/2)] - (45*I)*c
```

```
^2*d^3*Sinh[(3*c)/2 + 5*(c/2 + (d*x)/2)]*SinhIntegral[(3*c)/2 - 3*(c/2 + (d
*x)/2)] + (180*I)*c*d^3*(c/2 + (d*x)/2)*Sinh[(3*c)/2 + 5*(c/2 + (d*x)/2)]*S
inhIntegral[(3*c)/2 - 3*(c/2 + (d*x)/2)] - (180*I)*d^3*(c/2 + (d*x)/2)^2*Si
nh[(3*c)/2 + 5*(c/2 + (d*x)/2)]*SinhIntegral[(3*c)/2 - 3*(c/2 + (d*x)/2)]))
/(d*(-c + 2*(c/2 + (d*x)/2))^2*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2]
)^5)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(i\,a\sinh(dx+c)+a)^{\frac{5}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)/x^3, x)
```

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int \frac{(a+ia\sinh(dx+c))^{\frac{5}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(d*x+c))^(5/2)/x^3,x)
```

```
[Out] int((a+I*a*sinh(d*x+c))^(5/2)/x^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(i\,a\sinh(dx+c)+a)^{\frac{5}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(d*x + c) + a)^(5/2)/x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + a \sinh(c + d\,x)\; 1\mathrm{i})^{5/2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(c + d*x)*1i)^(5/2)/x^3,x)
```

```
[Out] int((a + a*sinh(c + d*x)*1i)^(5/2)/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ia\,(\sinh(c + dx) - i))^{\frac{5}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(d*x+c))**(5/2)/x**3,x)
```

```
[Out] Integral((I*a*(sinh(c + d*x) - I))**(5/2)/x**3, x)
```

3.136 $\int \frac{x^3}{\sqrt{a+ia\sinh(e+fx)}}\,dx$

Optimal. Leaf size=493

$$\frac{96i\text{Li}_4\left(-e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{f^4\sqrt{a+ia\sinh(e+fx)}}-\frac{96i\text{Li}_4\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{f^4\sqrt{a+ia\sinh(e+fx)}}-\frac{48ix\text{Li}_3\left(-e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cos}{f^3\sqrt{a+ia\sinh(e}}$$

```
[Out] -4*I*x^3*arctanh(exp(1/2*e+3/4*I*Pi+1/2*f*x))*cosh(1/2*e+1/4*I*Pi+1/2*f*x)/
f/(a+I*a*sinh(f*x+e))^(1/2)+12*I*x^2*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(2
,exp(1/2*e+3/4*I*Pi+1/2*f*x))/f^2/(a+I*a*sinh(f*x+e))^(1/2)-12*I*x^2*cosh(1
/2*e+1/4*I*Pi+1/2*f*x)*polylog(2,-exp(1/2*e+3/4*I*Pi+1/2*f*x))/f^2/(a+I*a*s
inh(f*x+e))^(1/2)-48*I*x*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(3,exp(1/2*e+3
/4*I*Pi+1/2*f*x))/f^3/(a+I*a*sinh(f*x+e))^(1/2)+48*I*x*cosh(1/2*e+1/4*I*Pi+
1/2*f*x)*polylog(3,-exp(1/2*e+3/4*I*Pi+1/2*f*x))/f^3/(a+I*a*sinh(f*x+e))^(1
/2)+96*I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(4,exp(1/2*e+3/4*I*Pi+1/2*f*x)
)/f^4/(a+I*a*sinh(f*x+e))^(1/2)-96*I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(4
,-exp(1/2*e+3/4*I*Pi+1/2*f*x))/f^4/(a+I*a*sinh(f*x+e))^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 493, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3319, 4182, 2531, 6609, 2282, 6589}

$$\frac{12ix^2\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{fx}{2}+\frac{1}{4}(2e-i\pi)}\right)}{f^2\sqrt{a+ia\sinh(e+fx)}}-\frac{12ix^2\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{fx}{2}+\frac{1}{4}(2e-i\pi)}\right)}{f^2\sqrt{a+ia\sinh(e+fx)}}-\frac{48ix\,\text{c}}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3/Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] ((4*I)*x^3*ArcTanh[E^((2*e - I*Pi)/4 + (f*x)/2)]*Cosh[e/2 + (I/4)*Pi + (f*x
)/2])/(f*Sqrt[a + I*a*Sinh[e + f*x]]) + ((12*I)*x^2*Cosh[e/2 + (I/4)*Pi + (
f*x)/2]*PolyLog[2, -E^((2*e - I*Pi)/4 + (f*x)/2)])/(f^2*Sqrt[a + I*a*Sinh[e
 + f*x]]) - ((12*I)*x^2*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[2, E^((2*e -
 I*Pi)/4 + (f*x)/2)])/(f^2*Sqrt[a + I*a*Sinh[e + f*x]]) - ((48*I)*x*Cosh[e/
2 + (I/4)*Pi + (f*x)/2]*PolyLog[3, -E^((2*e - I*Pi)/4 + (f*x)/2)])/(f^3*Sqr
t[a + I*a*Sinh[e + f*x]]) + ((48*I)*x*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLo
g[3, E^((2*e - I*Pi)/4 + (f*x)/2)])/(f^3*Sqrt[a + I*a*Sinh[e + f*x]]) + ((9
6*I)*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[4, -E^((2*e - I*Pi)/4 + (f*x)/2
)])/(f^4*Sqrt[a + I*a*Sinh[e + f*x]]) - ((96*I)*Cosh[e/2 + (I/4)*Pi + (f*x)
/2]*PolyLog[4, E^((2*e - I*Pi)/4 + (f*x)/2)])/(f^4*Sqrt[a + I*a*Sinh[e + f*
x]])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
```

```
d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^3}{\sqrt{a+ia\sinh(e+fx)}}\,dx = \frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\int x^3\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx}{\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{4ix^3\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} - \frac{\left(6\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\right)\int x^2\log\left(1\right.}{f\sqrt{a+ia\sinh(e+}}$$

$$= \frac{4ix^3\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} + \frac{12ix^2\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\mathrm{Li}_2\left(-e^{\frac{1}{4}}\right.}{f^2\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{4ix^3\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} + \frac{12ix^2\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\mathrm{Li}_2\left(-e^{\frac{1}{4}}\right.}{f^2\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{4ix^3\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} + \frac{12ix^2\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\mathrm{Li}_2\left(-e^{\frac{1}{4}}\right.}{f^2\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{4ix^3\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} + \frac{12ix^2\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\mathrm{Li}_2\left(-e^{\frac{1}{4}}\right.}{f^2\sqrt{a+ia\sinh(e+fx)}}$$

Mathematica [A] time = 1.22, size = 331, normalized size = 0.67

$$\frac{(1-i)(-1)^{3/4}\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)\left(e^3\log\left(1-(-1)^{3/4}e^{\frac{1}{2}(e+fx)}\right)-e^3\log\left((-1)^{3/4}e^{\frac{1}{2}(e+fx)}+1\right)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3/Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] ((1 - I)*(-1)^(3/4)*((2*I)*e^3*ArcTan[(-1)^(1/4)*E^((e + f*x)/2)] + e^3*Log
[1 - (-1)^(3/4)*E^((e + f*x)/2)] + f^3*x^3*Log[1 - (-1)^(3/4)*E^((e + f*x)/
2)] - e^3*Log[1 + (-1)^(3/4)*E^((e + f*x)/2)] - f^3*x^3*Log[1 + (-1)^(3/4)*
E^((e + f*x)/2)] - 6*f^2*x^2*PolyLog[2, -((-1)^(3/4)*E^((e + f*x)/2))] + 6*
f^2*x^2*PolyLog[2, (-1)^(3/4)*E^((e + f*x)/2)] + 24*f*x*PolyLog[3, -((-1)^(
```

```
3/4)*E^((e + f*x)/2))] - 24*f*x*PolyLog[3, (-1)^(3/4)*E^((e + f*x)/2)] - 48
*PolyLog[4, -((-1)^(3/4)*E^((e + f*x)/2))] + 48*PolyLog[4, (-1)^(3/4)*E^((e
 + f*x)/2)])*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2]))/(f^4*Sqrt[a + I*a*S
inh[e + f*x]])
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{2i\sqrt{\frac{1}{2}i\,ae^{\left(-fx-e\right)}}\,x^{3}e^{\left(fx+e\right)}}{ae^{\left(fx+e\right)}-i\,a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-2*I*sqrt(1/2*I*a*e^(-f*x - e))*x^3*e^(f*x + e)/(a*e^(f*x + e) - I
*a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3}}{\sqrt{i\,a\sinh\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(x^3/sqrt(I*a*sinh(f*x + e) + a), x)
```

maple [F] time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{x^{3}}{\sqrt{a+ia\sinh\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a+I*a*sinh(f*x+e))^(1/2),x)
```

```
[Out] int(x^3/(a+I*a*sinh(f*x+e))^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3}}{\sqrt{i\,a\sinh\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^3/sqrt(I*a*sinh(f*x + e) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3}{\sqrt{a + a \sinh\left(e + f\,x\right)\,1\mathrm{i}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a + a*sinh(e + f*x)*1i)^(1/2),x)
```

```
[Out] int(x^3/(a + a*sinh(e + f*x)*1i)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\sqrt{ia\left(\sinh\left(e + fx\right) - i\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/(a+I*a*sinh(f*x+e))**(1/2),x)
```

```
[Out] Integral(x**3/sqrt(I*a*(sinh(e + f*x) - I)), x)
```

3.137 $\int \frac{x^2}{\sqrt{a+ia\sinh(e+fx)}}\,dx$

Optimal. Leaf size=349

$$-\frac{16i\text{Li}_3\left(-e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{f^3\sqrt{a+ia\sinh(e+fx)}}+\frac{16i\text{Li}_3\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{f^3\sqrt{a+ia\sinh(e+fx)}}+\frac{8ix\text{Li}_2\left(-e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\text{co}}{f^2\sqrt{a+ia\sinh}}$$

```
[Out] -4*I*x^2*arctanh(exp(1/2*e+3/4*I*Pi+1/2*f*x))*cosh(1/2*e+1/4*I*Pi+1/2*f*x)/
f/(a+I*a*sinh(f*x+e))^(1/2)+8*I*x*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(2,ex
p(1/2*e+3/4*I*Pi+1/2*f*x))/f^2/(a+I*a*sinh(f*x+e))^(1/2)-8*I*x*cosh(1/2*e+1
/4*I*Pi+1/2*f*x)*polylog(2,-exp(1/2*e+3/4*I*Pi+1/2*f*x))/f^2/(a+I*a*sinh(f*
x+e))^(1/2)-16*I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(3,exp(1/2*e+3/4*I*Pi+
1/2*f*x))/f^3/(a+I*a*sinh(f*x+e))^(1/2)+16*I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*p
olylog(3,-exp(1/2*e+3/4*I*Pi+1/2*f*x))/f^3/(a+I*a*sinh(f*x+e))^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 349, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {3319, 4182, 2531, 2282, 6589}

$$\frac{8ix\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{fx}{2}+\frac{1}{4}(2e-i\pi)}\right)}{f^2\sqrt{a+ia\sinh(e+fx)}}-\frac{8ix\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{fx}{2}+\frac{1}{4}(2e-i\pi)}\right)}{f^2\sqrt{a+ia\sinh(e+fx)}}-\frac{16i\cosh}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] ((4*I)*x^2*ArcTanh[E^((2*e - I*Pi)/4 + (f*x)/2)]*Cosh[e/2 + (I/4)*Pi + (f*x
)/2])/(f*Sqrt[a + I*a*Sinh[e + f*x]]) + ((8*I)*x*Cosh[e/2 + (I/4)*Pi + (f*x
)/2]*PolyLog[2, -E^((2*e - I*Pi)/4 + (f*x)/2)])/(f^2*Sqrt[a + I*a*Sinh[e +
f*x]]) - ((8*I)*x*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[2, E^((2*e - I*Pi)
/4 + (f*x)/2)])/(f^2*Sqrt[a + I*a*Sinh[e + f*x]]) - ((16*I)*Cosh[e/2 + (I/4
)*Pi + (f*x)/2]*PolyLog[3, -E^((2*e - I*Pi)/4 + (f*x)/2)])/(f^3*Sqrt[a + I*
a*Sinh[e + f*x]]) + ((16*I)*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[3, E^((2
*e - I*Pi)/4 + (f*x)/2)])/(f^3*Sqrt[a + I*a*Sinh[e + f*x]])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2}{\sqrt{a+ia\sinh(e+fx)}}\,dx = \frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\int x^2\text{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx}{\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{4ix^2\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} - \frac{\left(4\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\right)\int x\log\left(\cdots\right.}{f\sqrt{a+ia\sinh(e+\cdots}}$$

$$= \frac{4ix^2\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} + \frac{8ix\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\text{Li}_2\left(-e^{\frac{1}{4}\cdots}\right.}{f^2\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{4ix^2\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} + \frac{8ix\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\text{Li}_2\left(-e^{\frac{1}{4}\cdots}\right.}{f^2\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{4ix^2\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} + \frac{8ix\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\text{Li}_2\left(-e^{\frac{1}{4}\cdots}\right.}{f^2\sqrt{a+ia\sinh(e+fx)}}$$

Mathematica [A] time = 0.93, size = 276, normalized size = 0.79

$$\frac{(1+i)(-1)^{3/4}\left(\sinh\left(\frac{1}{2}(e+fx)\right)-i\cosh\left(\frac{1}{2}(e+fx)\right)\right)\left(-e^2\log\left(1-(-1)^{3/4}e^{\frac{1}{2}(e+fx)}\right)+e^2\log\left((-1)^{3/4}e^{\frac{1}{2}(e+fx)}+1\right)\cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] ((1 + I)*(-1)^(3/4)*((-2*I)*e^2*ArcTan[(-1)^(1/4)*E^((e + f*x)/2)] - e^2*Lo
g[1 - (-1)^(3/4)*E^((e + f*x)/2)] + f^2*x^2*Log[1 - (-1)^(3/4)*E^((e + f*x)
/2)] + e^2*Log[1 + (-1)^(3/4)*E^((e + f*x)/2)] - f^2*x^2*Log[1 + (-1)^(3/4)
*E^((e + f*x)/2)] - 4*f*x*PolyLog[2, -((-1)^(3/4)*E^((e + f*x)/2))] + 4*f*x
*PolyLog[2, (-1)^(3/4)*E^((e + f*x)/2)] + 8*PolyLog[3, -((-1)^(3/4)*E^((e +
 f*x)/2))] - 8*PolyLog[3, (-1)^(3/4)*E^((e + f*x)/2)])*((-I)*Cosh[(e + f*x)
/2] + Sinh[(e + f*x)/2]))/(f^3*Sqrt[a + I*a*Sinh[e + f*x]])
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{2i\sqrt{\frac{1}{2}i\,ae^{\left(-fx-e\right)}}\,x^2e^{\left(fx+e\right)}}{ae^{\left(fx+e\right)}-i\,a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-2*I*sqrt(1/2*I*a*e^(-f*x - e))*x^2*e^(f*x + e)/(a*e^(f*x + e) - I
*a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{i\,a\sinh\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(x^2/sqrt(I*a*sinh(f*x + e) + a), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{a+ia\sinh\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a+I*a*sinh(f*x+e))^(1/2),x)
```

```
[Out] int(x^2/(a+I*a*sinh(f*x+e))^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{i\,a\sinh\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^2/sqrt(I*a*sinh(f*x + e) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2}{\sqrt{a+a\sinh\left(e+f\,x\right)\,1{}\mathrm{i}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a + a*sinh(e + f*x)*1i)^(1/2),x)
```

```
[Out] int(x^2/(a + a*sinh(e + f*x)*1i)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{ia\left(\sinh\left(e+fx\right)-i\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(a+I*a*sinh(f*x+e))**(1/2),x)
```

```
[Out] Integral(x**2/sqrt(I*a*(sinh(e + f*x) - I)), x)
```

3.138 $\int \frac{x}{\sqrt{a+ia\sinh(e+fx)}}\,dx$

Optimal. Leaf size=207

$$\frac{4i\text{Li}_2\left(-e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{f^2\sqrt{a+ia\sinh(e+fx)}}-\frac{4i\text{Li}_2\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{f^2\sqrt{a+ia\sinh(e+fx)}}+\frac{4ix\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\tanh^{-}}{f\sqrt{a+ia\sinh(e+}}$$

```
[Out] -4*I*x*arctanh(exp(1/2*e+3/4*I*Pi+1/2*f*x))*cosh(1/2*e+1/4*I*Pi+1/2*f*x)/f/
(a+I*a*sinh(f*x+e))^(1/2)+4*I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(2,exp(1/
2*e+3/4*I*Pi+1/2*f*x))/f^2/(a+I*a*sinh(f*x+e))^(1/2)-4*I*cosh(1/2*e+1/4*I*P
i+1/2*f*x)*polylog(2,-exp(1/2*e+3/4*I*Pi+1/2*f*x))/f^2/(a+I*a*sinh(f*x+e))^
(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {3319, 4182, 2279, 2391}

$$\frac{4i\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{fx}{2}+\frac{1}{4}(2e-i\pi)}\right)}{f^2\sqrt{a+ia\sinh(e+fx)}}-\frac{4i\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{fx}{2}+\frac{1}{4}(2e-i\pi)}\right)}{f^2\sqrt{a+ia\sinh(e+fx)}}+\frac{4ix\cosh\left(\frac{e}{2}\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Int[x/Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] ((4*I)*x*ArcTanh[E^((2*e - I*Pi)/4 + (f*x)/2)]*Cosh[e/2 + (I/4)*Pi + (f*x)/
2])/(f*Sqrt[a + I*a*Sinh[e + f*x]]) + ((4*I)*Cosh[e/2 + (I/4)*Pi + (f*x)/2]
*PolyLog[2, -E^((2*e - I*Pi)/4 + (f*x)/2)])/(f^2*Sqrt[a + I*a*Sinh[e + f*x]
]) - ((4*I)*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[2, E^((2*e - I*Pi)/4 + (
f*x)/2)])/(f^2*Sqrt[a + I*a*Sinh[e + f*x]])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rubi steps

$$\int \frac{x}{\sqrt{a+ia\sinh(e+fx)}}\,dx = \frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\int x\operatorname{csch}\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx}{\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{4ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} - \frac{\left(2\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\right)\int\log\left(1-\right.}{f\sqrt{a+ia\sinh(e+}}$$

$$= \frac{4ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} - \frac{\left(4\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\right)\operatorname{Subst}\left(\int\right.}{f^2\sqrt{a+ia\sinh}}$$

$$= \frac{4ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{f\sqrt{a+ia\sinh(e+fx)}} + \frac{4i\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\operatorname{Li}_2\left(-e^{\frac{1}{4}(2e\right.}}{f^2\sqrt{a+ia\sinh(e+fx)}}$$

Mathematica [A] time = 0.46, size = 221, normalized size = 1.07

$$\frac{\sqrt{2}\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)\left(-2i\left(\operatorname{Li}_2\left(-\sqrt[4]{-1}\,e^{-\frac{e}{2}-\frac{fx}{2}}\right)-\operatorname{Li}_2\left(\sqrt[4]{-1}\,e^{-\frac{e}{2}-\frac{fx}{2}}\right)\right)-\frac{1}{2}(2ie+2ifx+\pi)\right.}{f^2\sqrt{a+ia\sinh(}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Sqrt[a + I*a*Sinh[e + f*x]],x]
```

```
[Out] (Sqrt[2]*(-2*e*ArcTan[(I + Tanh[(e + f*x)/4])/Sqrt[2]] + I*Pi*ArcTan[(I + T
anh[(e + f*x)/4])/Sqrt[2]] - (((2*I)*e + Pi + (2*I)*f*x)*(Log[1 - (-1)^(1/4
)*E^(-1/2*e - (f*x)/2)] - Log[1 + (-1)^(1/4)*E^(-1/2*e - (f*x)/2)]))/2 - (2
*I)*(PolyLog[2, -((-1)^(1/4)*E^(-1/2*e - (f*x)/2))] - PolyLog[2, (-1)^(1/4)
*E^(-1/2*e - (f*x)/2)]))*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2]))/(f^2*Sq
rt[a + I*a*Sinh[e + f*x]])
```

fricas [F] time = 0.79, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{2i\sqrt{\frac{1}{2}i\,ae^{\left(-fx-e\right)}}\,xe^{\left(fx+e\right)}}{ae^{\left(fx+e\right)}-i\,a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-2*I*sqrt(1/2*I*a*e^(-f*x - e))*x*e^(f*x + e)/(a*e^(f*x + e) - I*a
), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{i\,a\sinh\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(x/sqrt(I*a*sinh(f*x + e) + a), x)
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{a+ia\sinh\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+I*a*sinh(f*x+e))^(1/2),x)
```

```
[Out] int(x/(a+I*a*sinh(f*x+e))^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{i\,a\sinh\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x/sqrt(I*a*sinh(f*x + e) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x}{\sqrt{a + a \sinh\left(e + f x\right) 1\mathrm{i}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a + a*sinh(e + f*x)*1i)^(1/2),x)
```

```
[Out] int(x/(a + a*sinh(e + f*x)*1i)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{ia \left(\sinh\left(e + f x\right) - i\right)}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(f*x+e))**(1/2),x)
```

```
[Out] Integral(x/sqrt(I*a*(sinh(e + f*x) - I)), x)
```

3.139 $\int \frac{1}{x\sqrt{a+ia\sinh(e+fx)}}\,dx$

Optimal. Leaf size=24

$$\text{Int}\left(\frac{1}{x\sqrt{a+ia\sinh(e+fx)}},x\right)$$

```
[Out] Unintegrable(1/x/(a+I*a*sinh(f*x+e))^(1/2),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x\sqrt{a+ia\sinh(e+fx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*Sqrt[a + I*a*Sinh[e + f*x]]),x]
[Out] Defer[Int][1/(x*Sqrt[a + I*a*Sinh[e + f*x]]), x]
```

Rubi steps

$$\int \frac{1}{x\sqrt{a+ia\sinh(e+fx)}}\,dx=\int \frac{1}{x\sqrt{a+ia\sinh(e+fx)}}\,dx$$

Mathematica [A] time = 3.80, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{a+ia\sinh(e+fx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*Sqrt[a + I*a*Sinh[e + f*x]]),x]
[Out] Integrate[1/(x*Sqrt[a + I*a*Sinh[e + f*x]]), x]
```

fricas [A] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{2i\sqrt{\frac{1}{2}i\,ae^{(-fx-e)}}\,e^{(fx+e)}}{axe^{(fx+e)}-i\,ax},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-2*I*sqrt(1/2*I*a*e^(-f*x - e))*e^(f*x + e)/(a*x*e^(f*x + e) - I*a
*x), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{i\,a\sinh\left(fx+e\right)+a}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(I*a*sinh(f*x + e) + a)*x), x)
```

maple [A] time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{a+ia\sinh\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/(a+I*a*sinh(f*x+e))^(1/2),x)
```

```
[Out] int(1/x/(a+I*a*sinh(f*x+e))^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{i\,a\sinh\left(fx+e\right)+a}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(I*a*sinh(f*x + e) + a)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{x\,\sqrt{a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1{}\mathrm{i}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*(a + a*sinh(e + f*x)*1i)^(1/2)),x)
[Out] int(1/(x*(a + a*sinh(e + f*x)*1i)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{ia\left(\sinh\left(e+fx\right)-i\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(f*x+e))**(1/2),x)
[Out] Integral(1/(x*sqrt(I*a*(sinh(e + f*x) - I))), x)
```

3.140 $\int \frac{1}{x^2\sqrt{a+ia\sinh(e+fx)}}\,dx$

Optimal. Leaf size=24

$$\text{Int}\left(\frac{1}{x^2\sqrt{a+ia\sinh(e+fx)}},x\right)$$

```
[Out] Unintegrable(1/x^2/(a+I*a*sinh(f*x+e))^(1/2),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2\sqrt{a+ia\sinh(e+fx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x^2*Sqrt[a + I*a*Sinh[e + f*x]]),x]
[Out] Defer[Int][1/(x^2*Sqrt[a + I*a*Sinh[e + f*x]]), x]
```

Rubi steps

$$\int \frac{1}{x^2\sqrt{a+ia\sinh(e+fx)}}\,dx=\int \frac{1}{x^2\sqrt{a+ia\sinh(e+fx)}}\,dx$$

Mathematica [A] time = 3.85, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\sqrt{a+ia\sinh(e+fx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x^2*Sqrt[a + I*a*Sinh[e + f*x]]),x]
[Out] Integrate[1/(x^2*Sqrt[a + I*a*Sinh[e + f*x]]), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{2i\sqrt{\frac{1}{2}i\,ae^{(-fx-e)}}\,e^{(fx+e)}}{ax^2e^{(fx+e)}-i\,ax^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-2*I*sqrt(1/2*I*a*e^(-f*x - e))*e^(f*x + e)/(a*x^2*e^(f*x + e) - I
*a*x^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{i\,a \sinh\left(f\,x + e\right) + a}\,x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(I*a*sinh(f*x + e) + a)*x^2), x)
```

maple [A] time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{1}{x^{2}\sqrt{a + ia\sinh\left(fx + e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(a+I*a*sinh(f*x+e))^(1/2),x)
```

```
[Out] int(1/x^2/(a+I*a*sinh(f*x+e))^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{i\,a \sinh\left(f\,x + e\right) + a}\,x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+I*a*sinh(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(I*a*sinh(f*x + e) + a)*x^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{x^2\,\sqrt{a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1{}\mathrm{i}}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*(a + a*sinh(e + f*x)*1i)^(1/2)),x)
[Out] int(1/(x^2*(a + a*sinh(e + f*x)*1i)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\sqrt{ia\left(\sinh\left(e+fx\right)-i\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/(a+I*a*sinh(f*x+e))**(1/2),x)
[Out] Integral(1/(x**2*sqrt(I*a*(sinh(e + f*x) - I))), x)
```

3.141 $\int \frac{x^3}{(a+ia\sinh(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=807

$$\frac{\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)x^3}{2af\sqrt{i\sinh(e+fx)a+a}}+\frac{i\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)x^3}{af\sqrt{i\sinh(e+fx)a+a}}+\frac{3i\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\mathrm{Li}_2\left(-e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right.}{af^2\sqrt{i\sinh(e+fx)a+a}}$$

```
[Out] 3*x^2/a/f^2/(a+I*a*sinh(f*x+e))^(1/2)+24*I*x*arctanh(exp(1/2*e+3/4*I*Pi+1/2
*f*x))*cosh(1/2*e+1/4*I*Pi+1/2*f*x)/a/f^3/(a+I*a*sinh(f*x+e))^(1/2)-I*x^3*a
rctanh(exp(1/2*e+3/4*I*Pi+1/2*f*x))*cosh(1/2*e+1/4*I*Pi+1/2*f*x)/a/f/(a+I*a
*sinh(f*x+e))^(1/2)-24*I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(2,exp(1/2*e+3
/4*I*Pi+1/2*f*x))/a/f^4/(a+I*a*sinh(f*x+e))^(1/2)+3*I*x^2*cosh(1/2*e+1/4*I*
Pi+1/2*f*x)*polylog(2,exp(1/2*e+3/4*I*Pi+1/2*f*x))/a/f^2/(a+I*a*sinh(f*x+e)
)^(1/2)+24*I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(2,-exp(1/2*e+3/4*I*Pi+1/2
*f*x))/a/f^4/(a+I*a*sinh(f*x+e))^(1/2)-3*I*x^2*cosh(1/2*e+1/4*I*Pi+1/2*f*x)
*polylog(2,-exp(1/2*e+3/4*I*Pi+1/2*f*x))/a/f^2/(a+I*a*sinh(f*x+e))^(1/2)-12
*I*x*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(3,exp(1/2*e+3/4*I*Pi+1/2*f*x))/a/
f^3/(a+I*a*sinh(f*x+e))^(1/2)+12*I*x*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(3
,-exp(1/2*e+3/4*I*Pi+1/2*f*x))/a/f^3/(a+I*a*sinh(f*x+e))^(1/2)+24*I*cosh(1/
2*e+1/4*I*Pi+1/2*f*x)*polylog(4,exp(1/2*e+3/4*I*Pi+1/2*f*x))/a/f^4/(a+I*a*s
inh(f*x+e))^(1/2)-24*I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(4,-exp(1/2*e+3/
4*I*Pi+1/2*f*x))/a/f^4/(a+I*a*sinh(f*x+e))^(1/2)+1/2*x^3*tanh(1/2*e+1/4*I*P
i+1/2*f*x)/a/f/(a+I*a*sinh(f*x+e))^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 807, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {3319, 4186, 4182, 2279, 2391, 2531, 6609, 2282, 6589}

$$\frac{\tanh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)x^3}{2af\sqrt{i\sinh(e+fx)a+a}}+\frac{i\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)x^3}{af\sqrt{i\sinh(e+fx)a+a}}+\frac{3i\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\mathrm{PolyLog}\left(2,-e^{\frac{1}{4}\cdots}\right.}{af^2\sqrt{i\sinh(e+fx)a+a}}$$

Antiderivative was successfully verified.

```
[In] Int[x^3/(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] (3*x^2)/(a*f^2*Sqrt[a + I*a*Sinh[e + f*x]]) - ((24*I)*x*ArcTanh[E^((2*e - I
*Pi)/4 + (f*x)/2)]*Cosh[e/2 + (I/4)*Pi + (f*x)/2])/(a*f^3*Sqrt[a + I*a*Sinh
[e + f*x]]) + (I*x^3*ArcTanh[E^((2*e - I*Pi)/4 + (f*x)/2)]*Cosh[e/2 + (I/4)
*Pi + (f*x)/2])/(a*f*Sqrt[a + I*a*Sinh[e + f*x]]) - ((24*I)*Cosh[e/2 + (I/4
)*Pi + (f*x)/2]*PolyLog[2, -E^((2*e - I*Pi)/4 + (f*x)/2)])/(a*f^4*Sqrt[a +
I*a*Sinh[e + f*x]]) + ((3*I)*x^2*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[2,
```

```
-E^((2*e - I*Pi)/4 + (f*x)/2)])/(a*f^2*Sqrt[a + I*a*Sinh[e + f*x]]) + ((24*
I)*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[2, E^((2*e - I*Pi)/4 + (f*x)/2)])
/(a*f^4*Sqrt[a + I*a*Sinh[e + f*x]]) - ((3*I)*x^2*Cosh[e/2 + (I/4)*Pi + (f*
x)/2]*PolyLog[2, E^((2*e - I*Pi)/4 + (f*x)/2)])/(a*f^2*Sqrt[a + I*a*Sinh[e
+ f*x]]) - ((12*I)*x*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[3, -E^((2*e - I
*Pi)/4 + (f*x)/2)])/(a*f^3*Sqrt[a + I*a*Sinh[e + f*x]]) + ((12*I)*x*Cosh[e/
2 + (I/4)*Pi + (f*x)/2]*PolyLog[3, E^((2*e - I*Pi)/4 + (f*x)/2)])/(a*f^3*Sq
rt[a + I*a*Sinh[e + f*x]]) + ((24*I)*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog
[4, -E^((2*e - I*Pi)/4 + (f*x)/2)])/(a*f^4*Sqrt[a + I*a*Sinh[e + f*x]]) - (
(24*I)*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[4, E^((2*e - I*Pi)/4 + (f*x)/
2)])/(a*f^4*Sqrt[a + I*a*Sinh[e + f*x]]) + (x^3*Tanh[e/2 + (I/4)*Pi + (f*x)
/2])/(2*a*f*Sqrt[a + I*a*Sinh[e + f*x]])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
```

```
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^3}{(a+ia\sinh(e+fx))^{3/2}}\,dx = -\frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\int x^3\operatorname{csch}^3\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx}{2a\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{3x^2}{af^2\sqrt{a+ia\sinh(e+fx)}} + \frac{x^3\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+ia\sinh(e+fx)}} + \frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\int x}{4a\sqrt{a+ia\,s}}$$

$$= \frac{3x^2}{af^2\sqrt{a+ia\sinh(e+fx)}} - \frac{24ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}} + \frac{ix}{}$$

$$= \frac{3x^2}{af^2\sqrt{a+ia\sinh(e+fx)}} - \frac{24ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}} + \frac{ix}{}$$

$$= \frac{3x^2}{af^2\sqrt{a+ia\sinh(e+fx)}} - \frac{24ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}} + \frac{ix}{}$$

$$= \frac{3x^2}{af^2\sqrt{a+ia\sinh(e+fx)}} - \frac{24ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}} + \frac{ix}{}$$

$$= \frac{3x^2}{af^2\sqrt{a+ia\sinh(e+fx)}} - \frac{24ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}} + \frac{ix}{}$$

Mathematica [A] time = 3.15, size = 546, normalized size = 0.68

$$\frac{\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)\left(\left(\frac{1}{2}-\frac{i}{2}\right)(-1)^{3/4}\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)^2\left(e^3\log\left(1-(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3/(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] ((Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2])*(f^2*x^2*(6 + I*f*x)*(Cosh[(e +
f*x)/2] + I*Sinh[(e + f*x)/2]) + (1/2 - I/2)*(-1)^(3/4)*(-48*e*ArcTanh[(-1)
^(3/4)*E^((e + f*x)/2)] + 2*e^3*ArcTanh[(-1)^(3/4)*E^((e + f*x)/2)] - 24*e*
Log[1 - (-1)^(3/4)*E^((e + f*x)/2)] + e^3*Log[1 - (-1)^(3/4)*E^((e + f*x)/2
)] - 24*f*x*Log[1 - (-1)^(3/4)*E^((e + f*x)/2)] + f^3*x^3*Log[1 - (-1)^(3/4
)*E^((e + f*x)/2)] + 24*e*Log[1 + (-1)^(3/4)*E^((e + f*x)/2)] - e^3*Log[1 +
```

```
 (-1)^(3/4)*E^((e + f*x)/2)] + 24*f*x*Log[1 + (-1)^(3/4)*E^((e + f*x)/2)] -
 f^3*x^3*Log[1 + (-1)^(3/4)*E^((e + f*x)/2)] - 6*(-8 + f^2*x^2)*PolyLog[2,
-((-1)^(3/4)*E^((e + f*x)/2))] + 6*(-8 + f^2*x^2)*PolyLog[2, (-1)^(3/4)*E^(
(e + f*x)/2)] + 24*f*x*PolyLog[3, -((-1)^(3/4)*E^((e + f*x)/2))] - 24*f*x*P
olyLog[3, (-1)^(3/4)*E^((e + f*x)/2)] - 48*PolyLog[4, -((-1)^(3/4)*E^((e +
f*x)/2))] + 48*PolyLog[4, (-1)^(3/4)*E^((e + f*x)/2)])*(Cosh[(e + f*x)/2] +
 I*Sinh[(e + f*x)/2])^2 + 2*f^3*x^3*Sinh[(e + f*x)/2]))/(2*f^4*(a + I*a*Sin
h[e + f*x])^(3/2))
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\frac{\left(a^2f^2e^{(2fx+2e)} - 2i\,a^2f^2e^{(fx+e)} - a^2f^2\right)\text{integral}\left(\frac{\left(-i\,f^2x^3+24i\,x\right)\sqrt{\frac{1}{2}i\,ae^{(-fx-e)}}\,e^{(fx+e)}}{2\left(a^2f^2e^{(fx+e)}-i\,a^2f^2\right)}, x\right) + \left(\left(-i\,fx^3 - 6i\,x^2\right)e^{(2fx+2e)} + \left(\right.\right.}{a^2f^2e^{(2fx+2e)} - 2i\,a^2f^2e^{(fx+e)} - a^2f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] ((a^2*f^2*e^(2*f*x + 2*e) - 2*I*a^2*f^2*e^(f*x + e) - a^2*f^2)*integral(1/2
*(-I*f^2*x^3 + 24*I*x)*sqrt(1/2*I*a*e^(-f*x - e))*e^(f*x + e)/(a^2*f^2*e^(f
*x + e) - I*a^2*f^2), x) + ((-I*f*x^3 - 6*I*x^2)*e^(2*f*x + 2*e) + (f*x^3 -
 6*x^2)*e^(f*x + e))*sqrt(1/2*I*a*e^(-f*x - e)))/(a^2*f^2*e^(2*f*x + 2*e) -
 2*I*a^2*f^2*e^(f*x + e) - a^2*f^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(x^3/(I*a*sinh(f*x + e) + a)^(3/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(a+ia\sinh\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a+I*a*sinh(f*x+e))^(3/2),x)
[Out] int(x^3/(a+I*a*sinh(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate(x^3/(I*a*sinh(f*x + e) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3}{{\left(a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1{}\mathrm{i}\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a + a*sinh(e + f*x)*1i)^(3/2),x)
[Out] int(x^3/(a + a*sinh(e + f*x)*1i)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3}}{\left(ia \left(\sinh{\left(e + fx \right)} - i\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/(a+I*a*sinh(f*x+e))**(3/2),x)
[Out] Integral(x**3/(I*a*(sinh(e + f*x) - I))**(3/2), x)
```

3.142 $\int \frac{x^2}{(a+ia\sinh(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=506

$$-\frac{4i\text{Li}_3\left(-e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}}+\frac{4i\text{Li}_3\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}}-\frac{4\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\tan^{-1}(}{af^3\sqrt{a+ia\sinh}}$$

```
[Out] 2*x/a/f^2/(a+I*a*sinh(f*x+e))^(1/2)-4*arctan(sinh(1/2*e+1/4*I*Pi+1/2*f*x))*
cosh(1/2*e+1/4*I*Pi+1/2*f*x)/a/f^3/(a+I*a*sinh(f*x+e))^(1/2)-I*x^2*arctanh(
exp(1/2*e+3/4*I*Pi+1/2*f*x))*cosh(1/2*e+1/4*I*Pi+1/2*f*x)/a/f/(a+I*a*sinh(f
*x+e))^(1/2)+2*I*x*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(2,exp(1/2*e+3/4*I*P
i+1/2*f*x))/a/f^2/(a+I*a*sinh(f*x+e))^(1/2)-2*I*x*cosh(1/2*e+1/4*I*Pi+1/2*f
*x)*polylog(2,-exp(1/2*e+3/4*I*Pi+1/2*f*x))/a/f^2/(a+I*a*sinh(f*x+e))^(1/2)
-4*I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(3,exp(1/2*e+3/4*I*Pi+1/2*f*x))/a/
f^3/(a+I*a*sinh(f*x+e))^(1/2)+4*I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(3,-e
xp(1/2*e+3/4*I*Pi+1/2*f*x))/a/f^3/(a+I*a*sinh(f*x+e))^(1/2)+1/2*x^2*tanh(1/
2*e+1/4*I*Pi+1/2*f*x)/a/f/(a+I*a*sinh(f*x+e))^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 506, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3319, 4186, 3770, 4182, 2531, 2282, 6589}

$$\frac{2ix\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{fx}{2}+\frac{1}{4}(2e-i\pi)}\right)}{af^2\sqrt{a+ia\sinh(e+fx)}}-\frac{2ix\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{fx}{2}+\frac{1}{4}(2e-i\pi)}\right)}{af^2\sqrt{a+ia\sinh(e+fx)}}-\frac{4i\cosh\left(\frac{e}{2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] (2*x)/(a*f^2*Sqrt[a + I*a*Sinh[e + f*x]]) - (4*ArcTan[Sinh[e/2 + (I/4)*Pi +
 (f*x)/2]]*Cosh[e/2 + (I/4)*Pi + (f*x)/2])/(a*f^3*Sqrt[a + I*a*Sinh[e + f*x
]]) + (I*x^2*ArcTanh[E^((2*e - I*Pi)/4 + (f*x)/2)]*Cosh[e/2 + (I/4)*Pi + (f
*x)/2])/(a*f*Sqrt[a + I*a*Sinh[e + f*x]]) + ((2*I)*x*Cosh[e/2 + (I/4)*Pi +
(f*x)/2]*PolyLog[2, -E^((2*e - I*Pi)/4 + (f*x)/2)])/(a*f^2*Sqrt[a + I*a*Sin
h[e + f*x]]) - ((2*I)*x*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[2, E^((2*e -
 I*Pi)/4 + (f*x)/2)])/(a*f^2*Sqrt[a + I*a*Sinh[e + f*x]]) - ((4*I)*Cosh[e/2
 + (I/4)*Pi + (f*x)/2]*PolyLog[3, -E^((2*e - I*Pi)/4 + (f*x)/2)])/(a*f^3*Sq
rt[a + I*a*Sinh[e + f*x]]) + ((4*I)*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[
3, E^((2*e - I*Pi)/4 + (f*x)/2)])/(a*f^3*Sqrt[a + I*a*Sinh[e + f*x]]) + (x^
2*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/(2*a*f*Sqrt[a + I*a*Sinh[e + f*x]])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2}{(a+ia\sinh(e+fx))^{3/2}}\,dx = -\frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\int x^2\operatorname{csch}^3\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx}{2a\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{2x}{af^2\sqrt{a+ia\sinh(e+fx)}}+\frac{x^2\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+ia\sinh(e+fx)}}+\frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\int x^2 \cdots}{4a\sqrt{a+ia\,\mathrm{si}\cdots}}$$

$$= \frac{2x}{af^2\sqrt{a+ia\sinh(e+fx)}}-\frac{4\tan^{-1}\left(\sinh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}}+\cdots$$

$$= \frac{2x}{af^2\sqrt{a+ia\sinh(e+fx)}}-\frac{4\tan^{-1}\left(\sinh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}}+\cdots$$

$$= \frac{2x}{af^2\sqrt{a+ia\sinh(e+fx)}}-\frac{4\tan^{-1}\left(\sinh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}}+\cdots$$

$$= \frac{2x}{af^2\sqrt{a+ia\sinh(e+fx)}}-\frac{4\tan^{-1}\left(\sinh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af^3\sqrt{a+ia\sinh(e+fx)}}+\cdots$$

Mathematica [A] time = 1.68, size = 384, normalized size = 0.76

$$\frac{\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)\left(-\left(\frac{1}{2}-\frac{i}{2}\right)(-1)^{3/4}\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)^2\left(e^2\log\left(1-(\cdots\right.\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] ((Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2])*(f*x*(4 + I*f*x)*(Cosh[(e + f*x)
/2] + I*Sinh[(e + f*x)/2]) - (1/2 - I/2)*(-1)^(3/4)*(-16*ArcTanh[(-1)^(3/4)
```

```
*E^((e + f*x)/2)] + 2*e^2*ArcTanh[(-1)^(3/4)*E^((e + f*x)/2)] + e^2*Log[1 -
 (-1)^(3/4)*E^((e + f*x)/2)] - f^2*x^2*Log[1 - (-1)^(3/4)*E^((e + f*x)/2)]
- e^2*Log[1 + (-1)^(3/4)*E^((e + f*x)/2)] + f^2*x^2*Log[1 + (-1)^(3/4)*E^((
e + f*x)/2)] + 4*f*x*PolyLog[2, -((-1)^(3/4)*E^((e + f*x)/2))] - 4*f*x*Poly
Log[2, (-1)^(3/4)*E^((e + f*x)/2)] - 8*PolyLog[3, -((-1)^(3/4)*E^((e + f*x)
/2))] + 8*PolyLog[3, (-1)^(3/4)*E^((e + f*x)/2)])*(Cosh[(e + f*x)/2] + I*Si
nh[(e + f*x)/2])^2 + 2*f^2*x^2*Sinh[(e + f*x)/2]))/(2*f^3*(a + I*a*Sinh[e +
 f*x])^(3/2))
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\frac{\left(a^2f^2e^{(2fx+2e)} - 2i\,a^2f^2e^{(fx+e)} - a^2f^2\right)\text{integral}\left(\frac{\left(-i\,f^2x^2+8i\right)\sqrt{\frac{1}{2}i\,ae^{(-fx-e)}}\,e^{(fx+e)}}{2\left(a^2f^2e^{(fx+e)}-i\,a^2f^2\right)}, x\right) + \left(\left(-i\,fx^2 - 4i\,x\right)e^{(2fx+2e)} + (f}{a^2f^2e^{(2fx+2e)} - 2i\,a^2f^2e^{(fx+e)} - a^2f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] ((a^2*f^2*e^(2*f*x + 2*e) - 2*I*a^2*f^2*e^(f*x + e) - a^2*f^2)*integral(1/2
*(-I*f^2*x^2 + 8*I)*sqrt(1/2*I*a*e^(-f*x - e))*e^(f*x + e)/(a^2*f^2*e^(f*x
+ e) - I*a^2*f^2), x) + ((-I*f*x^2 - 4*I*x)*e^(2*f*x + 2*e) + (f*x^2 - 4*x)
*e^(f*x + e))*sqrt(1/2*I*a*e^(-f*x - e)))/(a^2*f^2*e^(2*f*x + 2*e) - 2*I*a^
2*f^2*e^(f*x + e) - a^2*f^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(x^2/(I*a*sinh(f*x + e) + a)^(3/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(a+ia\sinh\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a+I*a*sinh(f*x+e))^(3/2),x)
```

```
[Out] int(x^2/(a+I*a*sinh(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(x^2/(I*a*sinh(f*x + e) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2}{{\left(a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1{}\mathrm{i}\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a + a*sinh(e + f*x)*1i)^(3/2),x)
```

```
[Out] int(x^2/(a + a*sinh(e + f*x)*1i)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{2}}{\left(ia \left(\sinh{\left(e + fx \right)} - i\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(a+I*a*sinh(f*x+e))**(3/2),x)
```

```
[Out] Integral(x**2/(I*a*(sinh(e + f*x) - I))**(3/2), x)
```

3.143 $\int \frac{x}{(a+ia\sinh(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=288

$$\frac{i\mathrm{Li}_2\left(-e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{af^2\sqrt{a+ia\sinh(e+fx)}}-\frac{i\mathrm{Li}_2\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)}{af^2\sqrt{a+ia\sinh(e+fx)}}+\frac{1}{af^2\sqrt{a+ia\sinh(e+fx)}}+\frac{x}{2af}$$

```
[Out] 1/a/f^2/(a+I*a*sinh(f*x+e))^(1/2)-I*x*arctanh(exp(1/2*e+3/4*I*Pi+1/2*f*x))*
cosh(1/2*e+1/4*I*Pi+1/2*f*x)/a/f/(a+I*a*sinh(f*x+e))^(1/2)+I*cosh(1/2*e+1/4
*I*Pi+1/2*f*x)*polylog(2,exp(1/2*e+3/4*I*Pi+1/2*f*x))/a/f^2/(a+I*a*sinh(f*x
+e))^(1/2)-I*cosh(1/2*e+1/4*I*Pi+1/2*f*x)*polylog(2,-exp(1/2*e+3/4*I*Pi+1/2
*f*x))/a/f^2/(a+I*a*sinh(f*x+e))^(1/2)+1/2*x*tanh(1/2*e+1/4*I*Pi+1/2*f*x)/a
/f/(a+I*a*sinh(f*x+e))^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {3319, 4185, 4182, 2279, 2391}

$$\frac{i\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\mathrm{PolyLog}\left(2,-e^{\frac{fx}{2}+\frac{1}{4}(2e-i\pi)}\right)}{af^2\sqrt{a+ia\sinh(e+fx)}}-\frac{i\cosh\left(\frac{e}{2}+\frac{fx}{2}+\frac{i\pi}{4}\right)\mathrm{PolyLog}\left(2,e^{\frac{fx}{2}+\frac{1}{4}(2e-i\pi)}\right)}{af^2\sqrt{a+ia\sinh(e+fx)}}+\frac{1}{af^2\sqrt{a+ia\sinh(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] 1/(a*f^2*Sqrt[a + I*a*Sinh[e + f*x]]) + (I*x*ArcTanh[E^((2*e - I*Pi)/4 + (f
*x)/2)]*Cosh[e/2 + (I/4)*Pi + (f*x)/2])/(a*f*Sqrt[a + I*a*Sinh[e + f*x]]) +
 (I*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*PolyLog[2, -E^((2*e - I*Pi)/4 + (f*x)/2)
])/(a*f^2*Sqrt[a + I*a*Sinh[e + f*x]]) - (I*Cosh[e/2 + (I/4)*Pi + (f*x)/2]*
PolyLog[2, E^((2*e - I*Pi)/4 + (f*x)/2)])/(a*f^2*Sqrt[a + I*a*Sinh[e + f*x]
]) + (x*Tanh[e/2 + (I/4)*Pi + (f*x)/2])/(2*a*f*Sqrt[a + I*a*Sinh[e + f*x]])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rubi steps

$$\int \frac{x}{(a+ia\sinh(e+fx))^{3/2}}\,dx = -\frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\int x\operatorname{csch}^3\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)dx}{2a\sqrt{a+ia\sinh(e+fx)}}$$

$$= \frac{1}{af^2\sqrt{a+ia\sinh(e+fx)}} + \frac{x\tanh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+ia\sinh(e+fx)}} + \frac{\sinh\left(\frac{e}{2}-\frac{i\pi}{4}+\frac{fx}{2}\right)\int x}{4a\sqrt{a+ia\,s}}$$

$$= \frac{1}{af^2\sqrt{a+ia\sinh(e+fx)}} + \frac{ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af\sqrt{a+ia\sinh(e+fx)}} + \frac{x}{2af}$$

$$= \frac{1}{af^2\sqrt{a+ia\sinh(e+fx)}} + \frac{ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af\sqrt{a+ia\sinh(e+fx)}} + \frac{x}{2af}$$

$$= \frac{1}{af^2\sqrt{a+ia\sinh(e+fx)}} + \frac{ix\tanh^{-1}\left(e^{\frac{1}{4}(2e-i\pi)+\frac{fx}{2}}\right)\cosh\left(\frac{e}{2}+\frac{i\pi}{4}+\frac{fx}{2}\right)}{af\sqrt{a+ia\sinh(e+fx)}} + \frac{i\cos}{}$$

Mathematica [A] time = 0.76, size = 332, normalized size = 1.15

$$\frac{\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)\left(\frac{i\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx)\right)\right)^2\left(-2\text{Li}_2\left(-\sqrt[4]{-1}\,e^{-\frac{e}{2}-\frac{fx}{2}}\right)+2\text{Li}_2\left(\sqrt[4]{-1}\,e^{-\frac{e}{2}-\frac{fx}{2}}\right)+\frac{1}{2}i(2ie+2\right.}{\sqrt{2}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(a + I*a*Sinh[e + f*x])^(3/2),x]
```

```
[Out] ((Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2])*((2 + I*f*x)*(Cosh[(e + f*x)/2]
+ I*Sinh[(e + f*x)/2]) - Sqrt[2]*e*ArcTan[(I + Tanh[(e + f*x)/4])/Sqrt[2]]*
(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2])^2 + (I*(Pi*ArcTan[(I + Tanh[(e +
f*x)/4])/Sqrt[2]] + (I/2)*((2*I)*e + Pi + (2*I)*f*x)*(Log[1 - (-1)^(1/4)*E^
(-1/2*e - (f*x)/2)] - Log[1 + (-1)^(1/4)*E^(-1/2*e - (f*x)/2)]) - 2*PolyLog
[2, -((-1)^(1/4)*E^(-1/2*e - (f*x)/2))] + 2*PolyLog[2, (-1)^(1/4)*E^(-1/2*e
 - (f*x)/2)])*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2])^2)/Sqrt[2] + 2*f*x*
Sinh[(e + f*x)/2]))/(2*f^2*(a + I*a*Sinh[e + f*x])^(3/2))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\frac{\left(a^2 f^2 e^{\left(2\,fx+2\,e\right)} - 2i\,a^2 f^2 e^{\left(fx+e\right)} - a^2 f^2\right)\text{integral}\left(-\frac{i\,\sqrt{\frac{1}{2}i\,ae^{\left(-fx-e\right)}}\,xe^{\left(fx+e\right)}}{2\,a^2 e^{\left(fx+e\right)}-2i\,a^2}, x\right) + \left(\left(-i\,fx-2i\right)e^{\left(2\,fx+2\,e\right)} + \left(fx-2\right)e^{\left(fx+\right.}\right.}{a^2 f^2 e^{\left(2\,fx+2\,e\right)} - 2i\,a^2 f^2 e^{\left(fx+e\right)} - a^2 f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] ((a^2*f^2*e^(2*f*x + 2*e) - 2*I*a^2*f^2*e^(f*x + e) - a^2*f^2)*integral(-I*
sqrt(1/2*I*a*e^(-f*x - e))*x*e^(f*x + e)/(2*a^2*e^(f*x + e) - 2*I*a^2), x)
+ ((-I*f*x - 2*I)*e^(2*f*x + 2*e) + (f*x - 2)*e^(f*x + e))*sqrt(1/2*I*a*e^(
-f*x - e)))/(a^2*f^2*e^(2*f*x + 2*e) - 2*I*a^2*f^2*e^(f*x + e) - a^2*f^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(x/(I*a*sinh(f*x + e) + a)^(3/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(a+ia\sinh\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+I*a*sinh(f*x+e))^(3/2),x)
```

```
[Out] int(x/(a+I*a*sinh(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate(x/(I*a*sinh(f*x + e) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x}{\left(a + a\sinh\left(e + f\,x\right)\,1\mathrm{i}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a + a*sinh(e + f*x)*1i)^(3/2),x)
[Out] int(x/(a + a*sinh(e + f*x)*1i)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(ia\left(\sinh\left(e + fx\right) - i\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(f*x+e))**(3/2),x)
[Out] Integral(x/(I*a*(sinh(e + f*x) - I))**(3/2), x)
```

3.144 $\int \frac{1}{x(a+ia\sinh(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=24

$$\mathrm{Int}\left(\frac{1}{x(a+ia\sinh(e+fx))^{3/2}},x\right)$$

```
[Out] Unintegrable(1/x/(a+I*a*sinh(f*x+e))^(3/2),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x(a+ia\sinh(e+fx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*(a + I*a*Sinh[e + f*x])^(3/2)),x]
```

```
[Out] Defer[Int][1/(x*(a + I*a*Sinh[e + f*x])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{x(a+ia\sinh(e+fx))^{3/2}}\,dx = \int \frac{1}{x(a+ia\sinh(e+fx))^{3/2}}\,dx$$

Mathematica [A] time = 21.10, size = 0, normalized size = 0.00

$$\int \frac{1}{x(a+ia\sinh(e+fx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*(a + I*a*Sinh[e + f*x])^(3/2)),x]
```

```
[Out] Integrate[1/(x*(a + I*a*Sinh[e + f*x])^(3/2)), x]
```

fricas [A] time = 0.60, size = 0, normalized size = 0.00

$$\frac{\left(a^2f^2x^2e^{(2fx+2e)} - 2i\,a^2f^2x^2e^{(fx+e)} - a^2f^2x^2\right)\mathrm{integral}\left(\frac{\left(-i\,f^2x^2+8i\right)\sqrt{\frac{1}{2}i\,ae^{(-fx-e)}}\,e^{(fx+e)}}{2\,a^2f^2x^3e^{(fx+e)}-2i\,a^2f^2x^3},x\right) + \left(\left(-i\,fx+2i\right)e^{(2fx+2e)} + \right.}{a^2f^2x^2e^{(2fx+2e)} - 2i\,a^2f^2x^2e^{(fx+e)} - a^2f^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] ((a^2*f^2*x^2*e^(2*f*x + 2*e) - 2*I*a^2*f^2*x^2*e^(f*x + e) - a^2*f^2*x^2)*
integral((-I*f^2*x^2 + 8*I)*sqrt(1/2*I*a*e^(-f*x - e))*e^(f*x + e)/(2*a^2*f
^2*x^3*e^(f*x + e) - 2*I*a^2*f^2*x^3), x) + ((-I*f*x + 2*I)*e^(2*f*x + 2*e)
 + (f*x + 2)*e^(f*x + e))*sqrt(1/2*I*a*e^(-f*x - e)))/(a^2*f^2*x^2*e^(2*f*x
 + 2*e) - 2*I*a^2*f^2*x^2*e^(f*x + e) - a^2*f^2*x^2)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((I*a*sinh(f*x + e) + a)^(3/2)*x), x)
```

maple [A] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(a+ia\sinh\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/(a+I*a*sinh(f*x+e))^(3/2),x)
```

```
[Out] int(1/x/(a+I*a*sinh(f*x+e))^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*sinh(f*x + e) + a)^(3/2)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{x\left(a+a\sinh\left(e+f\,x\right)\,1{}\mathrm{i}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*(a + a*sinh(e + f*x)*1i)^(3/2)),x)
```

```
[Out] int(1/(x*(a + a*sinh(e + f*x)*1i)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(ia\left(\sinh\left(e+fx\right)-i\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(f*x+e))**(3/2),x)
```

```
[Out] Integral(1/(x*(I*a*(sinh(e + f*x) - I))**(3/2)), x)
```

3.145 $\int \frac{1}{x^2(a+ia\sinh(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=24

$$\text{Int}\left(\frac{1}{x^2(a+ia\sinh(e+fx))^{3/2}},x\right)$$

```
[Out] Unintegrable(1/x^2/(a+I*a*sinh(f*x+e))^(3/2),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2(a+ia\sinh(e+fx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x^2*(a + I*a*Sinh[e + f*x])^(3/2)),x]
```

```
[Out] Defer[Int][1/(x^2*(a + I*a*Sinh[e + f*x])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{x^2(a+ia\sinh(e+fx))^{3/2}}\,dx = \int \frac{1}{x^2(a+ia\sinh(e+fx))^{3/2}}\,dx$$

Mathematica [A] time = 24.09, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2(a+ia\sinh(e+fx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x^2*(a + I*a*Sinh[e + f*x])^(3/2)),x]
```

```
[Out] Integrate[1/(x^2*(a + I*a*Sinh[e + f*x])^(3/2)), x]
```

fricas [A] time = 0.93, size = 0, normalized size = 0.00

$$\frac{\left(a^2f^2x^3e^{(2fx+2e)}-2i\,a^2f^2x^3e^{(fx+e)}-a^2f^2x^3\right)\text{integral}\left(\frac{\left(-i\,f^2x^2+24i\right)\sqrt{\frac{1}{2}i\,ae^{(-fx-e)}}\,e^{(fx+e)}}{2\,a^2f^2x^4e^{(fx+e)}-2i\,a^2f^2x^4},x\right)+\left(\left(-i\,fx+4i\right)e^{(2fx+2e)}\right.}{a^2f^2x^3e^{(2fx+2e)}-2i\,a^2f^2x^3e^{(fx+e)}-a^2f^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] ((a^2*f^2*x^3*e^(2*f*x + 2*e) - 2*I*a^2*f^2*x^3*e^(f*x + e) - a^2*f^2*x^3)*
integral((-I*f^2*x^2 + 24*I)*sqrt(1/2*I*a*e^(-f*x - e))*e^(f*x + e)/(2*a^2*
f^2*x^4*e^(f*x + e) - 2*I*a^2*f^2*x^4), x) + ((-I*f*x + 4*I)*e^(2*f*x + 2*e
) + (f*x + 4)*e^(f*x + e))*sqrt(1/2*I*a*e^(-f*x - e)))/(a^2*f^2*x^3*e^(2*f*
x + 2*e) - 2*I*a^2*f^2*x^3*e^(f*x + e) - a^2*f^2*x^3)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((I*a*sinh(f*x + e) + a)^(3/2)*x^2), x)
```

maple [A] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{x^{2}\left(a+ia\sinh\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(a+I*a*sinh(f*x+e))^(3/2),x)
```

```
[Out] int(1/x^2/(a+I*a*sinh(f*x+e))^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{3}{2}}x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+I*a*sinh(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*sinh(f*x + e) + a)^(3/2)*x^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{x^{2}\left(a+a\sinh\left(e+f\,x\right)\,1{}\mathrm{i}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*(a + a*sinh(e + f*x)*1i)^(3/2)),x)
[Out] int(1/(x^2*(a + a*sinh(e + f*x)*1i)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\left(ia\left(\sinh\left(e+fx\right)-i\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/(a+I*a*sinh(f*x+e))**(3/2),x)
[Out] Integral(1/(x**2*(I*a*(sinh(e + f*x) - I))**(3/2)), x)
```

3.146 $\int \frac{x^3}{(a+ia\sinh(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=1016

$$\frac{\operatorname{sech}^2\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)x^3}{8a^2d\sqrt{i\sinh(c+dx)a+a}}+\frac{3\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)x^3}{16a^2d\sqrt{i\sinh(c+dx)a+a}}+\frac{3i\tanh^{-1}\left(e^{\frac{1}{4}(2c-i\pi)+\frac{dx}{2}}\right)\cosh\left(\frac{c}{2}+\frac{dx}{2}+\right.}{8a^2d\sqrt{i\sinh(c+dx)a+a}}$$

[Out] -1/a^2/d^4/(a+I*a*sinh(d*x+c))^(1/2)+9/8*x^2/a^2/d^2/(a+I*a*sinh(d*x+c))^(1
/2)+10*I*x*arctanh(exp(1/2*c+3/4*I*Pi+1/2*d*x))*cosh(1/2*c+1/4*I*Pi+1/2*d*x
)/a^2/d^3/(a+I*a*sinh(d*x+c))^(1/2)-9/2*I*x*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*po
lylog(3,exp(1/2*c+3/4*I*Pi+1/2*d*x))/a^2/d^3/(a+I*a*sinh(d*x+c))^(1/2)+9/8*
I*x^2*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*polylog(2,exp(1/2*c+3/4*I*Pi+1/2*d*x))/a
^2/d^2/(a+I*a*sinh(d*x+c))^(1/2)-9/8*I*x^2*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*pol
ylog(2,-exp(1/2*c+3/4*I*Pi+1/2*d*x))/a^2/d^2/(a+I*a*sinh(d*x+c))^(1/2)-3/8*
I*x^3*arctanh(exp(1/2*c+3/4*I*Pi+1/2*d*x))*cosh(1/2*c+1/4*I*Pi+1/2*d*x)/a^2
/d/(a+I*a*sinh(d*x+c))^(1/2)-9*I*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*polylog(4,-ex
p(1/2*c+3/4*I*Pi+1/2*d*x))/a^2/d^4/(a+I*a*sinh(d*x+c))^(1/2)+9*I*cosh(1/2*c
+1/4*I*Pi+1/2*d*x)*polylog(4,exp(1/2*c+3/4*I*Pi+1/2*d*x))/a^2/d^4/(a+I*a*si
nh(d*x+c))^(1/2)+9/2*I*x*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*polylog(3,-exp(1/2*c+
3/4*I*Pi+1/2*d*x))/a^2/d^3/(a+I*a*sinh(d*x+c))^(1/2)+10*I*cosh(1/2*c+1/4*I*
Pi+1/2*d*x)*polylog(2,-exp(1/2*c+3/4*I*Pi+1/2*d*x))/a^2/d^4/(a+I*a*sinh(d*x
+c))^(1/2)-10*I*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*polylog(2,exp(1/2*c+3/4*I*Pi+1
/2*d*x))/a^2/d^4/(a+I*a*sinh(d*x+c))^(1/2)+1/4*x^2*sech(1/2*c+1/4*I*Pi+1/2*
d*x)^2/a^2/d^2/(a+I*a*sinh(d*x+c))^(1/2)-1/2*x*tanh(1/2*c+1/4*I*Pi+1/2*d*x)
/a^2/d^3/(a+I*a*sinh(d*x+c))^(1/2)+3/16*x^3*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a^
2/d/(a+I*a*sinh(d*x+c))^(1/2)+1/8*x^3*sech(1/2*c+1/4*I*Pi+1/2*d*x)^2*tanh(1
/2*c+1/4*I*Pi+1/2*d*x)/a^2/d/(a+I*a*sinh(d*x+c))^(1/2)

Rubi [A] time = 0.68, antiderivative size = 1016, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {3319, 4186, 4185, 4182, 2279, 2391, 2531, 6609, 2282, 6589}

$$\frac{\operatorname{sech}^2\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)x^3}{8a^2d\sqrt{i\sinh(c+dx)a+a}}+\frac{3\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)x^3}{16a^2d\sqrt{i\sinh(c+dx)a+a}}+\frac{3i\tanh^{-1}\left(e^{\frac{1}{4}(2c-i\pi)+\frac{dx}{2}}\right)\cosh\left(\frac{c}{2}+\frac{dx}{2}+\right.}{8a^2d\sqrt{i\sinh(c+dx)a+a}}$$

Antiderivative was successfully verified.

[In] Int[x^3/(a + I*a*Sinh[c + d*x])^(5/2),x]

[Out] -(1/(a^2*d^4*Sqrt[a + I*a*Sinh[c + d*x]])) + (9*x^2)/(8*a^2*d^2*Sqrt[a + I*
a*Sinh[c + d*x]]) - ((10*I)*x*ArcTanh[E^((2*c - I*Pi)/4 + (d*x)/2)]*Cosh[c/

```
2 + (I/4)*Pi + (d*x)/2])/(a^2*d^3*Sqrt[a + I*a*Sinh[c + d*x]]) + (((3*I)/8)
*x^3*ArcTanh[E^((2*c - I*Pi)/4 + (d*x)/2)]*Cosh[c/2 + (I/4)*Pi + (d*x)/2])/
(a^2*d*Sqrt[a + I*a*Sinh[c + d*x]]) - ((10*I)*Cosh[c/2 + (I/4)*Pi + (d*x)/2
]*PolyLog[2, -E^((2*c - I*Pi)/4 + (d*x)/2)])/(a^2*d^4*Sqrt[a + I*a*Sinh[c +
 d*x]]) + (((9*I)/8)*x^2*Cosh[c/2 + (I/4)*Pi + (d*x)/2]*PolyLog[2, -E^((2*c
 - I*Pi)/4 + (d*x)/2)])/(a^2*d^2*Sqrt[a + I*a*Sinh[c + d*x]]) + ((10*I)*Cos
h[c/2 + (I/4)*Pi + (d*x)/2]*PolyLog[2, E^((2*c - I*Pi)/4 + (d*x)/2)])/(a^2*
d^4*Sqrt[a + I*a*Sinh[c + d*x]]) - (((9*I)/8)*x^2*Cosh[c/2 + (I/4)*Pi + (d*
x)/2]*PolyLog[2, E^((2*c - I*Pi)/4 + (d*x)/2)])/(a^2*d^2*Sqrt[a + I*a*Sinh[
c + d*x]]) - (((9*I)/2)*x*Cosh[c/2 + (I/4)*Pi + (d*x)/2]*PolyLog[3, -E^((2*
c - I*Pi)/4 + (d*x)/2)])/(a^2*d^3*Sqrt[a + I*a*Sinh[c + d*x]]) + (((9*I)/2)
*x*Cosh[c/2 + (I/4)*Pi + (d*x)/2]*PolyLog[3, E^((2*c - I*Pi)/4 + (d*x)/2)])
/(a^2*d^3*Sqrt[a + I*a*Sinh[c + d*x]]) + ((9*I)*Cosh[c/2 + (I/4)*Pi + (d*x)
/2]*PolyLog[4, -E^((2*c - I*Pi)/4 + (d*x)/2)])/(a^2*d^4*Sqrt[a + I*a*Sinh[c
 + d*x]]) - ((9*I)*Cosh[c/2 + (I/4)*Pi + (d*x)/2]*PolyLog[4, E^((2*c - I*Pi
)/4 + (d*x)/2)])/(a^2*d^4*Sqrt[a + I*a*Sinh[c + d*x]]) + (x^2*Sech[c/2 + (I
/4)*Pi + (d*x)/2]^2)/(4*a^2*d^2*Sqrt[a + I*a*Sinh[c + d*x]]) - (x*Tanh[c/2
+ (I/4)*Pi + (d*x)/2])/(2*a^2*d^3*Sqrt[a + I*a*Sinh[c + d*x]]) + (3*x^3*Tan
h[c/2 + (I/4)*Pi + (d*x)/2])/(16*a^2*d*Sqrt[a + I*a*Sinh[c + d*x]]) + (x^3*
Sech[c/2 + (I/4)*Pi + (d*x)/2]^2*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(8*a^2*d*S
qrt[a + I*a*Sinh[c + d*x]])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
```

```
1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^3}{(a+ia\sinh(c+dx))^{5/2}}\,dx = \frac{\sinh\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\int x^3\operatorname{csch}^5\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)dx}{4a^2\sqrt{a+ia\sinh(c+dx)}}$$

$$= \frac{x^2\operatorname{sech}^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{4a^2d^2\sqrt{a+ia\sinh(c+dx)}} + \frac{x^3\operatorname{sech}^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{8a^2d\sqrt{a+ia\sinh(c+dx)}} - \frac{(3\,\text{s}\ldots}{\ldots}$$

$$= -\frac{1}{a^2d^4\sqrt{a+ia\sinh(c+dx)}} + \frac{9x^2}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}} + \frac{x^2\operatorname{sech}^2\left(\frac{c}{2}+\frac{i\pi}{4}\ldots\right.}{4a^2d^2\sqrt{a+ia\sinh\ldots}}$$

$$= -\frac{1}{a^2d^4\sqrt{a+ia\sinh(c+dx)}} + \frac{9x^2}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}} - \frac{10ix\tanh^{-1}\left(e^{\frac{1}{4}(2c-\ldots}\right.}{a^2d^3\sqrt{a\ldots}}$$

$$= -\frac{1}{a^2d^4\sqrt{a+ia\sinh(c+dx)}} + \frac{9x^2}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}} - \frac{10ix\tanh^{-1}\left(e^{\frac{1}{4}(2c-\ldots}\right.}{a^2d^3\sqrt{a\ldots}}$$

$$= -\frac{1}{a^2d^4\sqrt{a+ia\sinh(c+dx)}} + \frac{9x^2}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}} - \frac{10ix\tanh^{-1}\left(e^{\frac{1}{4}(2c-\ldots}\right.}{a^2d^3\sqrt{a\ldots}}$$

$$= -\frac{1}{a^2d^4\sqrt{a+ia\sinh(c+dx)}} + \frac{9x^2}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}} - \frac{10ix\tanh^{-1}\left(e^{\frac{1}{4}(2c-\ldots}\right.}{a^2d^3\sqrt{a\ldots}}$$

$$= -\frac{1}{a^2d^4\sqrt{a+ia\sinh(c+dx)}} + \frac{9x^2}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}} - \frac{10ix\tanh^{-1}\left(e^{\frac{1}{4}(2c-\ldots}\right.}{a^2d^3\sqrt{a\ldots}}$$

Mathematica [A] time = 4.37, size = 1200, normalized size = 1.18

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[x^3/(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] ((Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*(-48*Cosh[(c + d*x)/2] + (8*I)*c
*Cosh[(c + d*x)/2] + 70*c^2*Cosh[(c + d*x)/2] - (11*I)*c^3*Cosh[(c + d*x)/2
] - (8*I)*(c + d*x)*Cosh[(c + d*x)/2] - 140*c*(c + d*x)*Cosh[(c + d*x)/2] +
 (33*I)*c^2*(c + d*x)*Cosh[(c + d*x)/2] + 70*(c + d*x)^2*Cosh[(c + d*x)/2]
- (33*I)*c*(c + d*x)^2*Cosh[(c + d*x)/2] + (11*I)*(c + d*x)^3*Cosh[(c + d*x
)/2] + 16*Cosh[(3*(c + d*x))/2] + (8*I)*c*Cosh[(3*(c + d*x))/2] - 18*c^2*Co
sh[(3*(c + d*x))/2] - (3*I)*c^3*Cosh[(3*(c + d*x))/2] - (8*I)*(c + d*x)*Cos
h[(3*(c + d*x))/2] + 36*c*(c + d*x)*Cosh[(3*(c + d*x))/2] + (9*I)*c^2*(c +
d*x)*Cosh[(3*(c + d*x))/2] - 18*(c + d*x)^2*Cosh[(3*(c + d*x))/2] - (9*I)*c
*(c + d*x)^2*Cosh[(3*(c + d*x))/2] + (3*I)*(c + d*x)^3*Cosh[(3*(c + d*x))/2
] + (1 - I)*(-1)^(3/4)*(-160*c*ArcTanh[(-1)^(3/4)*E^((c + d*x)/2)] + 6*c^3*
ArcTanh[(-1)^(3/4)*E^((c + d*x)/2)] - 80*c*Log[1 - (-1)^(3/4)*E^((c + d*x)/
2)] + 3*c^3*Log[1 - (-1)^(3/4)*E^((c + d*x)/2)] - 80*d*x*Log[1 - (-1)^(3/4)
*E^((c + d*x)/2)] + 3*d^3*x^3*Log[1 - (-1)^(3/4)*E^((c + d*x)/2)] + 80*c*Lo
g[1 + (-1)^(3/4)*E^((c + d*x)/2)] - 3*c^3*Log[1 + (-1)^(3/4)*E^((c + d*x)/2
)] + 80*d*x*Log[1 + (-1)^(3/4)*E^((c + d*x)/2)] - 3*d^3*x^3*Log[1 + (-1)^(3
/4)*E^((c + d*x)/2)] - 2*(-80 + 9*d^2*x^2)*PolyLog[2, -((-1)^(3/4)*E^((c +
d*x)/2))] + 2*(-80 + 9*d^2*x^2)*PolyLog[2, (-1)^(3/4)*E^((c + d*x)/2)] + 72
*d*x*PolyLog[3, -((-1)^(3/4)*E^((c + d*x)/2))] - 72*d*x*PolyLog[3, (-1)^(3/
4)*E^((c + d*x)/2)] - 144*PolyLog[4, -((-1)^(3/4)*E^((c + d*x)/2))] + 144*P
olyLog[4, (-1)^(3/4)*E^((c + d*x)/2)])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x
)/2])^4 - (48*I)*Sinh[(c + d*x)/2] + 8*c*Sinh[(c + d*x)/2] + (70*I)*c^2*Sin
h[(c + d*x)/2] - 11*c^3*Sinh[(c + d*x)/2] - 8*(c + d*x)*Sinh[(c + d*x)/2] -
 (140*I)*c*(c + d*x)*Sinh[(c + d*x)/2] + 33*c^2*(c + d*x)*Sinh[(c + d*x)/2]
 + (70*I)*(c + d*x)^2*Sinh[(c + d*x)/2] - 33*c*(c + d*x)^2*Sinh[(c + d*x)/2
] + 11*(c + d*x)^3*Sinh[(c + d*x)/2] - (16*I)*Sinh[(3*(c + d*x))/2] - 8*c*S
inh[(3*(c + d*x))/2] + (18*I)*c^2*Sinh[(3*(c + d*x))/2] + 3*c^3*Sinh[(3*(c
+ d*x))/2] + 8*(c + d*x)*Sinh[(3*(c + d*x))/2] - (36*I)*c*(c + d*x)*Sinh[(3
*(c + d*x))/2] - 9*c^2*(c + d*x)*Sinh[(3*(c + d*x))/2] + (18*I)*(c + d*x)^2
*Sinh[(3*(c + d*x))/2] + 9*c*(c + d*x)^2*Sinh[(3*(c + d*x))/2] - 3*(c + d*x
)^3*Sinh[(3*(c + d*x))/2]))/(32*d^4*(a + I*a*Sinh[c + d*x])^(5/2))
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\left(8\,a^3d^4e^{(4\,dx+4\,c)} - 32i\,a^3d^4e^{(3\,dx+3\,c)} - 48\,a^3d^4e^{(2\,dx+2\,c)} + 32i\,a^3d^4e^{(dx+c)} + 8\,a^3d^4\right)\text{integral}\left(\frac{\left(-3i\,d^2x^3+80i\,x\right)\sqrt{\frac{1}{2}\,i\,ae^{(-dx-c}}}{16\left(a^3d^2e^{(dx+c)}-i\,a^3d^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] ((8*a^3*d^4*e^(4*d*x + 4*c) - 32*I*a^3*d^4*e^(3*d*x + 3*c) - 48*a^3*d^4*e^(
2*d*x + 2*c) + 32*I*a^3*d^4*e^(d*x + c) + 8*a^3*d^4)*integral(1/16*(-3*I*d^
```

```
2*x^3 + 80*I*x)*sqrt(1/2*I*a*e^(-d*x - c))*e^(d*x + c)/(a^3*d^2*e^(d*x + c)
 - I*a^3*d^2), x) + ((-3*I*d^3*x^3 - 18*I*d^2*x^2 + 8*I*d*x + 16*I)*e^(4*d*
x + 4*c) - (11*d^3*x^3 + 70*d^2*x^2 - 8*d*x - 48)*e^(3*d*x + 3*c) + (-11*I*
d^3*x^3 + 70*I*d^2*x^2 + 8*I*d*x - 48*I)*e^(2*d*x + 2*c) - (3*d^3*x^3 - 18*
d^2*x^2 - 8*d*x + 16)*e^(d*x + c))*sqrt(1/2*I*a*e^(-d*x - c)))/(8*a^3*d^4*e
^(4*d*x + 4*c) - 32*I*a^3*d^4*e^(3*d*x + 3*c) - 48*a^3*d^4*e^(2*d*x + 2*c)
+ 32*I*a^3*d^4*e^(d*x + c) + 8*a^3*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{(i\,a\sinh(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(x^3/(I*a*sinh(d*x + c) + a)^(5/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{x^3}{(a+ia\sinh(dx+c))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a+I*a*sinh(d*x+c))^(5/2),x)
```

```
[Out] int(x^3/(a+I*a*sinh(d*x+c))^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{(i\,a\sinh(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(x^3/(I*a*sinh(d*x + c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3}{(a+a\sinh(c+d\,x)\,1\mathrm{i})^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a + a*sinh(c + d*x)*1i)^(5/2),x)
```

```
[Out] int(x^3/(a + a*sinh(c + d*x)*1i)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(ia\left(\sinh\left(c+dx\right)-i\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/(a+I*a*sinh(d*x+c))**(5/2),x)
```

```
[Out] Integral(x**3/(I*a*(sinh(c + d*x) - I))**(5/2), x)
```

3.147 $\int \frac{x^2}{(a+ia\sinh(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=689

$$-\frac{3i\text{Li}_3\left(-e^{\frac{1}{4}(2c-i\pi)+\frac{dx}{2}}\right)\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{2a^2d^3\sqrt{a+ia\sinh(c+dx)}}+\frac{3i\text{Li}_3\left(e^{\frac{1}{4}(2c-i\pi)+\frac{dx}{2}}\right)\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{2a^2d^3\sqrt{a+ia\sinh(c+dx)}}-\frac{\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{6a^2d^3\sqrt{a+ia\sinh(c+dx)}}$$

```
[Out] 3/4*x/a^2/d^2/(a+I*a*sinh(d*x+c))^(1/2)-5/3*arctan(sinh(1/2*c+1/4*I*Pi+1/2*
d*x))*cosh(1/2*c+1/4*I*Pi+1/2*d*x)/a^2/d^3/(a+I*a*sinh(d*x+c))^(1/2)-3/8*I*
x^2*arctanh(exp(1/2*c+3/4*I*Pi+1/2*d*x))*cosh(1/2*c+1/4*I*Pi+1/2*d*x)/a^2/d
/(a+I*a*sinh(d*x+c))^(1/2)+3/4*I*x*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*polylog(2,e
xp(1/2*c+3/4*I*Pi+1/2*d*x))/a^2/d^2/(a+I*a*sinh(d*x+c))^(1/2)-3/4*I*x*cosh(
1/2*c+1/4*I*Pi+1/2*d*x)*polylog(2,-exp(1/2*c+3/4*I*Pi+1/2*d*x))/a^2/d^2/(a+
I*a*sinh(d*x+c))^(1/2)-3/2*I*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*polylog(3,exp(1/2
*c+3/4*I*Pi+1/2*d*x))/a^2/d^3/(a+I*a*sinh(d*x+c))^(1/2)+3/2*I*cosh(1/2*c+1/
4*I*Pi+1/2*d*x)*polylog(3,-exp(1/2*c+3/4*I*Pi+1/2*d*x))/a^2/d^3/(a+I*a*sinh
(d*x+c))^(1/2)+1/6*x*sech(1/2*c+1/4*I*Pi+1/2*d*x)^2/a^2/d^2/(a+I*a*sinh(d*x
+c))^(1/2)-1/6*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a^2/d^3/(a+I*a*sinh(d*x+c))^(1/
2)+3/16*x^2*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a^2/d/(a+I*a*sinh(d*x+c))^(1/2)+1/
8*x^2*sech(1/2*c+1/4*I*Pi+1/2*d*x)^2*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a^2/d/(a+
I*a*sinh(d*x+c))^(1/2)
```

Rubi [A] time = 0.46, antiderivative size = 689, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.381, Rules used = {3319, 4186, 3768, 3770, 4182, 2531, 2282, 6589}

$$\frac{3ix\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{dx}{2}+\frac{1}{4}(2c-i\pi)}\right)}{4a^2d^2\sqrt{a+ia\sinh(c+dx)}}-\frac{3ix\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{dx}{2}+\frac{1}{4}(2c-i\pi)}\right)}{4a^2d^2\sqrt{a+ia\sinh(c+dx)}}-\frac{3i\cosh(}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] (3*x)/(4*a^2*d^2*Sqrt[a + I*a*Sinh[c + d*x]]) - (5*ArcTan[Sinh[c/2 + (I/4)*
Pi + (d*x)/2]]*Cosh[c/2 + (I/4)*Pi + (d*x)/2])/(3*a^2*d^3*Sqrt[a + I*a*Sinh
[c + d*x]]) + (((3*I)/8)*x^2*ArcTanh[E^((2*c - I*Pi)/4 + (d*x)/2)]*Cosh[c/2
 + (I/4)*Pi + (d*x)/2])/(a^2*d*Sqrt[a + I*a*Sinh[c + d*x]]) + (((3*I)/4)*x*
Cosh[c/2 + (I/4)*Pi + (d*x)/2]*PolyLog[2, -E^((2*c - I*Pi)/4 + (d*x)/2)])/(
a^2*d^2*Sqrt[a + I*a*Sinh[c + d*x]]) - (((3*I)/4)*x*Cosh[c/2 + (I/4)*Pi + (
d*x)/2]*PolyLog[2, E^((2*c - I*Pi)/4 + (d*x)/2)])/(a^2*d^2*Sqrt[a + I*a*Sin
h[c + d*x]]) - (((3*I)/2)*Cosh[c/2 + (I/4)*Pi + (d*x)/2]*PolyLog[3, -E^((2*
c - I*Pi)/4 + (d*x)/2)])/(a^2*d^3*Sqrt[a + I*a*Sinh[c + d*x]]) + (((3*I)/2)
```

```
*Cosh[c/2 + (I/4)*Pi + (d*x)/2]*PolyLog[3, E^((2*c - I*Pi)/4 + (d*x)/2)])/(
a^2*d^3*Sqrt[a + I*a*Sinh[c + d*x]]) + (x*Sech[c/2 + (I/4)*Pi + (d*x)/2]^2)
/(6*a^2*d^2*Sqrt[a + I*a*Sinh[c + d*x]]) - Tanh[c/2 + (I/4)*Pi + (d*x)/2]/(
6*a^2*d^3*Sqrt[a + I*a*Sinh[c + d*x]]) + (3*x^2*Tanh[c/2 + (I/4)*Pi + (d*x)
/2])/(16*a^2*d*Sqrt[a + I*a*Sinh[c + d*x]]) + (x^2*Sech[c/2 + (I/4)*Pi + (d
*x)/2]^2*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(8*a^2*d*Sqrt[a + I*a*Sinh[c + d*x
]])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3768

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Csc[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[(b^2*(n - 2))/(n - 1), I
nt[(b*Csc[c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] &&
IntegerQ[2*n]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2}{(a+ia\sinh(c+dx))^{5/2}}\,dx = \frac{\sinh\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\int x^2\operatorname{csch}^5\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)dx}{4a^2\sqrt{a+ia\sinh(c+dx)}}$$

$$= \frac{x\operatorname{sech}^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{6a^2d^2\sqrt{a+ia\sinh(c+dx)}} + \frac{x^2\operatorname{sech}^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{8a^2d\sqrt{a+ia\sinh(c+dx)}} - \frac{\left(3\sin\right.}{}$$

$$= \frac{3x}{4a^2d^2\sqrt{a+ia\sinh(c+dx)}} + \frac{x\operatorname{sech}^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{6a^2d^2\sqrt{a+ia\sinh(c+dx)}} - \frac{\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\right.}{6a^2d^3\sqrt{a+ia\sinh(c}}$$

$$= \frac{3x}{4a^2d^2\sqrt{a+ia\sinh(c+dx)}} - \frac{5\tan^{-1}\left(\sinh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\right)\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{3a^2d^3\sqrt{a+ia\sinh(c+dx)}} +$$

$$= \frac{3x}{4a^2d^2\sqrt{a+ia\sinh(c+dx)}} - \frac{5\tan^{-1}\left(\sinh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\right)\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{3a^2d^3\sqrt{a+ia\sinh(c+dx)}} +$$

$$= \frac{3x}{4a^2d^2\sqrt{a+ia\sinh(c+dx)}} - \frac{5\tan^{-1}\left(\sinh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\right)\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{3a^2d^3\sqrt{a+ia\sinh(c+dx)}} +$$

$$= \frac{3x}{4a^2d^2\sqrt{a+ia\sinh(c+dx)}} - \frac{5\tan^{-1}\left(\sinh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\right)\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{3a^2d^3\sqrt{a+ia\sinh(c+dx)}} +$$

Mathematica [A] time = 2.29, size = 482, normalized size = 0.70

$$\frac{\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)\left(\left(-\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)^4\left(9c^2\log\left(1-\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] ((Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*(4*d*x*(4 + (3*I)*d*x)*(Cosh[(c
+ d*x)/2] + I*Sinh[(c + d*x)/2]) + (-8*I + 36*d*x + (9*I)*d^2*x^2)*(Cosh[(c
 + d*x)/2] + I*Sinh[(c + d*x)/2])^3 - (1/2 - I/2)*(-1)^(3/4)*(-160*ArcTanh[
(-1)^(3/4)*E^((c + d*x)/2)] + 18*c^2*ArcTanh[(-1)^(3/4)*E^((c + d*x)/2)] +
9*c^2*Log[1 - (-1)^(3/4)*E^((c + d*x)/2)] - 9*d^2*x^2*Log[1 - (-1)^(3/4)*E^
((c + d*x)/2)] - 9*c^2*Log[1 + (-1)^(3/4)*E^((c + d*x)/2)] + 9*d^2*x^2*Log[
1 + (-1)^(3/4)*E^((c + d*x)/2)] + 36*d*x*PolyLog[2, -((-1)^(3/4)*E^((c + d*
```

```
x)/2))] - 36*d*x*PolyLog[2, (-1)^(3/4)*E^((c + d*x)/2)] - 72*PolyLog[3, -((
-1)^(3/4)*E^((c + d*x)/2))] + 72*PolyLog[3, (-1)^(3/4)*E^((c + d*x)/2)])*(C
osh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^4 + 24*d^2*x^2*Sinh[(c + d*x)/2] +
2*(-8 + 9*d^2*x^2)*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2*Sinh[(c + d*
x)/2]))/(48*d^3*(a + I*a*Sinh[c + d*x])^(5/2))
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\frac{\left(24\,a^3d^3e^{(4\,dx+4\,c)} - 96i\,a^3d^3e^{(3\,dx+3\,c)} - 144\,a^3d^3e^{(2\,dx+2\,c)} + 96i\,a^3d^3e^{(dx+c)} + 24\,a^3d^3\right)\mathrm{integral}\left(\frac{\left(-9i\,d^2x^2+80i\right)\sqrt{\frac{1}{2}i\,ae^{(}}}{48\left(a^3d^2e^{(dx+c)}-\right.}\right.}{24\,a^3d^3e^{(4\,dx+4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] ((24*a^3*d^3*e^(4*d*x + 4*c) - 96*I*a^3*d^3*e^(3*d*x + 3*c) - 144*a^3*d^3*e
^(2*d*x + 2*c) + 96*I*a^3*d^3*e^(d*x + c) + 24*a^3*d^3)*integral(1/48*(-9*I
*d^2*x^2 + 80*I)*sqrt(1/2*I*a*e^(-d*x - c))*e^(d*x + c)/(a^3*d^2*e^(d*x + c
) - I*a^3*d^2), x) + ((-9*I*d^2*x^2 - 36*I*d*x + 8*I)*e^(4*d*x + 4*c) - (33
*d^2*x^2 + 140*d*x - 8)*e^(3*d*x + 3*c) + (-33*I*d^2*x^2 + 140*I*d*x + 8*I)
*e^(2*d*x + 2*c) - (9*d^2*x^2 - 36*d*x - 8)*e^(d*x + c))*sqrt(1/2*I*a*e^(-d
*x - c)))/(24*a^3*d^3*e^(4*d*x + 4*c) - 96*I*a^3*d^3*e^(3*d*x + 3*c) - 144*
a^3*d^3*e^(2*d*x + 2*c) + 96*I*a^3*d^3*e^(d*x + c) + 24*a^3*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(i\,a\sinh\left(dx+c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(x^2/(I*a*sinh(d*x + c) + a)^(5/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(a+ia\sinh\left(dx+c\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a+I*a*sinh(d*x+c))^(5/2),x)
```

```
[Out] int(x^2/(a+I*a*sinh(d*x+c))^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{(i\,a\sinh{(dx+c)}+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(x^2/(I*a*sinh(d*x + c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2}{(a+a\sinh{(c+d\,x)}\;1\mathrm{i})^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a + a*sinh(c + d*x)*1i)^(5/2),x)
```

```
[Out] int(x^2/(a + a*sinh(c + d*x)*1i)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{(ia\,(\sinh{(c+dx)}-i))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(a+I*a*sinh(d*x+c))**(5/2),x)
```

```
[Out] Integral(x**2/(I*a*(sinh(c + d*x) - I))**(5/2), x)
```

3.148 $\int \frac{x}{(a+ia\sinh(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=416

$$\frac{3i\text{Li}_2\left(-e^{\frac{1}{4}(2c-i\pi)+\frac{dx}{2}}\right)\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}}-\frac{3i\text{Li}_2\left(e^{\frac{1}{4}(2c-i\pi)+\frac{dx}{2}}\right)\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}}+\frac{3}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}}+$$

```
[Out] 3/8/a^2/d^2/(a+I*a*sinh(d*x+c))^(1/2)-3/8*I*x*arctanh(exp(1/2*c+3/4*I*Pi+1/
2*d*x))*cosh(1/2*c+1/4*I*Pi+1/2*d*x)/a^2/d/(a+I*a*sinh(d*x+c))^(1/2)+3/8*I*
cosh(1/2*c+1/4*I*Pi+1/2*d*x)*polylog(2,exp(1/2*c+3/4*I*Pi+1/2*d*x))/a^2/d^2
/(a+I*a*sinh(d*x+c))^(1/2)-3/8*I*cosh(1/2*c+1/4*I*Pi+1/2*d*x)*polylog(2,-ex
p(1/2*c+3/4*I*Pi+1/2*d*x))/a^2/d^2/(a+I*a*sinh(d*x+c))^(1/2)+1/12*sech(1/2*
c+1/4*I*Pi+1/2*d*x)^2/a^2/d^2/(a+I*a*sinh(d*x+c))^(1/2)+3/16*x*tanh(1/2*c+1
/4*I*Pi+1/2*d*x)/a^2/d/(a+I*a*sinh(d*x+c))^(1/2)+1/8*x*sech(1/2*c+1/4*I*Pi+
1/2*d*x)^2*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a^2/d/(a+I*a*sinh(d*x+c))^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 416, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {3319, 4185, 4182, 2279, 2391}

$$\frac{3i\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{dx}{2}+\frac{1}{4}(2c-i\pi)}\right)}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}}-\frac{3i\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{dx}{2}+\frac{1}{4}(2c-i\pi)}\right)}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}}+\frac{}{8a^2d^2\sqrt{a+}}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] 3/(8*a^2*d^2*Sqrt[a + I*a*Sinh[c + d*x]]) + (((3*I)/8)*x*ArcTanh[E^((2*c -
I*Pi)/4 + (d*x)/2)]*Cosh[c/2 + (I/4)*Pi + (d*x)/2])/(a^2*d*Sqrt[a + I*a*Sin
h[c + d*x]]) + (((3*I)/8)*Cosh[c/2 + (I/4)*Pi + (d*x)/2]*PolyLog[2, -E^((2*
c - I*Pi)/4 + (d*x)/2)])/(a^2*d^2*Sqrt[a + I*a*Sinh[c + d*x]]) - (((3*I)/8)
*Cosh[c/2 + (I/4)*Pi + (d*x)/2]*PolyLog[2, E^((2*c - I*Pi)/4 + (d*x)/2)])/(
a^2*d^2*Sqrt[a + I*a*Sinh[c + d*x]]) + Sech[c/2 + (I/4)*Pi + (d*x)/2]^2/(12
*a^2*d^2*Sqrt[a + I*a*Sinh[c + d*x]]) + (3*x*Tanh[c/2 + (I/4)*Pi + (d*x)/2]
)/(16*a^2*d*Sqrt[a + I*a*Sinh[c + d*x]]) + (x*Sech[c/2 + (I/4)*Pi + (d*x)/2
]^2*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(8*a^2*d*Sqrt[a + I*a*Sinh[c + d*x]])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rubi steps

$$\int \frac{x}{(a+ia\sinh(c+dx))^{5/2}}\,dx = \frac{\sinh\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)\int x\operatorname{csch}^5\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)dx}{4a^2\sqrt{a+ia\sinh(c+dx)}}$$

$$= \frac{\operatorname{sech}^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{12a^2d^2\sqrt{a+ia\sinh(c+dx)}} + \frac{x\operatorname{sech}^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{8a^2d\sqrt{a+ia\sinh(c+dx)}} - \frac{(3\,\mathrm{s}}{}$$

$$= \frac{3}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}} + \frac{\operatorname{sech}^2\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{12a^2d^2\sqrt{a+ia\sinh(c+dx)}} + \frac{3x\tanh\left(\frac{c}{2}+\frac{i\pi}{4}\right.}{16a^2d\sqrt{a+ia\sin}}$$

$$= \frac{3}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}} + \frac{3ix\tanh^{-1}\left(e^{\frac{1}{4}(2c-i\pi)+\frac{dx}{2}}\right)\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{8a^2d\sqrt{a+ia\sinh(c+dx)}} + \frac{}{1}$$

$$= \frac{3}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}} + \frac{3ix\tanh^{-1}\left(e^{\frac{1}{4}(2c-i\pi)+\frac{dx}{2}}\right)\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{8a^2d\sqrt{a+ia\sinh(c+dx)}} + \frac{}{1}$$

$$= \frac{3}{8a^2d^2\sqrt{a+ia\sinh(c+dx)}} + \frac{3ix\tanh^{-1}\left(e^{\frac{1}{4}(2c-i\pi)+\frac{dx}{2}}\right)\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{8a^2d\sqrt{a+ia\sinh(c+dx)}} + \frac{3}{}$$

Mathematica [A] time = 1.52, size = 411, normalized size = 0.99

$$\frac{\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)\left(\frac{9i\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)^4\left(-2\mathrm{Li}_2\left(-\sqrt[4]{-1}\,e^{-\frac{c}{2}-\frac{dx}{2}}\right)+2\mathrm{Li}_2\left(\sqrt[4]{-1}\,e^{-\frac{c}{2}-\frac{dx}{2}}\right)+\frac{1}{2}i(2ic+2\right.}{\sqrt{2}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(a + I*a*Sinh[c + d*x])^(5/2),x]
```

```
[Out] ((Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*(4*(2 + (3*I)*d*x)*(Cosh[(c + d*
x)/2] + I*Sinh[(c + d*x)/2]) + 9*(2 + I*d*x)*(Cosh[(c + d*x)/2] + I*Sinh[(c
 + d*x)/2])^3 - 9*Sqrt[2]*c*ArcTan[(I + Tanh[(c + d*x)/4])/Sqrt[2]]*(Cosh[(
c + d*x)/2] + I*Sinh[(c + d*x)/2])^4 + ((9*I)*(Pi*ArcTan[(I + Tanh[(c + d*x
)/4])/Sqrt[2]] + (I/2)*((2*I)*c + Pi + (2*I)*d*x)*(Log[1 - (-1)^(1/4)*E^(-1
/2*c - (d*x)/2)] - Log[1 + (-1)^(1/4)*E^(-1/2*c - (d*x)/2)]) - 2*PolyLog[2,
 -((-1)^(1/4)*E^(-1/2*c - (d*x)/2))] + 2*PolyLog[2, (-1)^(1/4)*E^(-1/2*c -
(d*x)/2)])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^4)/Sqrt[2] + 24*d*x*Si
```

```
nh[(c + d*x)/2] + 18*d*x*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2*Sinh[(
c + d*x)/2]))/(48*d^2*(a + I*a*Sinh[c + d*x])^(5/2))
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\frac{\left(24\,a^3d^2e^{(4\,dx+4\,c)}-96i\,a^3d^2e^{(3\,dx+3\,c)}-144\,a^3d^2e^{(2\,dx+2\,c)}+96i\,a^3d^2e^{(dx+c)}+24\,a^3d^2\right)\mathrm{integral}\left(-\frac{3i\,\sqrt{\frac{1}{2}i\,ae^{(-dx-c)}}\,xe^{(dx+c)}}{16\,a^3e^{(dx+c)}-16i\,a^3}\right.}{24\,a^3d^2e^{(4\,dx+4\,c)}-96i\,a^3d^2e^{(3\,dx+3\,c)}-144}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] ((24*a^3*d^2*e^(4*d*x + 4*c) - 96*I*a^3*d^2*e^(3*d*x + 3*c) - 144*a^3*d^2*e
^(2*d*x + 2*c) + 96*I*a^3*d^2*e^(d*x + c) + 24*a^3*d^2)*integral(-3*I*sqrt(
1/2*I*a*e^(-d*x - c))*x*e^(d*x + c)/(16*a^3*e^(d*x + c) - 16*I*a^3), x) + (
(-9*I*d*x - 18*I)*e^(4*d*x + 4*c) - (33*d*x + 70)*e^(3*d*x + 3*c) + (-33*I*
d*x + 70*I)*e^(2*d*x + 2*c) - 9*(d*x - 2)*e^(d*x + c))*sqrt(1/2*I*a*e^(-d*x
 - c)))/(24*a^3*d^2*e^(4*d*x + 4*c) - 96*I*a^3*d^2*e^(3*d*x + 3*c) - 144*a^
3*d^2*e^(2*d*x + 2*c) + 96*I*a^3*d^2*e^(d*x + c) + 24*a^3*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(i\,a\sinh\left(dx+c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(x/(I*a*sinh(d*x + c) + a)^(5/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(a+ia\sinh\left(dx+c\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+I*a*sinh(d*x+c))^(5/2),x)
```

```
[Out] int(x/(a+I*a*sinh(d*x+c))^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(i\,a\sinh\left(dx+c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(x/(I*a*sinh(d*x + c) + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x}{(a + a \sinh(c + d\,x)\,1\mathrm{i})^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a + a*sinh(c + d*x)*1i)^(5/2),x)
```

```
[Out] int(x/(a + a*sinh(c + d*x)*1i)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{(ia(\sinh(c + dx) - i))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+I*a*sinh(d*x+c))**(5/2),x)
```

```
[Out] Integral(x/(I*a*(sinh(c + d*x) - I))**(5/2), x)
```

3.149 $\int \frac{1}{x(a+ia\sinh(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=24

$$\mathrm{Int}\left(\frac{1}{x(a+ia\sinh(c+dx))^{5/2}},x\right)$$

```
[Out] Unintegrable(1/x/(a+I*a*sinh(d*x+c))^(5/2),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x(a+ia\sinh(c+dx))^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*(a + I*a*Sinh[c + d*x])^(5/2)),x]
[Out] Defer[Int][1/(x*(a + I*a*Sinh[c + d*x])^(5/2)), x]
```

Rubi steps

$$\int \frac{1}{x(a+ia\sinh(c+dx))^{5/2}}\,dx=\int \frac{1}{x(a+ia\sinh(c+dx))^{5/2}}\,dx$$

Mathematica [A] time = 34.80, size = 0, normalized size = 0.00

$$\int \frac{1}{x(a+ia\sinh(c+dx))^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*(a + I*a*Sinh[c + d*x])^(5/2)),x]
[Out] Integrate[1/(x*(a + I*a*Sinh[c + d*x])^(5/2)), x]
```

fricas [A] time = 0.91, size = 0, normalized size = 0.00

$$\frac{\left(24\,a^3d^4x^4e^{(4\,dx+4\,c)}-96i\,a^3d^4x^4e^{(3\,dx+3\,c)}-144\,a^3d^4x^4e^{(2\,dx+2\,c)}+96i\,a^3d^4x^4e^{(dx+c)}+24\,a^3d^4x^4\right)\mathrm{integral}\left(\frac{\left(-9i\,d^4x^4\right.}{4}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] ((24*a^3*d^4*x^4*e^(4*d*x + 4*c) - 96*I*a^3*d^4*x^4*e^(3*d*x + 3*c) - 144*a
^3*d^4*x^4*e^(2*d*x + 2*c) + 96*I*a^3*d^4*x^4*e^(d*x + c) + 24*a^3*d^4*x^4)
*integral((-9*I*d^4*x^4 + 80*I*d^2*x^2 - 384*I)*sqrt(1/2*I*a*e^(-d*x - c))*
e^(d*x + c)/(48*a^3*d^4*x^5*e^(d*x + c) - 48*I*a^3*d^4*x^5), x) + ((-9*I*d^
3*x^3 + 18*I*d^2*x^2 + 8*I*d*x - 48*I)*e^(4*d*x + 4*c) - (33*d^3*x^3 - 70*d
^2*x^2 - 8*d*x + 144)*e^(3*d*x + 3*c) + (-33*I*d^3*x^3 - 70*I*d^2*x^2 + 8*I
*d*x + 144*I)*e^(2*d*x + 2*c) - (9*d^3*x^3 + 18*d^2*x^2 - 8*d*x - 48)*e^(d*
x + c))*sqrt(1/2*I*a*e^(-d*x - c)))/(24*a^3*d^4*x^4*e^(4*d*x + 4*c) - 96*I*
a^3*d^4*x^4*e^(3*d*x + 3*c) - 144*a^3*d^4*x^4*e^(2*d*x + 2*c) + 96*I*a^3*d^
4*x^4*e^(d*x + c) + 24*a^3*d^4*x^4)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(i\,a\sinh\left(dx+c\right)+a)^{\frac{5}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/((I*a*sinh(d*x + c) + a)^(5/2)*x), x)
```

maple [A] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(a+ia\sinh\left(dx+c\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/(a+I*a*sinh(d*x+c))^(5/2),x)
```

```
[Out] int(1/x/(a+I*a*sinh(d*x+c))^(5/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(i\,a\sinh\left(dx+c\right)+a)^{\frac{5}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*sinh(d*x + c) + a)^(5/2)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{x\,(a + a\sinh\left(c + d\,x\right)\,1\mathrm{i})^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*(a + a*sinh(c + d*x)*1i)^(5/2)),x)
```

```
[Out] int(1/(x*(a + a*sinh(c + d*x)*1i)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\,(ia\,(\sinh\left(c + dx\right) - i))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+I*a*sinh(d*x+c))**(5/2),x)
```

```
[Out] Integral(1/(x*(I*a*(sinh(c + d*x) - I))**(5/2)), x)
```

3.150 $\int \frac{\sqrt[3]{a+ia\sinh(e+fx)}}{x}\,dx$

Optimal. Leaf size=24

$$\mathrm{Int}\left(\frac{\sqrt[3]{a+ia\sinh(e+fx)}}{x},x\right)$$

```
[Out] Unintegrable((a+I*a*sinh(f*x+e))^(1/3)/x,x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt[3]{a+ia\sinh(e+fx)}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + I*a*Sinh[e + f*x])^(1/3)/x,x]
```

```
[Out] Defer[Int][(a + I*a*Sinh[e + f*x])^(1/3)/x, x]
```

Rubi steps

$$\int \frac{\sqrt[3]{a+ia\sinh(e+fx)}}{x}\,dx=\int \frac{\sqrt[3]{a+ia\sinh(e+fx)}}{x}\,dx$$

Mathematica [A] time = 3.96, size = 0, normalized size = 0.00

$$\int \frac{\sqrt[3]{a+ia\sinh(e+fx)}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + I*a*Sinh[e + f*x])^(1/3)/x,x]
```

```
[Out] Integrate[(a + I*a*Sinh[e + f*x])^(1/3)/x, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/3)/x,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{1}{3}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/3)/x,x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(1/3)/x, x)
```

maple [A] time = 0.11, size = 0, normalized size = 0.00

$$\int \frac{\left(a+ia\sinh\left(fx+e\right)\right)^{\frac{1}{3}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*sinh(f*x+e))^(1/3)/x,x)
```

```
[Out] int((a+I*a*sinh(f*x+e))^(1/3)/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(i\,a\sinh\left(fx+e\right)+a\right)^{\frac{1}{3}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))^(1/3)/x,x, algorithm="maxima")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^(1/3)/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\left(a+a\sinh\left(e+f\,x\right)\,1{}\mathrm{i}\right)^{1/3}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^(1/3)/x,x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)^(1/3)/x, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt[3]{ia\left(\sinh\left(e+fx\right)-i\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*sinh(f*x+e))**(1/3)/x,x)
```

```
[Out] Integral((I*a*(sinh(e + f*x) - I))**(1/3)/x, x)
```

3.151 $\int (c+dx)^m (a+ia\sinh(e+fx))^n\,dx$

Optimal. Leaf size=26

$$\mathrm{Int}\left((c+dx)^m (a+ia\sinh(e+fx))^n, x\right)$$

```
[Out] Unintegrable((d*x+c)^m*(a+I*a*sinh(f*x+e))^n,x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} =$ 0.000, Rules used = {}

$$\int (c+dx)^m (a+ia\sinh(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m*(a + I*a*Sinh[e + f*x])^n,x]
```

```
[Out] Defer[Int][(c + d*x)^m*(a + I*a*Sinh[e + f*x])^n, x]
```

Rubi steps

$$\int (c+dx)^m (a+ia\sinh(e+fx))^n\,dx = \int (c+dx)^m (a+ia\sinh(e+fx))^n\,dx$$

Mathematica [A] time = 4.30, size = 0, normalized size = 0.00

$$\int (c+dx)^m (a+ia\sinh(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m*(a + I*a*Sinh[e + f*x])^n,x]
```

```
[Out] Integrate[(c + d*x)^m*(a + I*a*Sinh[e + f*x])^n, x]
```

fricas [A] time = 0.57, size = 0, normalized size = 0.00

$$\mathrm{integral}\left((dx+c)^m \left(\frac{1}{2}\left(i\,ae^{(2\,fx+2\,e)} + 2\,ae^{(fx+e)} - i\,a\right)e^{(-fx-e)}\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m*(1/2*(I*a*e^(2*f*x + 2*e) + 2*a*e^(f*x + e) - I*a)*e^(
-f*x - e))^n, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(i\,a\sinh\left(fx+e\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*(I*a*sinh(f*x + e) + a)^n, x)
```

maple [A] time = 0.08, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(a+ia\sinh\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+I*a*sinh(f*x+e))^n,x)
```

```
[Out] int((d*x+c)^m*(a+I*a*sinh(f*x+e))^n,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(i\,a\sinh\left(fx+e\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^m*(I*a*sinh(f*x + e) + a)^n, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \left(a+a\sinh\left(e+f\,x\right)\,1{}\mathrm{i}\right)^n\,(c+d\,x)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^n*(c + d*x)^m,x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)^n*(c + d*x)^m, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+I*a*sinh(f*x+e))**n,x)
```

```
[Out] Timed out
```

3.152 $\int (c+dx)^m (a+ia\sinh(e+fx))^3\,dx$

Optimal. Leaf size=410

$$-\frac{ia^3 3^{-m-1} e^{3e-\frac{3cf}{d}} (c+dx)^m \left(-\frac{f(c+dx)}{d}\right)^{-m} \Gamma\left(m+1,-\frac{3f(c+dx)}{d}\right)}{8f}-\frac{3a^3 2^{-m-3} e^{2e-\frac{2cf}{d}} (c+dx)^m \left(-\frac{f(c+dx)}{d}\right)^{-m} \Gamma\left(m+1,-\right.}{f}$$

```
[Out] 5/2*a^3*(d*x+c)^(1+m)/d/(1+m)-1/8*I*3^(-1-m)*a^3*exp(3*e-3*c*f/d)*(d*x+c)^m
*GAMMA(1+m,-3*f*(d*x+c)/d)/f/((-f*(d*x+c)/d)^m)-3*2^(-3-m)*a^3*exp(2*e-2*c*
f/d)*(d*x+c)^m*GAMMA(1+m,-2*f*(d*x+c)/d)/f/((-f*(d*x+c)/d)^m)+15/8*I*a^3*ex
p(e-c*f/d)*(d*x+c)^m*GAMMA(1+m,-f*(d*x+c)/d)/f/((-f*(d*x+c)/d)^m)+15/8*I*a^
3*exp(-e+c*f/d)*(d*x+c)^m*GAMMA(1+m,f*(d*x+c)/d)/f/((f*(d*x+c)/d)^m)+3*2^(-
3-m)*a^3*exp(-2*e+2*c*f/d)*(d*x+c)^m*GAMMA(1+m,2*f*(d*x+c)/d)/f/((f*(d*x+c)
/d)^m)-1/8*I*3^(-1-m)*a^3*exp(-3*e+3*c*f/d)*(d*x+c)^m*GAMMA(1+m,3*f*(d*x+c)
/d)/f/((f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.60, antiderivative size = 410, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {3318, 3312, 3307, 2181, 3308}

$$-\frac{ia^3 3^{-m-1} e^{3e-\frac{3cf}{d}} (c+dx)^m \left(-\frac{f(c+dx)}{d}\right)^{-m} \text{Gamma}\left(m+1,-\frac{3f(c+dx)}{d}\right)}{8f}-\frac{3a^3 2^{-m-3} e^{2e-\frac{2cf}{d}} (c+dx)^m \left(-\frac{f(c+dx)}{d}\right)^{-m} \text{Ga}}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + I*a*Sinh[e + f*x])^3,x]
```

```
[Out] (5*a^3*(c + d*x)^(1 + m))/(2*d*(1 + m)) - ((I/8)*3^(-1 - m)*a^3*E^(3*e - (3
*c*f)/d)*(c + d*x)^m*Gamma[1 + m, (-3*f*(c + d*x))/d])/(f*(-((f*(c + d*x))/
d))^m) - (3*2^(-3 - m)*a^3*E^(2*e - (2*c*f)/d)*(c + d*x)^m*Gamma[1 + m, (-2
*f*(c + d*x))/d])/(f*(-((f*(c + d*x))/d))^m) + (((15*I)/8)*a^3*E^(e - (c*f)
/d)*(c + d*x)^m*Gamma[1 + m, -((f*(c + d*x))/d)])/(f*(-((f*(c + d*x))/d))^m
) + (((15*I)/8)*a^3*E^(-e + (c*f)/d)*(c + d*x)^m*Gamma[1 + m, (f*(c + d*x))
/d])/(f*((f*(c + d*x))/d)^m) + (3*2^(-3 - m)*a^3*E^(-2*e + (2*c*f)/d)*(c +
d*x)^m*Gamma[1 + m, (2*f*(c + d*x))/d])/(f*((f*(c + d*x))/d)^m) - ((I/8)*3^
(-1 - m)*a^3*E^(-3*e + (3*c*f)/d)*(c + d*x)^m*Gamma[1 + m, (3*f*(c + d*x))/
d])/(f*((f*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
```

```
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int (c+dx)^m (a+ia\sinh(e+fx))^3\,dx = \left(8a^3\right)\int (c+dx)^m \sin^6\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)dx$$

$$= \left(8a^3\right)\int \left(\frac{5}{16}(c+dx)^m - \frac{3}{16}(c+dx)^m\cosh(2e+2fx) + \frac{15}{32}i(c+dx)^m\sinh\right.$$

$$= \frac{5a^3(c+dx)^{1+m}}{2d(1+m)} - \frac{1}{4}\left(ia^3\right)\int (c+dx)^m\sinh(3e+3fx)\,dx + \frac{1}{4}\left(15ia^3\right)\int (c$$

$$= \frac{5a^3(c+dx)^{1+m}}{2d(1+m)} - \frac{1}{8}\left(ia^3\right)\int e^{-i(3ie+3ifx)}(c+dx)^m\,dx + \frac{1}{8}\left(ia^3\right)\int e^{i(3ie+3ifx}$$

$$= \frac{5a^3(c+dx)^{1+m}}{2d(1+m)} - \frac{i3^{-1-m}a^3e^{3e-\frac{3cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{3f(c+}{d}\right.}{8f}$$

Mathematica [A] time = 1.55, size = 339, normalized size = 0.83

$$\frac{1}{24}a^3(c+dx)^m\left(-\frac{i3^{-m}e^{3e-\frac{3cf}{d}}\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{3f(c+dx)}{d}\right)}{f}-\frac{9\,2^{-m}e^{2e-\frac{2cf}{d}}\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{2f(c+dx)}{d}\right)}{f}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + I*a*Sinh[e + f*x])^3,x]
```

```
[Out] (a^3*(c + d*x)^m*((60*(c + d*x))/(d*(1 + m)) - (I*E^(3*e - (3*c*f)/d)*Gamma
[1 + m, (-3*f*(c + d*x))/d])/(3^m*f*(-((f*(c + d*x))/d))^m) - (9*E^(2*e - (
2*c*f)/d)*Gamma[1 + m, (-2*f*(c + d*x))/d])/(2^m*f*(-((f*(c + d*x))/d))^m)
+ ((45*I)*E^(e - (c*f)/d)*Gamma[1 + m, -((f*(c + d*x))/d)])/(f*(-((f*(c + d
*x))/d))^m) + ((45*I)*E^(-e + (c*f)/d)*Gamma[1 + m, (f*(c + d*x))/d])/(f*((
f*(c + d*x))/d)^m) + (9*E^(-2*e + (2*c*f)/d)*Gamma[1 + m, (2*f*(c + d*x))/d
])/(2^m*f*((f*(c + d*x))/d)^m) - (I*E^(-3*e + (3*c*f)/d)*Gamma[1 + m, (3*f*
(c + d*x))/d])/(3^m*f*((f*(c + d*x))/d)^m)))/24
```

fricas [A] time = 0.66, size = 372, normalized size = 0.91

$$\frac{\left(-i\,a^3dm-i\,a^3d\right)e^{\left(-\frac{dm\log\left(\frac{3f}{d}\right)+3\,de-3\,cf}{d}\right)}\Gamma\left(m+1,\frac{3\left(dfx+cf\right)}{d}\right)+9\left(a^3dm+a^3d\right)e^{\left(-\frac{dm\log\left(\frac{2f}{d}\right)+2\,de-2\,cf}{d}\right)}\Gamma\left(m+1,\frac{2\left(dfx+cf\right)}{d}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/24*((-I*a^3*d*m - I*a^3*d)*e^(-(d*m*log(3*f/d) + 3*d*e - 3*c*f)/d)*gamma(
m + 1, 3*(d*f*x + c*f)/d) + 9*(a^3*d*m + a^3*d)*e^(-(d*m*log(2*f/d) + 2*d*e
 - 2*c*f)/d)*gamma(m + 1, 2*(d*f*x + c*f)/d) + (45*I*a^3*d*m + 45*I*a^3*d)*
e^(-(d*m*log(f/d) + d*e - c*f)/d)*gamma(m + 1, (d*f*x + c*f)/d) + (45*I*a^3
*d*m + 45*I*a^3*d)*e^(-(d*m*log(-f/d) - d*e + c*f)/d)*gamma(m + 1, -(d*f*x
+ c*f)/d) - 9*(a^3*d*m + a^3*d)*e^(-(d*m*log(-2*f/d) - 2*d*e + 2*c*f)/d)*ga
mma(m + 1, -2*(d*f*x + c*f)/d) + (-I*a^3*d*m - I*a^3*d)*e^(-(d*m*log(-3*f/d
) - 3*d*e + 3*c*f)/d)*gamma(m + 1, -3*(d*f*x + c*f)/d) + 60*(a^3*d*f*x + a^
3*c*f)*(d*x + c)^m)/(d*f*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(i\,a\sinh\left(fx+e\right)+a\right)^3(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e))^3,x, algorithm="giac")
[Out] integrate((I*a*sinh(f*x + e) + a)^3*(d*x + c)^m, x)
```

maple [F] time = 0.19, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(a+ia\sinh\left(fx+e\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+I*a*sinh(f*x+e))^3,x)
[Out] int((d*x+c)^m*(a+I*a*sinh(f*x+e))^3,x)
```

maxima [A] time = 0.50, size = 375, normalized size = 0.91

$$-\frac{1}{8}i\left(\frac{(dx+c)^{m+1}e^{\left(-3e+\frac{3cf}{d}\right)}E_{-m}\left(\frac{3(dx+c)f}{d}\right)}{d}-\frac{3(dx+c)^{m+1}e^{\left(-e+\frac{cf}{d}\right)}E_{-m}\left(\frac{(dx+c)f}{d}\right)}{d}+\frac{3(dx+c)^{m+1}e^{\left(e-\frac{cf}{d}\right)}E_{-m}\left(-\frac{(dx+c}{d}\right.}{d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e))^3,x, algorithm="maxima")
[Out] -1/8*I*((d*x + c)^(m + 1)*e^(-3*e + 3*c*f/d)*exp_integral_e(-m, 3*(d*x + c)
*f/d)/d - 3*(d*x + c)^(m + 1)*e^(-e + c*f/d)*exp_integral_e(-m, (d*x + c)*f
/d)/d + 3*(d*x + c)^(m + 1)*e^(e - c*f/d)*exp_integral_e(-m, -(d*x + c)*f/d
)/d - (d*x + c)^(m + 1)*e^(3*e - 3*c*f/d)*exp_integral_e(-m, -3*(d*x + c)*f
/d)/d)*a^3 + 3/4*((d*x + c)^(m + 1)*e^(-2*e + 2*c*f/d)*exp_integral_e(-m, 2
*(d*x + c)*f/d)/d + (d*x + c)^(m + 1)*e^(2*e - 2*c*f/d)*exp_integral_e(-m,
-2*(d*x + c)*f/d)/d + 2*(d*x + c)^(m + 1)/(d*(m + 1)))*a^3 + 3/2*I*((d*x +
c)^(m + 1)*e^(-e + c*f/d)*exp_integral_e(-m, (d*x + c)*f/d)/d - (d*x + c)^(
m + 1)*e^(e - c*f/d)*exp_integral_e(-m, -(d*x + c)*f/d)/d)*a^3 + (d*x + c)^
(m + 1)*a^3/(d*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1{}\mathrm{i}\right)}^3\,{\left(c+d\,x\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^3*(c + d*x)^m,x)
[Out] int((a + a*sinh(e + f*x)*1i)^3*(c + d*x)^m, x)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+I*a*sinh(f*x+e))**3,x)
```

```
[Out] Exception raised: TypeError
```

3.153 $\int (c+dx)^m (a+ia\sinh(e+fx))^2\,dx$

Optimal. Leaf size=268

$$-\frac{a^2 2^{-m-3} e^{2e-\frac{2cf}{d}} (c+dx)^m \left(-\frac{f(c+dx)}{d}\right)^{-m} \Gamma\left(m+1,-\frac{2f(c+dx)}{d}\right)}{f}+\frac{ia^2 e^{e-\frac{cf}{d}} (c+dx)^m \left(-\frac{f(c+dx)}{d}\right)^{-m} \Gamma\left(m+1,-\frac{f(c+dx)}{d}\right)}{f}+$$

[Out] 3/2*a^2*(d*x+c)^(1+m)/d/(1+m)-2^(-3-m)*a^2*exp(2*e-2*c*f/d)*(d*x+c)^m*GAMMA(1+m,-2*f*(d*x+c)/d)/f/((-f*(d*x+c)/d)^m)+I*a^2*exp(e-c*f/d)*(d*x+c)^m*GAMMA(1+m,-f*(d*x+c)/d)/f/((-f*(d*x+c)/d)^m)+I*a^2*exp(-e+c*f/d)*(d*x+c)^m*GAMMA(1+m,f*(d*x+c)/d)/f/((f*(d*x+c)/d)^m)+2^(-3-m)*a^2*exp(-2*e+2*c*f/d)*(d*x+c)^m*GAMMA(1+m,2*f*(d*x+c)/d)/f/((f*(d*x+c)/d)^m)

Rubi [A] time = 0.36, antiderivative size = 268, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {3318, 3312, 3307, 2181, 3308}

$$-\frac{a^2 2^{-m-3} e^{2e-\frac{2cf}{d}} (c+dx)^m \left(-\frac{f(c+dx)}{d}\right)^{-m} \text{Gamma}\left(m+1,-\frac{2f(c+dx)}{d}\right)}{f}+\frac{ia^2 e^{e-\frac{cf}{d}} (c+dx)^m \left(-\frac{f(c+dx)}{d}\right)^{-m} \text{Gamma}\left(m\right.}{f}$$

Antiderivative was successfully verified.

[In] Int[(c + d*x)^m*(a + I*a*Sinh[e + f*x])^2,x]

[Out] (3*a^2*(c + d*x)^(1 + m))/(2*d*(1 + m)) - (2^(-3 - m)*a^2*E^(2*e - (2*c*f)/d)*(c + d*x)^m*Gamma[1 + m, (-2*f*(c + d*x))/d])/(f*(-((f*(c + d*x))/d))^m) + (I*a^2*E^(e - (c*f)/d)*(c + d*x)^m*Gamma[1 + m, -((f*(c + d*x))/d)])/(f*(-((f*(c + d*x))/d))^m) + (I*a^2*E^(-e + (c*f)/d)*(c + d*x)^m*Gamma[1 + m, (f*(c + d*x))/d])/(f*((f*(c + d*x))/d)^m) + (2^(-3 - m)*a^2*E^(-2*e + (2*c*f)/d)*(c + d*x)^m*Gamma[1 + m, (2*f*(c + d*x))/d])/(f*((f*(c + d*x))/d)^m)

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Log[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !IntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
```

```
f, m}, x] && IntegerQ[2*k]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int (c+dx)^m(a+ia\sinh(e+fx))^2\,dx = \left(4a^2\right)\int (c+dx)^m\sin^4\left(\frac{1}{2}\left(ie+\frac{\pi}{2}\right)+\frac{ifx}{2}\right)dx$$
$$= \left(4a^2\right)\int \left(\frac{3}{8}(c+dx)^m-\frac{1}{8}(c+dx)^m\cosh(2e+2fx)+\frac{1}{2}i(c+dx)^m\sinh(\ldots$$
$$= \frac{3a^2(c+dx)^{1+m}}{2d(1+m)}+\left(2ia^2\right)\int (c+dx)^m\sinh(e+fx)\,dx-\frac{1}{2}a^2\int (c+dx)^m\ldots$$
$$= \frac{3a^2(c+dx)^{1+m}}{2d(1+m)}+\left(ia^2\right)\int e^{-i(ie+ifx)}(c+dx)^m\,dx-\left(ia^2\right)\int e^{i(ie+ifx)}(c+\ldots$$
$$= \frac{3a^2(c+dx)^{1+m}}{2d(1+m)}-\frac{2^{-3-m}a^2e^{2e-\frac{2cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{2f(c+\ldots}{d}\right)}{f}\ldots$$

Mathematica [A] time = 0.75, size = 229, normalized size = 0.85

$$\frac{1}{8}a^2(c+dx)^m\left(-\frac{2^{-m}e^{2e-\frac{2cf}{d}}\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{2f(c+dx)}{d}\right)}{f}+\frac{8ie^{e-\frac{cf}{d}}\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{f(c+dx)}{d}\right)}{f}+\frac{8ie^{\frac{cf}{d}-\ldots}}{\ldots}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] (a^2*(c + d*x)^m*((12*(c + d*x))/(d*(1 + m)) - (E^(2*e - (2*c*f)/d)*Gamma[1
 + m, (-2*f*(c + d*x))/d])/(2^m*f*(-((f*(c + d*x))/d))^m) + ((8*I)*E^(e - (
c*f)/d)*Gamma[1 + m, -((f*(c + d*x))/d)])/(f*(-((f*(c + d*x))/d))^m) + ((8*
I)*E^(-e + (c*f)/d)*Gamma[1 + m, (f*(c + d*x))/d])/(f*((f*(c + d*x))/d)^m)
+ (E^(-2*e + (2*c*f)/d)*Gamma[1 + m, (2*f*(c + d*x))/d])/(2^m*f*((f*(c + d*
x))/d)^m)))/8
```

fricas [A] time = 0.53, size = 257, normalized size = 0.96

$$\left(a^{2} d m + a^{2} d\right) e^{\left(-\frac{d m \log\left(\frac{2 f}{d}\right) + 2 \, d e - 2 \, c f}{d}\right)} \Gamma\left(m + 1, \frac{2 \, {\left(d f x + c f\right)}}{d}\right) + \left(8 i \, a^{2} d m + 8 i \, a^{2} d\right) e^{\left(-\frac{d m \log\left(\frac{f}{d}\right) + d e - c f}{d}\right)} \Gamma\left(m + 1, \frac{d f x + c f}{d}\right) + \left(8 i \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/8*((a^2*d*m + a^2*d)*e^(-(d*m*log(2*f/d) + 2*d*e - 2*c*f)/d)*gamma(m + 1,
 2*(d*f*x + c*f)/d) + (8*I*a^2*d*m + 8*I*a^2*d)*e^(-(d*m*log(f/d) + d*e - c
*f)/d)*gamma(m + 1, (d*f*x + c*f)/d) + (8*I*a^2*d*m + 8*I*a^2*d)*e^(-(d*m*l
og(-f/d) - d*e + c*f)/d)*gamma(m + 1, -(d*f*x + c*f)/d) - (a^2*d*m + a^2*d)
*e^(-(d*m*log(-2*f/d) - 2*d*e + 2*c*f)/d)*gamma(m + 1, -2*(d*f*x + c*f)/d)
+ 12*(a^2*d*f*x + a^2*c*f)*(d*x + c)^m)/(d*f*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(i \, a \sinh\left(f x + e\right) + a\right)^{2} {\left(d x + c\right)}^{m}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)^2*(d*x + c)^m, x)
```

maple [F] time = 0.18, size = 0, normalized size = 0.00

$$\int \left(d x +c \right)^{m} \left(a +i a \sinh \left(f x +e \right)\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+I*a*sinh(f*x+e))^2,x)
```

```
[Out] int((d*x+c)^m*(a+I*a*sinh(f*x+e))^2,x)
```

maxima [A] time = 0.41, size = 210, normalized size = 0.78

$$\frac{1}{4}\left(\frac{(dx+c)^{m+1}e^{\left(-2e+\frac{2cf}{d}\right)}E_{-m}\left(\frac{2(dx+c)f}{d}\right)}{d}+\frac{(dx+c)^{m+1}e^{\left(2e-\frac{2cf}{d}\right)}E_{-m}\left(-\frac{2(dx+c)f}{d}\right)}{d}+\frac{2(dx+c)^{m+1}}{d(m+1)}\right)a^2+i\left(\frac{(dx+c)^{n}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/4*((d*x + c)^(m + 1)*e^(-2*e + 2*c*f/d)*exp_integral_e(-m, 2*(d*x + c)*f/
d)/d + (d*x + c)^(m + 1)*e^(2*e - 2*c*f/d)*exp_integral_e(-m, -2*(d*x + c)*
f/d)/d + 2*(d*x + c)^(m + 1)/(d*(m + 1)))*a^2 + I*((d*x + c)^(m + 1)*e^(-e
+ c*f/d)*exp_integral_e(-m, (d*x + c)*f/d)/d - (d*x + c)^(m + 1)*e^(e - c*f
/d)*exp_integral_e(-m, -(d*x + c)*f/d)/d)*a^2 + (d*x + c)^(m + 1)*a^2/(d*(m
 + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+a\sinh\left(e+f\,x\right)\,1\mathrm{i}\right)^2\,\left(c+d\,x\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)^2*(c + d*x)^m,x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)^2*(c + d*x)^m, x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+I*a*sinh(f*x+e))**2,x)
```

```
[Out] Exception raised: TypeError
```

3.154 $\int (c+dx)^m (a+ia\sinh(e+fx))\,dx$

Optimal. Leaf size=135

$$\frac{iae^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{f(c+dx)}{d}\right)}{2f}+\frac{iae^{\frac{cf}{d}-e}(c+dx)^m\left(\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{f(c+dx)}{d}\right)}{2f}+\frac{a(c+dx)^{m+1}}{d(m+1)}$$

```
[Out] a*(d*x+c)^(1+m)/d/(1+m)+1/2*I*a*exp(e-c*f/d)*(d*x+c)^m*GAMMA(1+m,-f*(d*x+c)
/d)/f/((-f*(d*x+c)/d)^m)+1/2*I*a*exp(-e+c*f/d)*(d*x+c)^m*GAMMA(1+m,f*(d*x+c
)/d)/f/((f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.15, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3317, 3308, 2181}

$$\frac{iae^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{f(c+dx)}{d}\right)}{2f}+\frac{iae^{\frac{cf}{d}-e}(c+dx)^m\left(\frac{f(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,\frac{f(c+dx)}{d}\right)}{2f}+$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^(1 + m))/(d*(1 + m)) + ((I/2)*a*E^(e - (c*f)/d)*(c + d*x)^m*Ga
mma[1 + m, -((f*(c + d*x))/d)])/(f*(-((f*(c + d*x))/d))^m) + ((I/2)*a*E^(-e
 + (c*f)/d)*(c + d*x)^m*Gamma[1 + m, (f*(c + d*x))/d])/(f*((f*(c + d*x))/d)
^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^m(a+ia\sinh(e+fx))\,dx = \int \left(a(c+dx)^m + ia(c+dx)^m\sinh(e+fx)\right)\,dx$$
$$= \frac{a(c+dx)^{1+m}}{d(1+m)} + (ia)\int (c+dx)^m\sinh(e+fx)\,dx$$
$$= \frac{a(c+dx)^{1+m}}{d(1+m)} + \frac{1}{2}(ia)\int e^{-i(ie+ifx)}(c+dx)^m\,dx - \frac{1}{2}(ia)\int e^{i(ie+ifx)}(c+dx)$$
$$= \frac{a(c+dx)^{1+m}}{d(1+m)} + \frac{iae^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{f(c+dx)}{d}\right)}{2f} + \frac{iae^{-e}}{}$$

Mathematica [A] time = 0.51, size = 207, normalized size = 1.53

$$-\frac{ae^{-\frac{cf}{d}-e}(c+dx)^m(\sinh(e+fx)-i)\left(-\frac{f^2(c+dx)^2}{d^2}\right)^{-m}\left(-2if(c+dx)e^{\frac{cf}{d}+e}\left(-\frac{f^2(c+dx)^2}{d^2}\right)^m + de^{2e}(m+1)\left(f\left(\frac{c}{d}+x\right)\right)^m\right.}{2df(m+1)\left(\cosh\left(\frac{1}{2}(e+fx)\right)+i\sinh\left(\frac{1}{2}(e+fx\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + I*a*Sinh[e + f*x]),x]
```

```
[Out] -1/2*(a*E^(-e - (c*f)/d)*(c + d*x)^m*((-2*I)*E^(e + (c*f)/d)*f*(c + d*x)*(-
((f^2*(c + d*x)^2)/d^2))^m + d*E^(2*e)*(1 + m)*(f*(c/d + x))^m*Gamma[1 + m,
 -((f*(c + d*x))/d)] + d*E^((2*c*f)/d)*(1 + m)*(-((f*(c + d*x))/d))^m*Gamma
[1 + m, (f*(c + d*x))/d])*(-I + Sinh[e + f*x]))/(d*f*(1 + m)*(-((f^2*(c + d
*x)^2)/d^2))^m*(Cosh[(e + f*x)/2] + I*Sinh[(e + f*x)/2])^2)
```

fricas [A] time = 0.92, size = 134, normalized size = 0.99

$$\frac{(i\,adm+i\,ad)e^{\left(-\frac{dm\log\left(\frac{f}{d}\right)+de-cf}{d}\right)}\Gamma\left(m+1,\frac{dfx+cf}{d}\right)+(i\,adm+i\,ad)e^{\left(-\frac{dm\log\left(-\frac{f}{d}\right)-de+cf}{d}\right)}\Gamma\left(m+1,-\frac{dfx+cf}{d}\right)+2\left(adfx+\right.}{2\left(dfm+df\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/2*((I*a*d*m + I*a*d)*e^(-(d*m*log(f/d) + d*e - c*f)/d)*gamma(m + 1, (d*f*
x + c*f)/d) + (I*a*d*m + I*a*d)*e^(-(d*m*log(-f/d) - d*e + c*f)/d)*gamma(m
+ 1, -(d*f*x + c*f)/d) + 2*(a*d*f*x + a*c*f)*(d*x + c)^m)/(d*f*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(i\,a\sinh\left(fx+e\right)+a\right)(dx+c)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((I*a*sinh(f*x + e) + a)*(d*x + c)^m, x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int (dx+c)^{m}\left(a+ia\sinh\left(fx+e\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+I*a*sinh(f*x+e)),x)
```

```
[Out] int((d*x+c)^m*(a+I*a*sinh(f*x+e)),x)
```

maxima [A] time = 0.41, size = 101, normalized size = 0.75

$$\frac{1}{2}i\left(\frac{(dx+c)^{m+1}e^{\left(-e+\frac{cf}{d}\right)}E_{-m}\left(\frac{(dx+c)f}{d}\right)}{d}-\frac{(dx+c)^{m+1}e^{\left(e-\frac{cf}{d}\right)}E_{-m}\left(-\frac{(dx+c)f}{d}\right)}{d}\right)a+\frac{(dx+c)^{m+1}a}{d(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+I*a*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/2*I*((d*x + c)^(m + 1)*e^(-e + c*f/d)*exp_integral_e(-m, (d*x + c)*f/d)/d
 - (d*x + c)^(m + 1)*e^(e - c*f/d)*exp_integral_e(-m, -(d*x + c)*f/d)/d)*a
+ (d*x + c)^(m + 1)*a/(d*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+a\sinh\left(e+f\,x\right)\,1{}\mathrm{i}\right)\,{\left(c+d\,x\right)}^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sinh(e + f*x)*1i)*(c + d*x)^m,x)
```

```
[Out] int((a + a*sinh(e + f*x)*1i)*(c + d*x)^m, x)
```

sympy **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+I*a*sinh(f*x+e)),x)
```

```
[Out] Exception raised: TypeError
```

3.155 $\int \frac{(c+dx)^m}{a+ia\sinh(e+fx)}\,dx$

Optimal. Leaf size=26

$$\text{Int}\left(\frac{(c+dx)^m}{a+ia\sinh(e+fx)},x\right)$$

```
[Out] Unintegrable((d*x+c)^m/(a+I*a*sinh(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(c+dx)^m}{a+ia\sinh(e+fx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m/(a + I*a*Sinh[e + f*x]),x]
[Out] Defer[Int][(c + d*x)^m/(a + I*a*Sinh[e + f*x]), x]
```

Rubi steps

$$\int \frac{(c+dx)^m}{a+ia\sinh(e+fx)}\,dx = \int \frac{(c+dx)^m}{a+ia\sinh(e+fx)}\,dx$$

Mathematica [A] time = 4.18, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{a+ia\sinh(e+fx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m/(a + I*a*Sinh[e + f*x]),x]
[Out] Integrate[(c + d*x)^m/(a + I*a*Sinh[e + f*x]), x]
```

fricas [A] time = 0.52, size = 0, normalized size = 0.00

$$\frac{\left(afe^{(fx+e)}-iaf\right)\text{integral}\left(-\frac{2i\,(dx+c)^m dm}{-i\,adfx-i\,acf+\left(adfx+acf\right)e^{(fx+e)}},x\right)+2i\,(dx+c)^m}{afe^{(fx+e)}-iaf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+I*a*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] ((a*f*e^(f*x + e) - I*a*f)*integral(-2*I*(d*x + c)^m*d*m/(-I*a*d*f*x - I*a*
c*f + (a*d*f*x + a*c*f)*e^(f*x + e)), x) + 2*I*(d*x + c)^m)/(a*f*e^(f*x + e
) - I*a*f)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{i\,a\sinh\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+I*a*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m/(I*a*sinh(f*x + e) + a), x)
```

maple [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{a+ia\sinh\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m/(a+I*a*sinh(f*x+e)),x)
```

```
[Out] int((d*x+c)^m/(a+I*a*sinh(f*x+e)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{i\,a\sinh\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+I*a*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^m/(I*a*sinh(f*x + e) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(c+d\,x)^m}{a+a\sinh\left(e+f\,x\right)\,1\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/(a + a*sinh(e + f*x)*1i),x)
```

```
[Out] int((c + d*x)^m/(a + a*sinh(e + f*x)*1i), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int \frac{(c+dx)^m}{\sinh(e+fx)-i}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m/(a+I*a*sinh(f*x+e)),x)
[Out] -I*Integral((c + d*x)**m/(sinh(e + f*x) - I), x)/a
```

3.156 $\int \frac{(c+dx)^m}{(a+ia\sinh(e+fx))^2} \, dx$

Optimal. Leaf size=26

$$\text{Int}\left(\frac{(c+dx)^m}{(a+ia\sinh(e+fx))^2},x\right)$$

```
[Out] Unintegrable((d*x+c)^m/(a+I*a*sinh(f*x+e))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(c+dx)^m}{(a+ia\sinh(e+fx))^2} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m/(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] Defer[Int][(c + d*x)^m/(a + I*a*Sinh[e + f*x])^2, x]
```

Rubi steps

$$\int \frac{(c+dx)^m}{(a+ia\sinh(e+fx))^2} \, dx = \int \frac{(c+dx)^m}{(a+ia\sinh(e+fx))^2} \, dx$$

Mathematica [A] time = 16.93, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{(a+ia\sinh(e+fx))^2} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m/(a + I*a*Sinh[e + f*x])^2,x]
```

```
[Out] Integrate[(c + d*x)^m/(a + I*a*Sinh[e + f*x])^2, x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\frac{\left(-2i\,d^2f^2x^2 - 4i\,cdf^2x - 2i\,c^2f^2 + 2i\,d^2m^2 - 2i\,d^2m + \left(-2i\,d^2fmx - 2i\,d^2m^2 + \left(-2i\,cdf + 2i\,d^2\right)m\right)e^{\left(2\,fx+2\,e\right)} + \cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)^m/(a+I*a*sinh(f*x+e))^2,x, algorithm="fricas")

[Out] ((-2*I*d^2*f^2*x^2 - 4*I*c*d*f^2*x - 2*I*c^2*f^2 + 2*I*d^2*m^2 - 2*I*d^2*m + (-2*I*d^2*f*m*x - 2*I*d^2*m^2 + (-2*I*c*d*f + 2*I*d^2)*m)*e^(2*f*x + 2*e) + 2*(3*d^2*f^2*x^2 + 3*c^2*f^2 - 2*d^2*m^2 - (c*d*f - 2*d^2)*m + (6*c*d*f^2 - d^2*f*m)*x)*e^(f*x + e))*(d*x + c)^m + (3*I*a^2*d^2*f^3*x^2 + 6*I*a^2*c*d*f^3*x + 3*I*a^2*c^2*f^3 + 3*(a^2*d^2*f^3*x^2 + 2*a^2*c*d*f^3*x + a^2*c^2*f^3)*e^(3*f*x + 3*e) + (-9*I*a^2*d^2*f^3*x^2 - 18*I*a^2*c*d*f^3*x - 9*I*a^2*c^2*f^3)*e^(2*f*x + 2*e) - 9*(a^2*d^2*f^3*x^2 + 2*a^2*c*d*f^3*x + a^2*c^2*f^3)*e^(f*x + e))*integral((-2*I*d^3*f^2*m*x^2 - 4*I*c*d^2*f^2*m*x + 2*I*d^3*m^3 - 6*I*d^3*m^2 + (-2*I*c^2*d*f^2 + 4*I*d^3)*m)*(d*x + c)^m/(-3*I*a^2*d^3*f^3*x^3 - 9*I*a^2*c*d^2*f^3*x^2 - 9*I*a^2*c^2*d*f^3*x - 3*I*a^2*c^3*f^3 + 3*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*e^(f*x + e)), x))/(3*I*a^2*d^2*f^3*x^2 + 6*I*a^2*c*d*f^3*x + 3*I*a^2*c^2*f^3 + 3*(a^2*d^2*f^3*x^2 + 2*a^2*c*d*f^3*x + a^2*c^2*f^3)*e^(3*f*x + 3*e) + (-9*I*a^2*d^2*f^3*x^2 - 18*I*a^2*c*d*f^3*x - 9*I*a^2*c^2*f^3)*e^(2*f*x + 2*e) - 9*(a^2*d^2*f^3*x^2 + 2*a^2*c*d*f^3*x + a^2*c^2*f^3)*e^(f*x + e))

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(i\,a\sinh\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)^m/(a+I*a*sinh(f*x+e))^2,x, algorithm="giac")

[Out] integrate((d*x + c)^m/(I*a*sinh(f*x + e) + a)^2, x)

maple [A] time = 0.11, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(a+ia\sinh\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*x+c)^m/(a+I*a*sinh(f*x+e))^2,x)

[Out] int((d*x+c)^m/(a+I*a*sinh(f*x+e))^2,x)

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(i\,a\sinh\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+I*a*sinh(f*x+e))^2,x, algorithm="maxima")
[Out] integrate((d*x + c)^m/(I*a*sinh(f*x + e) + a)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(c+d\,x)^m}{\left(a+a\,\mathrm{sinh}\left(e+f\,x\right)\,1\mathrm{i}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/(a + a*sinh(e + f*x)*1i)^2,x)
[Out] int((c + d*x)^m/(a + a*sinh(e + f*x)*1i)^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int \frac{(c+dx)^m}{\sinh^2\left(e+fx\right)-2i\sinh\left(e+fx\right)-1}\,dx}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m/(a+I*a*sinh(f*x+e))**2,x)
[Out] -Integral((c + d*x)**m/(sinh(e + f*x)**2 - 2*I*sinh(e + f*x) - 1), x)/a**2
```

3.157 $\int (c+dx)^3(a+b\sinh(e+fx))\,dx$

Optimal. Leaf size=89

$$\frac{a(c+dx)^4}{4d}+\frac{6bd^2(c+dx)\cosh(e+fx)}{f^3}-\frac{3bd(c+dx)^2\sinh(e+fx)}{f^2}+\frac{b(c+dx)^3\cosh(e+fx)}{f}-\frac{6bd^3\sinh(e+fx)}{f^4}$$

```
[Out] 1/4*a*(d*x+c)^4/d+6*b*d^2*(d*x+c)*cosh(f*x+e)/f^3+b*(d*x+c)^3*cosh(f*x+e)/f
-6*b*d^3*sinh(f*x+e)/f^4-3*b*d*(d*x+c)^2*sinh(f*x+e)/f^2
```

Rubi [A] time = 0.14, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3317, 3296, 2637}

$$\frac{a(c+dx)^4}{4d}+\frac{6bd^2(c+dx)\cosh(e+fx)}{f^3}-\frac{3bd(c+dx)^2\sinh(e+fx)}{f^2}+\frac{b(c+dx)^3\cosh(e+fx)}{f}-\frac{6bd^3\sinh(e+fx)}{f^4}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*(a + b*Sinh[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^4)/(4*d) + (6*b*d^2*(c + d*x)*Cosh[e + f*x])/f^3 + (b*(c + d*x
)^3*Cosh[e + f*x])/f - (6*b*d^3*Sinh[e + f*x])/f^4 - (3*b*d*(c + d*x)^2*Sin
h[e + f*x])/f^2
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^3(a+b\sinh(e+fx))\,dx = \int \left(a(c+dx)^3+b(c+dx)^3\sinh(e+fx)\right)\,dx$$
$$= \frac{a(c+dx)^4}{4d}+b\int (c+dx)^3\sinh(e+fx)\,dx$$
$$= \frac{a(c+dx)^4}{4d}+\frac{b(c+dx)^3\cosh(e+fx)}{f}-\frac{(3bd)\int (c+dx)^2\cosh(e+fx)\,dx}{f}$$
$$= \frac{a(c+dx)^4}{4d}+\frac{b(c+dx)^3\cosh(e+fx)}{f}-\frac{3bd(c+dx)^2\sinh(e+fx)}{f^2}+\frac{(6bd$$
$$= \frac{a(c+dx)^4}{4d}+\frac{6bd^2(c+dx)\cosh(e+fx)}{f^3}+\frac{b(c+dx)^3\cosh(e+fx)}{f}-\frac{3bd($$
$$= \frac{a(c+dx)^4}{4d}+\frac{6bd^2(c+dx)\cosh(e+fx)}{f^3}+\frac{b(c+dx)^3\cosh(e+fx)}{f}-\frac{6bd^3$$

Mathematica [A] time = 0.46, size = 123, normalized size = 1.38

$$\frac{1}{4}ax\left(4c^3+6c^2dx+4cd^2x^2+d^3x^3\right)-\frac{3bd\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2+2\right)\right)\sinh(e+fx)}{f^4}+\frac{b(c+dx)\left(c^2f^2+2cdf$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3*(a + b*Sinh[e + f*x]),x]
```

```
[Out] (a*x*(4*c^3 + 6*c^2*d*x + 4*c*d^2*x^2 + d^3*x^3))/4 + (b*(c + d*x)*(c^2*f^2
 + 2*c*d*f^2*x + d^2*(6 + f^2*x^2))*Cosh[e + f*x])/f^3 - (3*b*d*(c^2*f^2 +
2*c*d*f^2*x + d^2*(2 + f^2*x^2))*Sinh[e + f*x])/f^4
```

fricas [A] time = 0.52, size = 168, normalized size = 1.89

$$\frac{ad^3f^4x^4+4\,acd^2f^4x^3+6\,ac^2df^4x^2+4\,ac^3f^4x+4\left(bd^3f^3x^3+3\,bcd^2f^3x^2+bc^3f^3+6\,bcd^2f+3\left(bc^2df^3+2\,bd}{4\,f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/4*(a*d^3*f^4*x^4 + 4*a*c*d^2*f^4*x^3 + 6*a*c^2*d*f^4*x^2 + 4*a*c^3*f^4*x
+ 4*(b*d^3*f^3*x^3 + 3*b*c*d^2*f^3*x^2 + b*c^3*f^3 + 6*b*c*d^2*f + 3*(b*c^2
*d*f^3 + 2*b*d^3*f)*x)*cosh(f*x + e) - 12*(b*d^3*f^2*x^2 + 2*b*c*d^2*f^2*x
+ b*c^2*d*f^2 + 2*b*d^3)*sinh(f*x + e))/f^4
```

giac [B] time = 0.16, size = 260, normalized size = 2.92

$$\frac{1}{4}\,ad^3x^4+acd^2x^3+\frac{3}{2}\,ac^2dx^2+ac^3x+\frac{\left(bd^3f^3x^3+3\,bcd^2f^3x^2+3\,bc^2df^3x-3\,bd^3f^2x^2+bc^3f^3-6\,bcd^2f^2x-3\,bc^2df\right.}{2\,f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] 1/4*a*d^3*x^4 + a*c*d^2*x^3 + 3/2*a*c^2*d*x^2 + a*c^3*x + 1/2*(b*d^3*f^3*x^
3 + 3*b*c*d^2*f^3*x^2 + 3*b*c^2*d*f^3*x - 3*b*d^3*f^2*x^2 + b*c^3*f^3 - 6*b
*c*d^2*f^2*x - 3*b*c^2*d*f^2 + 6*b*d^3*f*x + 6*b*c*d^2*f - 6*b*d^3)*e^(f*x
+ e)/f^4 + 1/2*(b*d^3*f^3*x^3 + 3*b*c*d^2*f^3*x^2 + 3*b*c^2*d*f^3*x + 3*b*d
^3*f^2*x^2 + b*c^3*f^3 + 6*b*c*d^2*f^2*x + 3*b*c^2*d*f^2 + 6*b*d^3*f*x + 6*
b*c*d^2*f + 6*b*d^3)*e^(-f*x - e)/f^4
```

maple [B] time = 0.02, size = 482, normalized size = 5.42

$$\frac{\frac{d^3a\left(fx+e\right)^4}{4f^3}+\frac{d^3b\left(\left(fx+e\right)^3\cosh\left(fx+e\right)-3\left(fx+e\right)^2\sinh\left(fx+e\right)+6\left(fx+e\right)\cosh\left(fx+e\right)-6\sinh\left(fx+e\right)\right)}{f^3}-\frac{d^3ea\left(fx+e\right)^3}{f^3}-\frac{3d^3eb\left(\left(fx+e\right)^2\cosh\left(fx+e\right)\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*(a+b*sinh(f*x+e)),x)
```

```
[Out] 1/f*(1/4/f^3*d^3*a*(f*x+e)^4+1/f^3*d^3*b*((f*x+e)^3*cosh(f*x+e)-3*(f*x+e)^2
*sinh(f*x+e)+6*(f*x+e)*cosh(f*x+e)-6*sinh(f*x+e))-1/f^3*d^3*e*a*(f*x+e)^3-3
/f^3*d^3*e*b*((f*x+e)^2*cosh(f*x+e)-2*(f*x+e)*sinh(f*x+e)+2*cosh(f*x+e))+3/
2/f^3*d^3*e^2*a*(f*x+e)^2+3/f^3*d^3*e^2*b*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))
-d^3*e^3/f^3*a*(f*x+e)-1/f^3*d^3*e^3*b*cosh(f*x+e)+1/f^2*d^2*c*a*(f*x+e)^3+
3/f^2*c*d^2*b*((f*x+e)^2*cosh(f*x+e)-2*(f*x+e)*sinh(f*x+e)+2*cosh(f*x+e))-3
/f^2*d^2*e*c*a*(f*x+e)^2-6/f^2*c*d^2*e*b*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))+
3*d^2*e^2/f^2*c*a*(f*x+e)+3/f^2*c*d^2*e^2*b*cosh(f*x+e)+3/2/f*d*c^2*a*(f*x+
e)^2+3/f*c^2*d*b*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))-3*d*e/f*c^2*a*(f*x+e)-3/
f*c^2*d*e*b*cosh(f*x+e)+c^3*a*(f*x+e)+b*c^3*cosh(f*x+e))
```

maxima [B] time = 0.33, size = 234, normalized size = 2.63

$$\frac{1}{4}\,ad^3x^4+acd^2x^3+\frac{3}{2}\,ac^2dx^2+ac^3x+\frac{3}{2}\,bc^2d\left(\frac{\left(fxe^e-e^e\right)e^{(fx)}}{f^2}+\frac{\left(fx+1\right)e^{(-fx-e)}}{f^2}\right)+\frac{3}{2}\,bcd^2\left(\frac{\left(f^2x^2e^e-2\,fxe^e+2\,e^e\right)e^{(}}{f^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/4*a*d^3*x^4 + a*c*d^2*x^3 + 3/2*a*c^2*d*x^2 + a*c^3*x + 3/2*b*c^2*d*((f*x
*e^e - e^e)*e^(f*x)/f^2 + (f*x + 1)*e^(-f*x - e)/f^2) + 3/2*b*c*d^2*((f^2*x
^2*e^e - 2*f*x*e^e + 2*e^e)*e^(f*x)/f^3 + (f^2*x^2 + 2*f*x + 2)*e^(-f*x - e
)/f^3) + 1/2*b*d^3*((f^3*x^3*e^e - 3*f^2*x^2*e^e + 6*f*x*e^e - 6*e^e)*e^(f*
x)/f^4 + (f^3*x^3 + 3*f^2*x^2 + 6*f*x + 6)*e^(-f*x - e)/f^4) + b*c^3*cosh(f
*x + e)/f
```

mupad [B] time = 0.24, size = 187, normalized size = 2.10

$$\frac{\cosh\left(e+f\,x\right)\,\left(b\,c^3\,f^2+6\,b\,c\,d^2\right)}{f^3}-\frac{3\sinh\left(e+f\,x\right)\,\left(b\,c^2\,d\,f^2+2\,b\,d^3\right)}{f^4}+\frac{a\,d^3\,x^4}{4}+a\,c^3\,x+\frac{3\,x\cosh\left(e+f\,x\right)\,\left(b\,c^2\right.}{f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))*(c + d*x)^3,x)
```

```
[Out] (cosh(e + f*x)*(b*c^3*f^2 + 6*b*c*d^2))/f^3 - (3*sinh(e + f*x)*(2*b*d^3 + b
*c^2*d*f^2))/f^4 + (a*d^3*x^4)/4 + a*c^3*x + (3*x*cosh(e + f*x)*(2*b*d^3 +
b*c^2*d*f^2))/f^3 + (3*a*c^2*d*x^2)/2 + a*c*d^2*x^3 + (b*d^3*x^3*cosh(e + f
*x))/f - (3*b*d^3*x^2*sinh(e + f*x))/f^2 - (6*b*c*d^2*x*sinh(e + f*x))/f^2
+ (3*b*c*d^2*x^2*cosh(e + f*x))/f
```

sympy [A] time = 1.41, size = 264, normalized size = 2.97

$$\begin{cases} ac^3x + \frac{3ac^2dx^2}{2} + acd^2x^3 + \frac{ad^3x^4}{4} + \frac{bc^3\cosh\left(e+fx\right)}{f} + \frac{3bc^2dx\cosh\left(e+fx\right)}{f} - \frac{3bc^2d\sinh\left(e+fx\right)}{f^2} + \frac{3bcd^2x^2\cosh\left(e+fx\right)}{f} - \frac{6bcd^2x\sin}{f} \\ (a+b\sinh(e))\left(c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*(a+b*sinh(f*x+e)),x)
```

```
[Out] Piecewise((a*c**3*x + 3*a*c**2*d*x**2/2 + a*c*d**2*x**3 + a*d**3*x**4/4 + b
*c**3*cosh(e + f*x)/f + 3*b*c**2*d*x*cosh(e + f*x)/f - 3*b*c**2*d*sinh(e +
f*x)/f**2 + 3*b*c*d**2*x**2*cosh(e + f*x)/f - 6*b*c*d**2*x*sinh(e + f*x)/f*
*2 + 6*b*c*d**2*cosh(e + f*x)/f**3 + b*d**3*x**3*cosh(e + f*x)/f - 3*b*d**3
*x**2*sinh(e + f*x)/f**2 + 6*b*d**3*x*cosh(e + f*x)/f**3 - 6*b*d**3*sinh(e
+ f*x)/f**4, Ne(f, 0)), ((a + b*sinh(e))*(c**3*x + 3*c**2*d*x**2/2 + c*d**2
*x**3 + d**3*x**4/4), True))
```

3.158 $\int (c+dx)^2(a+b\sinh(e+fx))\,dx$

Optimal. Leaf size=67

$$\frac{a(c+dx)^3}{3d}-\frac{2bd(c+dx)\sinh(e+fx)}{f^2}+\frac{b(c+dx)^2\cosh(e+fx)}{f}+\frac{2bd^2\cosh(e+fx)}{f^3}$$

```
[Out] 1/3*a*(d*x+c)^3/d+2*b*d^2*cosh(f*x+e)/f^3+b*(d*x+c)^2*cosh(f*x+e)/f-2*b*d*(
d*x+c)*sinh(f*x+e)/f^2
```

Rubi [A] time = 0.10, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3317, 3296, 2638}

$$\frac{a(c+dx)^3}{3d}-\frac{2bd(c+dx)\sinh(e+fx)}{f^2}+\frac{b(c+dx)^2\cosh(e+fx)}{f}+\frac{2bd^2\cosh(e+fx)}{f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*(a + b*Sinh[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^3)/(3*d) + (2*b*d^2*Cosh[e + f*x])/f^3 + (b*(c + d*x)^2*Cosh[e
 + f*x])/f - (2*b*d*(c + d*x)*Sinh[e + f*x])/f^2
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^2(a+b\sinh(e+fx))\,dx = \int \left(a(c+dx)^2+b(c+dx)^2\sinh(e+fx)\right)\,dx$$
$$= \frac{a(c+dx)^3}{3d}+b\int (c+dx)^2\sinh(e+fx)\,dx$$
$$= \frac{a(c+dx)^3}{3d}+\frac{b(c+dx)^2\cosh(e+fx)}{f}-\frac{(2bd)\int (c+dx)\cosh(e+fx)\,dx}{f}$$
$$= \frac{a(c+dx)^3}{3d}+\frac{b(c+dx)^2\cosh(e+fx)}{f}-\frac{2bd(c+dx)\sinh(e+fx)}{f^2}+\frac{\left(2bd^2\right.}{}$$
$$= \frac{a(c+dx)^3}{3d}+\frac{2bd^2\cosh(e+fx)}{f^3}+\frac{b(c+dx)^2\cosh(e+fx)}{f}-\frac{2bd(c+dx)}{f}$$

Mathematica [A] time = 0.32, size = 83, normalized size = 1.24

$$\frac{1}{3}ax\left(3c^2+3cdx+d^2x^2\right)+\frac{b\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2+2\right)\right)\cosh(e+fx)}{f^3}-\frac{2bd(c+dx)\sinh(e+fx)}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*(a + b*Sinh[e + f*x]),x]
```

```
[Out] (a*x*(3*c^2 + 3*c*d*x + d^2*x^2))/3 + (b*(c^2*f^2 + 2*c*d*f^2*x + d^2*(2 +
f^2*x^2))*Cosh[e + f*x])/f^3 - (2*b*d*(c + d*x)*Sinh[e + f*x])/f^2
```

fricas [A] time = 1.06, size = 102, normalized size = 1.52

$$\frac{ad^2f^3x^3+3\,acdf^3x^2+3\,ac^2f^3x+3\left(bd^2f^2x^2+2\,bcdf^2x+bc^2f^2+2\,bd^2\right)\cosh\left(fx+e\right)-6\left(bd^2fx+bcdf\right)\sin}{3\,f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/3*(a*d^2*f^3*x^3 + 3*a*c*d*f^3*x^2 + 3*a*c^2*f^3*x + 3*(b*d^2*f^2*x^2 + 2
*b*c*d*f^2*x + b*c^2*f^2 + 2*b*d^2)*cosh(f*x + e) - 6*(b*d^2*f*x + b*c*d*f)
*sinh(f*x + e))/f^3
```

giac [B] time = 0.22, size = 148, normalized size = 2.21

$$\frac{1}{3}\,ad^2x^3+acdx^2+ac^2x+\frac{\left(bd^2f^2x^2+2\,bcdf^2x+bc^2f^2-2\,bd^2fx-2\,bcdf+2\,bd^2\right)e^{\left(fx+e\right)}}{2\,f^3}+\frac{\left(bd^2f^2x^2+2\,bcdf^2x+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] 1/3*a*d^2*x^3 + a*c*d*x^2 + a*c^2*x + 1/2*(b*d^2*f^2*x^2 + 2*b*c*d*f^2*x +
b*c^2*f^2 - 2*b*d^2*f*x - 2*b*c*d*f + 2*b*d^2)*e^(f*x + e)/f^3 + 1/2*(b*d^2
*f^2*x^2 + 2*b*c*d*f^2*x + b*c^2*f^2 + 2*b*d^2*f*x + 2*b*c*d*f + 2*b*d^2)*e
^(-f*x - e)/f^3
```

maple [B] time = 0.02, size = 240, normalized size = 3.58

$$\frac{\frac{d^2a(fx+e)^3}{3f^2}+\frac{d^2b\left((fx+e)^2\cosh(fx+e)-2(fx+e)\sinh(fx+e)+2\cosh(fx+e)\right)}{f^2}-\frac{d^2ea(fx+e)^2}{f^2}-\frac{2d^2eb\left((fx+e)\cosh(fx+e)-\sinh(fx+e)\right)}{f^2}+\frac{d^2e^2a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*(a+b*sinh(f*x+e)),x)
```

```
[Out] 1/f*(1/3/f^2*d^2*a*(f*x+e)^3+1/f^2*d^2*b*((f*x+e)^2*cosh(f*x+e)-2*(f*x+e)*s
inh(f*x+e)+2*cosh(f*x+e))-1/f^2*d^2*e*a*(f*x+e)^2-2/f^2*d^2*e*b*((f*x+e)*co
sh(f*x+e)-sinh(f*x+e))+d^2*e^2/f^2*a*(f*x+e)+1/f^2*d^2*e^2*b*cosh(f*x+e)+1/
f*d*c*a*(f*x+e)^2+2/f*c*d*b*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))-2*d*e/f*c*a*(
f*x+e)-2/f*c*d*e*b*cosh(f*x+e)+c^2*a*(f*x+e)+b*c^2*cosh(f*x+e))
```

maxima [B] time = 0.33, size = 139, normalized size = 2.07

$$\frac{1}{3}ad^2x^3+acdx^2+ac^2x+bcd\left(\frac{\left(fxe^e-e^e\right)e^{(fx)}}{f^2}+\frac{(fx+1)e^{(-fx-e)}}{f^2}\right)+\frac{1}{2}bd^2\left(\frac{\left(f^2x^2e^e-2fxe^e+2e^e\right)e^{(fx)}}{f^3}+\frac{\left(f^2x^2+2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/3*a*d^2*x^3 + a*c*d*x^2 + a*c^2*x + b*c*d*((f*x*e^e - e^e)*e^(f*x)/f^2 +
(f*x + 1)*e^(-f*x - e)/f^2) + 1/2*b*d^2*((f^2*x^2*e^e - 2*f*x*e^e + 2*e^e)*
e^(f*x)/f^3 + (f^2*x^2 + 2*f*x + 2)*e^(-f*x - e)/f^3) + b*c^2*cosh(f*x + e)
/f
```

mupad [B] time = 0.11, size = 110, normalized size = 1.64

$$\frac{a\,d^2\,x^3}{3}+\frac{\cosh\left(e+f\,x\right)\,\left(b\,c^2\,f^2+2\,b\,d^2\right)}{f^3}+a\,c^2\,x+a\,c\,d\,x^2-\frac{2\,b\,d^2\,x\sinh\left(e+f\,x\right)}{f^2}+\frac{b\,d^2\,x^2\cosh\left(e+f\,x\right)}{f}-\frac{2\,b\,c\,d\,\mathrm{si}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))*(c + d*x)^2,x)
```

```
[Out] (a*d^2*x^3)/3 + (cosh(e + f*x)*(2*b*d^2 + b*c^2*f^2))/f^3 + a*c^2*x + a*c*d
*x^2 - (2*b*d^2*x*sinh(e + f*x))/f^2 + (b*d^2*x^2*cosh(e + f*x))/f - (2*b*c
*d*sinh(e + f*x))/f^2 + (2*b*c*d*x*cosh(e + f*x))/f
```

sympy [A] time = 0.62, size = 151, normalized size = 2.25

$$\begin{cases} ac^2x + acdx^2 + \frac{ad^2x^3}{3} + \frac{bc^2\cosh\left(e+fx\right)}{f} + \frac{2bcdx\cosh\left(e+fx\right)}{f} - \frac{2bcd\sinh\left(e+fx\right)}{f^2} + \frac{bd^2x^2\cosh\left(e+fx\right)}{f} - \frac{2bd^2x\sinh\left(e+fx\right)}{f^2} + \frac{2bd^2 \\ (a+b\sinh(e))\left(c^2x + cdx^2 + \frac{d^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*(a+b*sinh(f*x+e)),x)
```

```
[Out] Piecewise((a*c**2*x + a*c*d*x**2 + a*d**2*x**3/3 + b*c**2*cosh(e + f*x)/f +
 2*b*c*d*x*cosh(e + f*x)/f - 2*b*c*d*sinh(e + f*x)/f**2 + b*d**2*x**2*cosh(
e + f*x)/f - 2*b*d**2*x*sinh(e + f*x)/f**2 + 2*b*d**2*cosh(e + f*x)/f**3, N
e(f, 0)), ((a + b*sinh(e))*(c**2*x + c*d*x**2 + d**2*x**3/3), True))
```

3.159 $\int (c+dx)(a+b\sinh(e+fx))\,dx$

Optimal. Leaf size=45

$$\frac{a(c+dx)^2}{2d}+\frac{b(c+dx)\cosh(e+fx)}{f}-\frac{bd\sinh(e+fx)}{f^2}$$

```
[Out] 1/2*a*(d*x+c)^2/d+b*(d*x+c)*cosh(f*x+e)/f-b*d*sinh(f*x+e)/f^2
```

Rubi [A] time = 0.05, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {3317, 3296, 2637}

$$\frac{a(c+dx)^2}{2d}+\frac{b(c+dx)\cosh(e+fx)}{f}-\frac{bd\sinh(e+fx)}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*(a + b*Sinh[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^2)/(2*d) + (b*(c + d*x)*Cosh[e + f*x])/f - (b*d*Sinh[e + f*x])
/f^2
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$
\begin{aligned}
\int (c+dx)(a+b\sinh(e+fx))\,dx &= \int (a(c+dx)+b(c+dx)\sinh(e+fx))\,dx \\
&= \frac{a(c+dx)^2}{2d} + b\int (c+dx)\sinh(e+fx)\,dx \\
&= \frac{a(c+dx)^2}{2d} + \frac{b(c+dx)\cosh(e+fx)}{f} - \frac{(bd)\int \cosh(e+fx)\,dx}{f} \\
&= \frac{a(c+dx)^2}{2d} + \frac{b(c+dx)\cosh(e+fx)}{f} - \frac{bd\sinh(e+fx)}{f^2}
\end{aligned}
$$

Mathematica [A] time = 0.12, size = 43, normalized size = 0.96

$$
\frac{1}{2}ax(2c+dx) + \frac{b(c+dx)\cosh(e+fx)}{f} - \frac{bd\sinh(e+fx)}{f^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*(a + b*Sinh[e + f*x]),x]
```

```
[Out] (a*x*(2*c + d*x))/2 + (b*(c + d*x)*Cosh[e + f*x])/f - (b*d*Sinh[e + f*x])/f
^2
```

fricas [A] time = 0.46, size = 51, normalized size = 1.13

$$
\frac{adf^2x^2 + 2\,acf^2x - 2\,bd\sinh\left(fx+e\right) + 2\left(bdfx + bcf\right)\cosh\left(fx+e\right)}{2\,f^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/2*(a*d*f^2*x^2 + 2*a*c*f^2*x - 2*b*d*sinh(f*x + e) + 2*(b*d*f*x + b*c*f)*
cosh(f*x + e))/f^2
```

giac [A] time = 0.20, size = 66, normalized size = 1.47

$$
\frac{1}{2}\,adx^2 + acx + \frac{\left(bdfx + bcf - bd\right)e^{\left(fx+e\right)}}{2\,f^2} + \frac{\left(bdfx + bcf + bd\right)e^{\left(-fx-e\right)}}{2\,f^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] 1/2*a*d*x^2 + a*c*x + 1/2*(b*d*f*x + b*c*f - b*d)*e^(f*x + e)/f^2 + 1/2*(b*
d*f*x + b*c*f + b*d)*e^(-f*x - e)/f^2
```

maple [B] time = 0.02, size = 91, normalized size = 2.02

$$\frac{\frac{da\left(fx+e\right)^{2}}{2f}+\frac{db\left(\left(fx+e\right)\cosh\left(fx+e\right)-\sinh\left(fx+e\right)\right)}{f}-\frac{dea\left(fx+e\right)}{f}-\frac{deb\cosh\left(fx+e\right)}{f}+ca\left(fx+e\right)+cb\cosh\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*(a+b*sinh(f*x+e)),x)
```

```
[Out] 1/f*(1/2/f*d*a*(f*x+e)^2+1/f*d*b*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))-d*e/f*a*
(f*x+e)-d*e/f*b*cosh(f*x+e)+c*a*(f*x+e)+c*b*cosh(f*x+e))
```

maxima [A] time = 0.32, size = 65, normalized size = 1.44

$$\frac{1}{2}\,adx^{2}+acx+\frac{1}{2}\,bd\left(\frac{\left(fxe^{e}-e^{e}\right)e^{\left(fx\right)}}{f^{2}}+\frac{\left(fx+1\right)e^{\left(-fx-e\right)}}{f^{2}}\right)+\frac{bc\cosh\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/2*a*d*x^2 + a*c*x + 1/2*b*d*((f*x*e^e - e^e)*e^(f*x)/f^2 + (f*x + 1)*e^(-
f*x - e)/f^2) + b*c*cosh(f*x + e)/f
```

mupad [B] time = 0.14, size = 49, normalized size = 1.09

$$\frac{f\,\left(b\,c\,\cosh\left(e+f\,x\right)+b\,d\,x\,\cosh\left(e+f\,x\right)\right)-b\,d\,\sinh\left(e+f\,x\right)}{f^{2}}+a\,c\,x+\frac{a\,d\,x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))*(c + d*x),x)
```

```
[Out] (f*(b*c*cosh(e + f*x) + b*d*x*cosh(e + f*x)) - b*d*sinh(e + f*x))/f^2 + a*c
*x + (a*d*x^2)/2
```

sympy [A] time = 0.28, size = 68, normalized size = 1.51

$$\begin{cases} acx+\frac{adx^{2}}{2}+\frac{bc\cosh\left(e+fx\right)}{f}+\frac{bdx\cosh\left(e+fx\right)}{f}-\frac{bd\sinh\left(e+fx\right)}{f^{2}} & \text{for}\: f\neq 0\\ \left(a+b\sinh\left(e\right)\right)\left(cx+\frac{dx^{2}}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sinh(f*x+e)),x)
```

```
[Out] Piecewise((a*c*x + a*d*x**2/2 + b*c*cosh(e + f*x)/f + b*d*x*cosh(e + f*x)/f
 - b*d*sinh(e + f*x)/f**2, Ne(f, 0)), ((a + b*sinh(e))*(c*x + d*x**2/2), Tr
ue))
```

3.160 $\int \frac{a+b\sinh(e+fx)}{c+dx}\,dx$

Optimal. Leaf size=64

$$\frac{a\log(c+dx)}{d}+\frac{b\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d}+\frac{b\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d}$$

```
[Out] a*ln(d*x+c)/d+b*cosh(-e+c*f/d)*Shi(c*f/d+f*x)/d-b*Chi(c*f/d+f*x)*sinh(-e+c*
f/d)/d
```

Rubi [A] time = 0.12, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3317, 3303, 3298, 3301}

$$\frac{a\log(c+dx)}{d}+\frac{b\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d}+\frac{b\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sinh[e + f*x])/(c + d*x),x]
```

```
[Out] (a*Log[c + d*x])/d + (b*CoshIntegral[(c*f)/d + f*x]*Sinh[e - (c*f)/d])/d +
(b*Cosh[e - (c*f)/d]*SinhIntegral[(c*f)/d + f*x])/d
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sinh(e+fx)}{c+dx}\,dx &= \int \left(\frac{a}{c+dx}+\frac{b\sinh(e+fx)}{c+dx}\right)dx\\ &= \frac{a\log(c+dx)}{d}+b\int \frac{\sinh(e+fx)}{c+dx}\,dx\\ &= \frac{a\log(c+dx)}{d}+\left(b\cosh\left(e-\frac{cf}{d}\right)\right)\int \frac{\sinh\left(\frac{cf}{d}+fx\right)}{c+dx}\,dx+\left(b\sinh\left(e-\frac{cf}{d}\right)\right)\int \frac{\text{cosh}}{}\\ &= \frac{a\log(c+dx)}{d}+\frac{b\text{Chi}\left(\frac{cf}{d}+fx\right)\sinh\left(e-\frac{cf}{d}\right)}{d}+\frac{b\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(\frac{cf}{d}+fx\right)}{d}\end{aligned}$$

Mathematica [A] time = 0.14, size = 57, normalized size = 0.89

$$\frac{a\log(c+dx)+b\text{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\sinh\left(e-\frac{cf}{d}\right)+b\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(f\left(\frac{c}{d}+x\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sinh[e + f*x])/(c + d*x),x]
```

```
[Out] (a*Log[c + d*x] + b*CoshIntegral[f*(c/d + x)]*Sinh[e - (c*f)/d] + b*Cosh[e
- (c*f)/d]*SinhIntegral[f*(c/d + x)])/d
```

fricas [A] time = 0.46, size = 111, normalized size = 1.73

$$\frac{\left(b\text{Ei}\left(\frac{dfx+cf}{d}\right)-b\text{Ei}\left(-\frac{dfx+cf}{d}\right)\right)\cosh\left(-\frac{de-cf}{d}\right)+2\,a\log\left(dx+c\right)-\left(b\text{Ei}\left(\frac{dfx+cf}{d}\right)+b\text{Ei}\left(-\frac{dfx+cf}{d}\right)\right)\sinh\left(-\frac{de-cf}{d}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c),x, algorithm="fricas")
```

```
[Out] 1/2*((b*Ei((d*f*x + c*f)/d) - b*Ei(-(d*f*x + c*f)/d))*cosh(-(d*e - c*f)/d)
+ 2*a*log(d*x + c) - (b*Ei((d*f*x + c*f)/d) + b*Ei(-(d*f*x + c*f)/d))*sinh(
-(d*e - c*f)/d))/d
```

giac [A] time = 0.18, size = 70, normalized size = 1.09

$$-\frac{b\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(\frac{cf}{d}-e\right)} - b\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(-\frac{cf}{d}+e\right)} - 2\,a\log\left(dx+c\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c),x, algorithm="giac")
```

```
[Out] -1/2*(b*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) - b*Ei((d*f*x + c*f)/d)*e^(-c*f/
d + e) - 2*a*log(d*x + c))/d
```

maple [A] time = 0.04, size = 94, normalized size = 1.47

$$\frac{a\ln\left(dx+c\right)}{d} + \frac{b\,\mathrm{e}^{\frac{cf-de}{d}}\,\mathrm{Ei}\left(1, fx+e+\frac{cf-de}{d}\right)}{2d} - \frac{b\,\mathrm{e}^{-\frac{cf-de}{d}}\,\mathrm{Ei}\left(1, -fx-e-\frac{cf-de}{d}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sinh(f*x+e))/(d*x+c),x)
```

```
[Out] a*ln(d*x+c)/d+1/2*b/d*exp((c*f-d*e)/d)*Ei(1,f*x+e+(c*f-d*e)/d)-1/2*b/d*exp(
-(c*f-d*e)/d)*Ei(1,-f*x-e-(c*f-d*e)/d)
```

maxima [A] time = 0.37, size = 71, normalized size = 1.11

$$\frac{1}{2}\,b\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_1\left(\frac{(dx+c)f}{d}\right)}{d} - \frac{e^{\left(e-\frac{cf}{d}\right)}E_1\left(-\frac{(dx+c)f}{d}\right)}{d}\right) + \frac{a\log\left(dx+c\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c),x, algorithm="maxima")
```

```
[Out] 1/2*b*(e^(-e + c*f/d)*exp_integral_e(1, (d*x + c)*f/d)/d - e^(e - c*f/d)*ex
p_integral_e(1, -(d*x + c)*f/d)/d) + a*log(d*x + c)/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\sinh\left(e+f\,x\right)}{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))/(c + d*x),x)
```

```
[Out] int((a + b*sinh(e + f*x))/(c + d*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\sinh\left(e + fx\right)}{c + dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c),x)
```

```
[Out] Integral((a + b*sinh(e + f*x))/(c + d*x), x)
```

3.161 $\int \frac{a+b\sinh(e+fx)}{(c+dx)^2}\,dx$

Optimal. Leaf size=87

$$-\frac{a}{d(c+dx)}+\frac{bf\operatorname{Chi}\left(xf+\frac{cf}{d}\right)\cosh\left(e-\frac{cf}{d}\right)}{d^2}+\frac{bf\sinh\left(e-\frac{cf}{d}\right)\operatorname{Shi}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{b\sinh(e+fx)}{d(c+dx)}$$

```
[Out] -a/d/(d*x+c)+b*f*Chi(c*f/d+f*x)*cosh(-e+c*f/d)/d^2-b*f*Shi(c*f/d+f*x)*sinh(
-e+c*f/d)/d^2-b*sinh(f*x+e)/d/(d*x+c)
```

Rubi [A] time = 0.17, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3317, 3297, 3303, 3298, 3301}

$$-\frac{a}{d(c+dx)}+\frac{bf\operatorname{Chi}\left(xf+\frac{cf}{d}\right)\cosh\left(e-\frac{cf}{d}\right)}{d^2}+\frac{bf\sinh\left(e-\frac{cf}{d}\right)\operatorname{Shi}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{b\sinh(e+fx)}{d(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sinh[e + f*x])/(c + d*x)^2,x]
```

```
[Out] -(a/(d*(c + d*x))) + (b*f*Cosh[e - (c*f)/d]*CoshIntegral[(c*f)/d + f*x])/d^
2 - (b*Sinh[e + f*x])/(d*(c + d*x)) + (b*f*Sinh[e - (c*f)/d]*SinhIntegral[(
c*f)/d + f*x])/d^2
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sinh(e+fx)}{(c+dx)^2}\,dx &= \int \left(\frac{a}{(c+dx)^2}+\frac{b\sinh(e+fx)}{(c+dx)^2}\right)dx\\
&= -\frac{a}{d(c+dx)}+b\int \frac{\sinh(e+fx)}{(c+dx)^2}\,dx\\
&= -\frac{a}{d(c+dx)}-\frac{b\sinh(e+fx)}{d(c+dx)}+\frac{(bf)\int \frac{\cosh(e+fx)}{c+dx}\,dx}{d}\\
&= -\frac{a}{d(c+dx)}-\frac{b\sinh(e+fx)}{d(c+dx)}+\frac{\left(bf\cosh\left(e-\frac{cf}{d}\right)\right)\int \frac{\cosh\left(\frac{cf}{d}+fx\right)}{c+dx}\,dx}{d}+\frac{\left(bf\sinh\left(e-\right.\right.}{}\\
&= -\frac{a}{d(c+dx)}+\frac{bf\cosh\left(e-\frac{cf}{d}\right)\text{Chi}\left(\frac{cf}{d}+fx\right)}{d^2}-\frac{b\sinh(e+fx)}{d(c+dx)}+\frac{bf\sinh\left(e-\frac{cf}{d}\right)\text{S}}{d^2}
\end{aligned}
$$

Mathematica [A] time = 0.35, size = 71, normalized size = 0.82

$$
\frac{-\frac{d(a+b\sinh(e+fx))}{c+dx}+bf\text{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\cosh\left(e-\frac{cf}{d}\right)+bf\sinh\left(e-\frac{cf}{d}\right)\text{Shi}\left(f\left(\frac{c}{d}+x\right)\right)}{d^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sinh[e + f*x])/(c + d*x)^2,x]
```

```
[Out] (b*f*Cosh[e - (c*f)/d]*CoshIntegral[f*(c/d + x)] - (d*(a + b*Sinh[e + f*x])
)/(c + d*x) + b*f*Sinh[e - (c*f)/d]*SinhIntegral[f*(c/d + x)])/d^2
```

fricas [A] time = 0.51, size = 162, normalized size = 1.86

$$-\frac{2\,bd\sinh\left(fx+e\right)+2\,ad-\left(\left(bdfx+bcf\right)\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)+\left(bdfx+bcf\right)\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)\right)\cosh\left(-\frac{de-cf}{d}\right)+\left(\left(bdfx+b\right.\right.}{2\left(d^{3}x+cd^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*d*sinh(f*x + e) + 2*a*d - ((b*d*f*x + b*c*f)*Ei((d*f*x + c*f)/d)
+ (b*d*f*x + b*c*f)*Ei(-(d*f*x + c*f)/d))*cosh(-(d*e - c*f)/d) + ((b*d*f*x
+ b*c*f)*Ei((d*f*x + c*f)/d) - (b*d*f*x + b*c*f)*Ei(-(d*f*x + c*f)/d))*sinh
(-(d*e - c*f)/d))/(d^3*x + c*d^2)
```

giac [B] time = 0.22, size = 682, normalized size = 7.84

$$\frac{1}{2}\,b\left(\frac{\left(\left(dx+c\right)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)f^{2}\mathrm{Ei}\left(\frac{(dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)-cf+de}{d}\right)e^{\left(\frac{cf-de}{d}\right)}-cf^{3}\mathrm{Ei}\left(\frac{(dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)-cf+de}{d}\right)e^{\left(\frac{cf-de}{d}\right)}+\cdots\right.}{\left(\left(dx+c\right)d^{4}\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)-cd^{4}f+d^{5}e\cdots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c)^2,x, algorithm="giac")
```

```
[Out] 1/2*b*(((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*Ei(((d*x + c)*(c*
f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^((c*f - d*e)/d) - c*f^3*
Ei(((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^((c*f -
 d*e)/d) + d*f^2*Ei(((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f +
d*e)/d)*e^((c*f - d*e)/d + 1) - d*f^2*e^((d*x + c)*(c*f/(d*x + c) - f - d*e
/(d*x + c))/d))*d^2/(((d*x + c)*d^4*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c
*d^4*f + d^5*e)*f) + ((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*Ei(
-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^(-(c*f -
d*e)/d) - c*f^3*Ei(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f +
d*e)/d)*e^(-(c*f - d*e)/d) + d*f^2*Ei(-((d*x + c)*(c*f/(d*x + c) - f - d*e/
(d*x + c)) - c*f + d*e)/d)*e^(-(c*f - d*e)/d + 1) + d*f^2*e^(-(d*x + c)*(c*
f/(d*x + c) - f - d*e/(d*x + c))/d))*d^2/(((d*x + c)*d^4*(c*f/(d*x + c) - f
 - d*e/(d*x + c)) - c*d^4*f + d^5*e)*f)) - a/((d*x + c)*d)
```

maple [A] time = 0.04, size = 149, normalized size = 1.71

$$-\frac{a}{d\left(dx+c\right)}+\frac{fb\,\mathrm{e}^{-fx-e}}{2d\left(dfx+cf\right)}-\frac{fb\,\mathrm{e}^{\frac{cf-de}{d}}\,\mathrm{Ei}\left(1,fx+e+\frac{cf-de}{d}\right)}{2d^{2}}-\frac{fb\,\mathrm{e}^{fx+e}}{2d^{2}\left(\frac{cf}{d}+fx\right)}-\frac{fb\,\mathrm{e}^{-\frac{cf-de}{d}}\,\mathrm{Ei}\left(1,-fx-e-\frac{cf-de}{d}\right)}{2d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sinh(f*x+e))/(d*x+c)^2,x)
```

```
[Out] -a/d/(d*x+c)+1/2*f*b*exp(-f*x-e)/d/(d*f*x+c*f)-1/2*f*b/d^2*exp((c*f-d*e)/d)
*Ei(1,f*x+e+(c*f-d*e)/d)-1/2*f*b/d^2*exp(f*x+e)/(c*f/d+f*x)-1/2*f*b/d^2*exp
(-(c*f-d*e)/d)*Ei(1,-f*x-e-(c*f-d*e)/d)
```

maxima [A] time = 0.45, size = 88, normalized size = 1.01

$$\frac{1}{2}\,b\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_{2}\left(\frac{(dx+c)f}{d}\right)}{(dx+c)d}-\frac{e^{\left(e-\frac{cf}{d}\right)}E_{2}\left(-\frac{(dx+c)f}{d}\right)}{(dx+c)d}\right)-\frac{a}{d^{2}x+cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] 1/2*b*(e^(-e + c*f/d)*exp_integral_e(2, (d*x + c)*f/d)/((d*x + c)*d) - e^(e
 - c*f/d)*exp_integral_e(2, -(d*x + c)*f/d)/((d*x + c)*d)) - a/(d^2*x + c*d
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\sinh\left(e+f\,x\right)}{{\left(c+d\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))/(c + d*x)^2,x)
```

```
[Out] int((a + b*sinh(e + f*x))/(c + d*x)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c)**2,x)
```

```
[Out] Timed out
```

3.162 $\int \frac{a+b\sinh(e+fx)}{(c+dx)^3}\,dx$

Optimal. Leaf size=123

$$-\frac{a}{2d(c+dx)^2}+\frac{bf^2\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{2d^3}+\frac{bf^2\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{2d^3}-\frac{bf\cosh(e+fx)}{2d^2(c+dx)}-\frac{b\sinh(e+f\ldots}{2d(c+dx)^2}$$

```
[Out] -1/2*a/d/(d*x+c)^2-1/2*b*f*cosh(f*x+e)/d^2/(d*x+c)+1/2*b*f^2*cosh(-e+c*f/d)
*Shi(c*f/d+f*x)/d^3-1/2*b*f^2*Chi(c*f/d+f*x)*sinh(-e+c*f/d)/d^3-1/2*b*sinh(
f*x+e)/d/(d*x+c)^2
```

Rubi [A] time = 0.21, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3317, 3297, 3303, 3298, 3301}

$$-\frac{a}{2d(c+dx)^2}+\frac{bf^2\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{2d^3}+\frac{bf^2\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{2d^3}-\frac{bf\cosh(e+fx)}{2d^2(c+dx)}-\frac{b\sinh(e+f\ldots}{2d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sinh[e + f*x])/(c + d*x)^3,x]
```

```
[Out] -a/(2*d*(c + d*x)^2) - (b*f*Cosh[e + f*x])/(2*d^2*(c + d*x)) + (b*f^2*CoshI
ntegral[(c*f)/d + f*x]*Sinh[e - (c*f)/d])/(2*d^3) - (b*Sinh[e + f*x])/(2*d*
(c + d*x)^2) + (b*f^2*Cosh[e - (c*f)/d]*SinhIntegral[(c*f)/d + f*x])/(2*d^3
)
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
```

```
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sinh(e+fx)}{(c+dx)^3}\,dx &= \int \left(\frac{a}{(c+dx)^3}+\frac{b\sinh(e+fx)}{(c+dx)^3}\right)dx\\
&= -\frac{a}{2d(c+dx)^2}+b\int \frac{\sinh(e+fx)}{(c+dx)^3}\,dx\\
&= -\frac{a}{2d(c+dx)^2}-\frac{b\sinh(e+fx)}{2d(c+dx)^2}+\frac{(bf)\int \frac{\cosh(e+fx)}{(c+dx)^2}\,dx}{2d}\\
&= -\frac{a}{2d(c+dx)^2}-\frac{bf\cosh(e+fx)}{2d^2(c+dx)}-\frac{b\sinh(e+fx)}{2d(c+dx)^2}+\frac{\left(bf^2\right)\int \frac{\sinh(e+fx)}{c+dx}\,dx}{2d^2}\\
&= -\frac{a}{2d(c+dx)^2}-\frac{bf\cosh(e+fx)}{2d^2(c+dx)}-\frac{b\sinh(e+fx)}{2d(c+dx)^2}+\frac{\left(bf^2\cosh\left(e-\frac{cf}{d}\right)\right)\int \frac{\sinh\left(\frac{cf}{d}+f}{c+dx}}{2d^2}\\
&= -\frac{a}{2d(c+dx)^2}-\frac{bf\cosh(e+fx)}{2d^2(c+dx)}+\frac{bf^2\text{Chi}\left(\frac{cf}{d}+fx\right)\sinh\left(e-\frac{cf}{d}\right)}{2d^3}-\frac{b\sinh(e+fx}{2d(c+dx)^2}
\end{aligned}$$

Mathematica [A] time = 0.62, size = 95, normalized size = 0.77

$$\frac{-\frac{d(d(a+b\sinh(e+fx))+bf(c+dx)\cosh(e+fx))}{(c+dx)^2}+bf^2\text{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\sinh\left(e-\frac{cf}{d}\right)+bf^2\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(f\left(\frac{c}{d}+x\right)\right)}{2d^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sinh[e + f*x])/(c + d*x)^3,x]
```

```
[Out] (b*f^2*CoshIntegral[f*(c/d + x)]*Sinh[e - (c*f)/d] - (d*(b*f*(c + d*x)*Cosh
[e + f*x] + d*(a + b*Sinh[e + f*x])))/(c + d*x)^2 + b*f^2*Cosh[e - (c*f)/d]
*SinhIntegral[f*(c/d + x)])/(2*d^3)
```

fricas [B] time = 0.45, size = 274, normalized size = 2.23

$$-\frac{2\,bd^2\sinh\left(fx+e\right)+2\,ad^2+2\left(bd^2fx+bcdf\right)\cosh\left(fx+e\right)-\left(\left(bd^2f^2x^2+2\,bcdf^2x+bc^2f^2\right)\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)-\left(b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(2*b*d^2*sinh(f*x + e) + 2*a*d^2 + 2*(b*d^2*f*x + b*c*d*f)*cosh(f*x +
e) - ((b*d^2*f^2*x^2 + 2*b*c*d*f^2*x + b*c^2*f^2)*Ei((d*f*x + c*f)/d) - (b*
d^2*f^2*x^2 + 2*b*c*d*f^2*x + b*c^2*f^2)*Ei(-(d*f*x + c*f)/d))*cosh(-(d*e -
 c*f)/d) + ((b*d^2*f^2*x^2 + 2*b*c*d*f^2*x + b*c^2*f^2)*Ei((d*f*x + c*f)/d)
 + (b*d^2*f^2*x^2 + 2*b*c*d*f^2*x + b*c^2*f^2)*Ei(-(d*f*x + c*f)/d))*sinh(-
(d*e - c*f)/d))/(d^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

giac [B] time = 0.18, size = 327, normalized size = 2.66

$$-\frac{bd^2f^2x^2\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(\frac{cf}{d}-e\right)}-bd^2f^2x^2\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(-\frac{cf}{d}+e\right)}+2\,bcdf^2x\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(\frac{cf}{d}-e\right)}-2\,bcdf^2x\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c)^3,x, algorithm="giac")
```

```
[Out] -1/4*(b*d^2*f^2*x^2*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) - b*d^2*f^2*x^2*Ei((
d*f*x + c*f)/d)*e^(-c*f/d + e) + 2*b*c*d*f^2*x*Ei(-(d*f*x + c*f)/d)*e^(c*f/
d - e) - 2*b*c*d*f^2*x*Ei((d*f*x + c*f)/d)*e^(-c*f/d + e) + b*c^2*f^2*Ei(-(
d*f*x + c*f)/d)*e^(c*f/d - e) - b*c^2*f^2*Ei((d*f*x + c*f)/d)*e^(-c*f/d + e
) + b*d^2*f*x*e^(f*x + e) + b*d^2*f*x*e^(-f*x - e) + b*c*d*f*e^(f*x + e) +
b*c*d*f*e^(-f*x - e) + b*d^2*e^(f*x + e) - b*d^2*e^(-f*x - e) + 2*a*d^2)/(d
^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

maple [B] time = 0.04, size = 296, normalized size = 2.41

$$-\frac{a}{2d\left(dx+c\right)^2}-\frac{f^3b\,\mathrm{e}^{-fx-e}x}{4d\left(d^2f^2x^2+2cd\,f^2x+c^2f^2\right)}-\frac{f^3b\,\mathrm{e}^{-fx-e}c}{4d^2\left(d^2f^2x^2+2cd\,f^2x+c^2f^2\right)}+\frac{f^2b\,\mathrm{e}^{-fx-e}}{4d\left(d^2f^2x^2+2cd\,f^2x+c^2f^2\right)}+\frac{f}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sinh(f*x+e))/(d*x+c)^3,x)
```

```
[Out] -1/2*a/d/(d*x+c)^2-1/4*f^3*b*exp(-f*x-e)/d/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2
)*x-1/4*f^3*b*exp(-f*x-e)/d^2/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)*c+1/4*f^2*b
*exp(-f*x-e)/d/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)+1/4*f^2*b/d^3*exp((c*f-d*e
)/d)*Ei(1,f*x+e+(c*f-d*e)/d)-1/4*f^2*b/d^3*exp(f*x+e)/(c*f/d+f*x)^2-1/4*f^2
*b/d^3*exp(f*x+e)/(c*f/d+f*x)-1/4*f^2*b/d^3*exp(-(c*f-d*e)/d)*Ei(1,-f*x-e-(
c*f-d*e)/d)
```

maxima [A] time = 0.42, size = 99, normalized size = 0.80

$$\frac{1}{2}\,b\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_3\left(\frac{(dx+c)f}{d}\right)}{(dx+c)^2d}-\frac{e^{\left(e-\frac{cf}{d}\right)}E_3\left(-\frac{(dx+c)f}{d}\right)}{(dx+c)^2d}\right)-\frac{a}{2\left(d^3x^2+2\,cd^2x+c^2d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c)^3,x, algorithm="maxima")
```

```
[Out] 1/2*b*(e^(-e + c*f/d)*exp_integral_e(3, (d*x + c)*f/d)/((d*x + c)^2*d) - e^
(e - c*f/d)*exp_integral_e(3, -(d*x + c)*f/d)/((d*x + c)^2*d)) - 1/2*a/(d^3
*x^2 + 2*c*d^2*x + c^2*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\sinh\left(e+f\,x\right)}{(c+d\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))/(c + d*x)^3,x)
```

```
[Out] int((a + b*sinh(e + f*x))/(c + d*x)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))/(d*x+c)**3,x)
```

```
[Out] Timed out
```

3.163 $\int (c+dx)^3(a+b\sinh(e+fx))^2\,dx$

Optimal. Leaf size=250

$$\frac{a^2(c+dx)^4}{4d}+\frac{12abd^2(c+dx)\cosh(e+fx)}{f^3}-\frac{6abd(c+dx)^2\sinh(e+fx)}{f^2}+\frac{2ab(c+dx)^3\cosh(e+fx)}{f}-\frac{12abd^3\sinh}{f^4}$$

```
[Out] -3/4*b^2*c*d^2*x/f^2-3/8*b^2*d^3*x^2/f^2+1/4*a^2*(d*x+c)^4/d-1/8*b^2*(d*x+c
)^4/d+12*a*b*d^2*(d*x+c)*cosh(f*x+e)/f^3+2*a*b*(d*x+c)^3*cosh(f*x+e)/f-12*a
*b*d^3*sinh(f*x+e)/f^4-6*a*b*d*(d*x+c)^2*sinh(f*x+e)/f^2+3/4*b^2*d^2*(d*x+c
)*cosh(f*x+e)*sinh(f*x+e)/f^3+1/2*b^2*(d*x+c)^3*cosh(f*x+e)*sinh(f*x+e)/f-3
/8*b^2*d^3*sinh(f*x+e)^2/f^4-3/4*b^2*d*(d*x+c)^2*sinh(f*x+e)^2/f^2
```

Rubi [A] time = 0.29, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {3317, 3296, 2637, 3311, 32, 3310}

$$\frac{a^2(c+dx)^4}{4d}+\frac{12abd^2(c+dx)\cosh(e+fx)}{f^3}-\frac{6abd(c+dx)^2\sinh(e+fx)}{f^2}+\frac{2ab(c+dx)^3\cosh(e+fx)}{f}-\frac{12abd^3\sinh}{f^4}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] (-3*b^2*c*d^2*x)/(4*f^2) - (3*b^2*d^3*x^2)/(8*f^2) + (a^2*(c + d*x)^4)/(4*d
) - (b^2*(c + d*x)^4)/(8*d) + (12*a*b*d^2*(c + d*x)*Cosh[e + f*x])/f^3 + (2
*a*b*(c + d*x)^3*Cosh[e + f*x])/f - (12*a*b*d^3*Sinh[e + f*x])/f^4 - (6*a*b
*d*(c + d*x)^2*Sinh[e + f*x])/f^2 + (3*b^2*d^2*(c + d*x)*Cosh[e + f*x]*Sinh
[e + f*x])/(4*f^3) + (b^2*(c + d*x)^3*Cosh[e + f*x]*Sinh[e + f*x])/(2*f) -
(3*b^2*d^3*Sinh[e + f*x]^2)/(8*f^4) - (3*b^2*d*(c + d*x)^2*Sinh[e + f*x]^2)
/(4*f^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^3(a+b\sinh(e+fx))^2\,dx = \int \left(a^2(c+dx)^3+2ab(c+dx)^3\sinh(e+fx)+b^2(c+dx)^3\sinh^2(e+fx)\right)$$

$$= \frac{a^2(c+dx)^4}{4d}+(2ab)\int (c+dx)^3\sinh(e+fx)\,dx+b^2\int (c+dx)^3\sinh^2(e$$

$$= \frac{a^2(c+dx)^4}{4d}+\frac{2ab(c+dx)^3\cosh(e+fx)}{f}+\frac{b^2(c+dx)^3\cosh(e+fx)\sinh}{2f}$$

$$= \frac{a^2(c+dx)^4}{4d}-\frac{b^2(c+dx)^4}{8d}+\frac{2ab(c+dx)^3\cosh(e+fx)}{f}-\frac{6abd(c+dx)^2\,\mathrm{s}}{f^2}$$

$$= -\frac{3b^2cd^2x}{4f^2}-\frac{3b^2d^3x^2}{8f^2}+\frac{a^2(c+dx)^4}{4d}-\frac{b^2(c+dx)^4}{8d}+\frac{12abd^2(c+dx)\cosh}{f^3}$$

$$= -\frac{3b^2cd^2x}{4f^2}-\frac{3b^2d^3x^2}{8f^2}+\frac{a^2(c+dx)^4}{4d}-\frac{b^2(c+dx)^4}{8d}+\frac{12abd^2(c+dx)\cosh}{f^3}$$

Mathematica [A] time = 1.36, size = 235, normalized size = 0.94

$$\frac{2\left(f^4x\left(2a^2-b^2\right)\left(4c^3+6c^2dx+4cd^2x^2+d^3x^3\right)-48abd\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2+2\right)\right)\sinh(e+fx)+b^2f(c+\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3*(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] (32*a*b*f*(c + d*x)*(c^2*f^2 + 2*c*d*f^2*x + d^2*(6 + f^2*x^2))*Cosh[e + f*
x] - 3*b^2*d*(2*c^2*f^2 + 4*c*d*f^2*x + d^2*(1 + 2*f^2*x^2))*Cosh[2*(e + f*
x)] + 2*((2*a^2 - b^2)*f^4*x*(4*c^3 + 6*c^2*d*x + 4*c*d^2*x^2 + d^3*x^3) -
48*a*b*d*(c^2*f^2 + 2*c*d*f^2*x + d^2*(2 + f^2*x^2))*Sinh[e + f*x] + b^2*f*
(c + d*x)*(2*c^2*f^2 + 4*c*d*f^2*x + d^2*(3 + 2*f^2*x^2))*Sinh[2*(e + f*x)]
))/(16*f^4)
```

fricas [A] time = 0.47, size = 418, normalized size = 1.67

$$\frac{2\left(2a^2-b^2\right)d^3f^4x^4+8\left(2a^2-b^2\right)cd^2f^4x^3+12\left(2a^2-b^2\right)c^2df^4x^2+8\left(2a^2-b^2\right)c^3f^4x-3\left(2b^2d^3f^2x^2+4b^2cd^2\cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/16*(2*(2*a^2 - b^2)*d^3*f^4*x^4 + 8*(2*a^2 - b^2)*c*d^2*f^4*x^3 + 12*(2*a
^2 - b^2)*c^2*d*f^4*x^2 + 8*(2*a^2 - b^2)*c^3*f^4*x - 3*(2*b^2*d^3*f^2*x^2
+ 4*b^2*c*d^2*f^2*x + 2*b^2*c^2*d*f^2 + b^2*d^3)*cosh(f*x + e)^2 - 3*(2*b^2
*d^3*f^2*x^2 + 4*b^2*c*d^2*f^2*x + 2*b^2*c^2*d*f^2 + b^2*d^3)*sinh(f*x + e)
^2 + 32*(a*b*d^3*f^3*x^3 + 3*a*b*c*d^2*f^3*x^2 + a*b*c^3*f^3 + 6*a*b*c*d^2*
f + 3*(a*b*c^2*d*f^3 + 2*a*b*d^3*f)*x)*cosh(f*x + e) - 4*(24*a*b*d^3*f^2*x^
2 + 48*a*b*c*d^2*f^2*x + 24*a*b*c^2*d*f^2 + 48*a*b*d^3 - (2*b^2*d^3*f^3*x^3
 + 6*b^2*c*d^2*f^3*x^2 + 2*b^2*c^3*f^3 + 3*b^2*c*d^2*f + 3*(2*b^2*c^2*d*f^3
 + b^2*d^3*f)*x)*cosh(f*x + e))*sinh(f*x + e))/f^4
```

giac [B] time = 0.24, size = 602, normalized size = 2.41

$$\frac{1}{4}a^2d^3x^4-\frac{1}{8}b^2d^3x^4+a^2cd^2x^3-\frac{1}{2}b^2cd^2x^3+\frac{3}{2}a^2c^2dx^2-\frac{3}{4}b^2c^2dx^2+a^2c^3x-\frac{1}{2}b^2c^3x+\frac{\left(4b^2d^3f^3x^3+12b^2cd^2f^3x^2+1\cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/4*a^2*d^3*x^4 - 1/8*b^2*d^3*x^4 + a^2*c*d^2*x^3 - 1/2*b^2*c*d^2*x^3 + 3/2
*a^2*c^2*d*x^2 - 3/4*b^2*c^2*d*x^2 + a^2*c^3*x - 1/2*b^2*c^3*x + 1/32*(4*b^
```

```
2*d^3*f^3*x^3 + 12*b^2*c*d^2*f^3*x^2 + 12*b^2*c^2*d*f^3*x - 6*b^2*d^3*f^2*x
^2 + 4*b^2*c^3*f^3 - 12*b^2*c*d^2*f^2*x - 6*b^2*c^2*d*f^2 + 6*b^2*d^3*f*x +
 6*b^2*c*d^2*f - 3*b^2*d^3)*e^(2*f*x + 2*e)/f^4 + (a*b*d^3*f^3*x^3 + 3*a*b*
c*d^2*f^3*x^2 + 3*a*b*c^2*d*f^3*x - 3*a*b*d^3*f^2*x^2 + a*b*c^3*f^3 - 6*a*b
*c*d^2*f^2*x - 3*a*b*c^2*d*f^2 + 6*a*b*d^3*f*x + 6*a*b*c*d^2*f - 6*a*b*d^3)
*e^(f*x + e)/f^4 + (a*b*d^3*f^3*x^3 + 3*a*b*c*d^2*f^3*x^2 + 3*a*b*c^2*d*f^3
*x + 3*a*b*d^3*f^2*x^2 + a*b*c^3*f^3 + 6*a*b*c*d^2*f^2*x + 3*a*b*c^2*d*f^2
+ 6*a*b*d^3*f*x + 6*a*b*c*d^2*f + 6*a*b*d^3)*e^(-f*x - e)/f^4 - 1/32*(4*b^2
*d^3*f^3*x^3 + 12*b^2*c*d^2*f^3*x^2 + 12*b^2*c^2*d*f^3*x + 6*b^2*d^3*f^2*x^
2 + 4*b^2*c^3*f^3 + 12*b^2*c*d^2*f^2*x + 6*b^2*c^2*d*f^2 + 6*b^2*d^3*f*x +
6*b^2*c*d^2*f + 3*b^2*d^3)*e^(-2*f*x - 2*e)/f^4
```

maple [B] time = 0.03, size = 1061, normalized size = 4.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*(a+b*sinh(f*x+e))^2,x)
```

```
[Out] 1/f*(6/f*c^2*d*a*b*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))+3/f^2*c*d^2*e^2*a^2*(f
*x+e)-6/f*c^2*d*e*a*b*cosh(f*x+e)-12/f^2*c*d^2*e*a*b*((f*x+e)*cosh(f*x+e)-s
inh(f*x+e))+6/f^2*c*d^2*e^2*a*b*cosh(f*x+e)-6/f^3*d^3*e*a*b*((f*x+e)^2*cosh
(f*x+e)-2*(f*x+e)*sinh(f*x+e)+2*cosh(f*x+e))+6/f^3*d^3*e^2*a*b*((f*x+e)*cos
h(f*x+e)-sinh(f*x+e))+6/f^2*c*d^2*a*b*((f*x+e)^2*cosh(f*x+e)-2*(f*x+e)*sinh
(f*x+e)+2*cosh(f*x+e))-6/f^2*c*d^2*e*b^2*(1/2*(f*x+e)*cosh(f*x+e)*sinh(f*x+
e)-1/4*(f*x+e)^2-1/4*cosh(f*x+e)^2)-3/f*c^2*d*e*b^2*(1/2*cosh(f*x+e)*sinh(f
*x+e)-1/2*f*x-1/2*e)-2/f^3*d^3*e^3*a*b*cosh(f*x+e)+3/f^2*c*d^2*e^2*b^2*(1/2
*cosh(f*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e)-3/f*c^2*d*e*a^2*(f*x+e)-3/f^2*c*d^2
*e*a^2*(f*x+e)^2+2*c^3*a*b*cosh(f*x+e)+1/f^3*d^3*b^2*(1/2*(f*x+e)^3*cosh(f*
x+e)*sinh(f*x+e)-1/8*(f*x+e)^4-3/4*(f*x+e)^2*cosh(f*x+e)^2+3/4*(f*x+e)*cosh
(f*x+e)*sinh(f*x+e)+3/8*(f*x+e)^2-3/8*cosh(f*x+e)^2)+c^3*b^2*(1/2*cosh(f*x+
e)*sinh(f*x+e)-1/2*f*x-1/2*e)+1/4/f^3*d^3*a^2*(f*x+e)^4-1/f^3*d^3*e^3*b^2*(
1/2*cosh(f*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e)+2/f^3*d^3*a*b*((f*x+e)^3*cosh(f*
x+e)-3*(f*x+e)^2*sinh(f*x+e)+6*(f*x+e)*cosh(f*x+e)-6*sinh(f*x+e))-3/f^3*d^3
*e*b^2*(1/2*(f*x+e)^2*cosh(f*x+e)*sinh(f*x+e)-1/6*(f*x+e)^3-1/2*(f*x+e)*cos
h(f*x+e)^2+1/4*cosh(f*x+e)*sinh(f*x+e)+1/4*f*x+1/4*e)+3/f^3*d^3*e^2*b^2*(1/
2*(f*x+e)*cosh(f*x+e)*sinh(f*x+e)-1/4*(f*x+e)^2-1/4*cosh(f*x+e)^2)+3/f^2*c*
d^2*b^2*(1/2*(f*x+e)^2*cosh(f*x+e)*sinh(f*x+e)-1/6*(f*x+e)^3-1/2*(f*x+e)*co
sh(f*x+e)^2+1/4*cosh(f*x+e)*sinh(f*x+e)+1/4*f*x+1/4*e)+3/f*c^2*d*b^2*(1/2*(
f*x+e)*cosh(f*x+e)*sinh(f*x+e)-1/4*(f*x+e)^2-1/4*cosh(f*x+e)^2)+1/f^2*c*d^2
*a^2*(f*x+e)^3-1/f^3*d^3*e^3*a^2*(f*x+e)-1/f^3*d^3*e*a^2*(f*x+e)^3+3/2/f*c^
2*d*a^2*(f*x+e)^2+3/2/f^3*d^3*e^2*a^2*(f*x+e)^2+c^3*a^2*(f*x+e))
```

maxima [B] time = 0.44, size = 520, normalized size = 2.08

$$\frac{1}{4}a^2d^3x^4+a^2cd^2x^3+\frac{3}{2}a^2c^2dx^2-\frac{3}{16}\left(4x^2-\frac{\left(2fxe^{(2e)}-e^{(2e)}\right)e^{(2fx)}}{f^2}+\frac{(2fx+1)e^{(-2fx-2e)}}{f^2}\right)b^2c^2d-\frac{1}{16}\left(8x^3-\frac{3(2\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/4*a^2*d^3*x^4 + a^2*c*d^2*x^3 + 3/2*a^2*c^2*d*x^2 - 3/16*(4*x^2 - (2*f*x*
e^(2*e) - e^(2*e))*e^(2*f*x)/f^2 + (2*f*x + 1)*e^(-2*f*x - 2*e)/f^2)*b^2*c^
2*d - 1/16*(8*x^3 - 3*(2*f^2*x^2*e^(2*e) - 2*f*x*e^(2*e) + e^(2*e))*e^(2*f*
x)/f^3 + 3*(2*f^2*x^2 + 2*f*x + 1)*e^(-2*f*x - 2*e)/f^3)*b^2*c*d^2 - 1/32*(
4*x^4 - (4*f^3*x^3*e^(2*e) - 6*f^2*x^2*e^(2*e) + 6*f*x*e^(2*e) - 3*e^(2*e))
*e^(2*f*x)/f^4 + (4*f^3*x^3 + 6*f^2*x^2 + 6*f*x + 3)*e^(-2*f*x - 2*e)/f^4)*
b^2*d^3 - 1/8*b^2*c^3*(4*x - e^(2*f*x + 2*e)/f + e^(-2*f*x - 2*e)/f) + a^2*
c^3*x + 3*a*b*c^2*d*((f*x*e^e - e^e)*e^(f*x)/f^2 + (f*x + 1)*e^(-f*x - e)/f
^2) + 3*a*b*c*d^2*((f^2*x^2*e^e - 2*f*x*e^e + 2*e^e)*e^(f*x)/f^3 + (f^2*x^2
 + 2*f*x + 2)*e^(-f*x - e)/f^3) + a*b*d^3*((f^3*x^3*e^e - 3*f^2*x^2*e^e + 6
*f*x*e^e - 6*e^e)*e^(f*x)/f^4 + (f^3*x^3 + 3*f^2*x^2 + 6*f*x + 6)*e^(-f*x -
 e)/f^4) + 2*a*b*c^3*cosh(f*x + e)/f
```

mupad [B] time = 1.86, size = 481, normalized size = 1.92

$$a^2c^3x-\frac{b^2c^3x}{2}+\frac{a^2d^3x^4}{4}-\frac{b^2d^3x^4}{8}+\frac{3a^2c^2dx^2}{2}+a^2cd^2x^3-\frac{3b^2c^2dx^2}{4}-\frac{b^2cd^2x^3}{2}-\frac{3b^2d^3\cosh\left(2e+2fx\right)}{16f^4}+\frac{b^2c\ldots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))^2*(c + d*x)^3,x)
```

```
[Out] a^2*c^3*x - (b^2*c^3*x)/2 + (a^2*d^3*x^4)/4 - (b^2*d^3*x^4)/8 + (3*a^2*c^2*
d*x^2)/2 + a^2*c*d^2*x^3 - (3*b^2*c^2*d*x^2)/4 - (b^2*c*d^2*x^3)/2 - (3*b^2
*d^3*cosh(2*e + 2*f*x))/(16*f^4) + (b^2*c^3*sinh(2*e + 2*f*x))/(4*f) + (2*a
*b*c^3*cosh(e + f*x))/f - (12*a*b*d^3*sinh(e + f*x))/f^4 - (3*b^2*d^3*x^2*c
osh(2*e + 2*f*x))/(8*f^2) + (b^2*d^3*x^3*sinh(2*e + 2*f*x))/(4*f) - (3*b^2*
c^2*d*cosh(2*e + 2*f*x))/(8*f^2) + (3*b^2*c*d^2*sinh(2*e + 2*f*x))/(8*f^3)
+ (3*b^2*d^3*x*sinh(2*e + 2*f*x))/(8*f^3) - (3*b^2*c*d^2*x*cosh(2*e + 2*f*x
))/(4*f^2) + (3*b^2*c^2*d*x*sinh(2*e + 2*f*x))/(4*f) + (12*a*b*c*d^2*cosh(e
 + f*x))/f^3 - (6*a*b*c^2*d*sinh(e + f*x))/f^2 + (12*a*b*d^3*x*cosh(e + f*x
))/f^3 + (3*b^2*c*d^2*x^2*sinh(2*e + 2*f*x))/(4*f) + (2*a*b*d^3*x^3*cosh(e
+ f*x))/f - (6*a*b*d^3*x^2*sinh(e + f*x))/f^2 + (6*a*b*c*d^2*x^2*cosh(e + f
*x))/f + (6*a*b*c^2*d*x*cosh(e + f*x))/f - (12*a*b*c*d^2*x*sinh(e + f*x))/f
^2
```

sympy [A] time = 3.65, size = 779, normalized size = 3.12

$$\begin{cases} a^2c^3x + \frac{3a^2c^2dx^2}{2} + a^2cd^2x^3 + \frac{a^2d^3x^4}{4} + \frac{2abc^3\cosh(e+fx)}{f} + \frac{6abc^2dx\cosh(e+fx)}{f} - \frac{6abc^2d\sinh(e+fx)}{f^2} + \frac{6abcd^2x^2\cosh(e+fx)}{f} - \\ (a+b\sinh(e))^2\left(c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*(a+b*sinh(f*x+e))**2,x)
```

```
[Out] Piecewise((a**2*c**3*x + 3*a**2*c**2*d*x**2/2 + a**2*c*d**2*x**3 + a**2*d**
3*x**4/4 + 2*a*b*c**3*cosh(e + f*x)/f + 6*a*b*c**2*d*x*cosh(e + f*x)/f - 6*
a*b*c**2*d*sinh(e + f*x)/f**2 + 6*a*b*c*d**2*x**2*cosh(e + f*x)/f - 12*a*b*
c*d**2*x*sinh(e + f*x)/f**2 + 12*a*b*c*d**2*cosh(e + f*x)/f**3 + 2*a*b*d**3
*x**3*cosh(e + f*x)/f - 6*a*b*d**3*x**2*sinh(e + f*x)/f**2 + 12*a*b*d**3*x*
cosh(e + f*x)/f**3 - 12*a*b*d**3*sinh(e + f*x)/f**4 + b**2*c**3*x*sinh(e +
f*x)**2/2 - b**2*c**3*x*cosh(e + f*x)**2/2 + b**2*c**3*sinh(e + f*x)*cosh(e
 + f*x)/(2*f) + 3*b**2*c**2*d*x**2*sinh(e + f*x)**2/4 - 3*b**2*c**2*d*x**2*
cosh(e + f*x)**2/4 + 3*b**2*c**2*d*x*sinh(e + f*x)*cosh(e + f*x)/(2*f) - 3*
b**2*c**2*d*sinh(e + f*x)**2/(4*f**2) + b**2*c*d**2*x**3*sinh(e + f*x)**2/2
 - b**2*c*d**2*x**3*cosh(e + f*x)**2/2 + 3*b**2*c*d**2*x**2*sinh(e + f*x)*c
osh(e + f*x)/(2*f) - 3*b**2*c*d**2*x*sinh(e + f*x)**2/(4*f**2) - 3*b**2*c*d
**2*x*cosh(e + f*x)**2/(4*f**2) + 3*b**2*c*d**2*sinh(e + f*x)*cosh(e + f*x)
/(4*f**3) + b**2*d**3*x**4*sinh(e + f*x)**2/8 - b**2*d**3*x**4*cosh(e + f*x
)**2/8 + b**2*d**3*x**3*sinh(e + f*x)*cosh(e + f*x)/(2*f) - 3*b**2*d**3*x**
2*sinh(e + f*x)**2/(8*f**2) - 3*b**2*d**3*x**2*cosh(e + f*x)**2/(8*f**2) +
3*b**2*d**3*x*sinh(e + f*x)*cosh(e + f*x)/(4*f**3) - 3*b**2*d**3*sinh(e + f
*x)**2/(8*f**4), Ne(f, 0)), ((a + b*sinh(e))**2*(c**3*x + 3*c**2*d*x**2/2 +
 c*d**2*x**3 + d**3*x**4/4), True))
```

3.164 $\int (c+dx)^2(a+b\sinh(e+fx))^2\,dx$

Optimal. Leaf size=182

$$\frac{a^2(c+dx)^3}{3d}-\frac{4abd(c+dx)\sinh(e+fx)}{f^2}+\frac{2ab(c+dx)^2\cosh(e+fx)}{f}+\frac{4abd^2\cosh(e+fx)}{f^3}-\frac{b^2d(c+dx)\sinh^2(e+}{2f^2}$$

```
[Out] -1/4*b^2*d^2*x/f^2+1/3*a^2*(d*x+c)^3/d-1/6*b^2*(d*x+c)^3/d+4*a*b*d^2*cosh(f
*x+e)/f^3+2*a*b*(d*x+c)^2*cosh(f*x+e)/f-4*a*b*d*(d*x+c)*sinh(f*x+e)/f^2+1/4
*b^2*d^2*cosh(f*x+e)*sinh(f*x+e)/f^3+1/2*b^2*(d*x+c)^2*cosh(f*x+e)*sinh(f*x
+e)/f-1/2*b^2*d*(d*x+c)*sinh(f*x+e)^2/f^2
```

Rubi [A] time = 0.20, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {3317, 3296, 2638, 3311, 32, 2635, 8}

$$\frac{a^2(c+dx)^3}{3d}-\frac{4abd(c+dx)\sinh(e+fx)}{f^2}+\frac{2ab(c+dx)^2\cosh(e+fx)}{f}+\frac{4abd^2\cosh(e+fx)}{f^3}-\frac{b^2d(c+dx)\sinh^2(e+}{2f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] -(b^2*d^2*x)/(4*f^2) + (a^2*(c + d*x)^3)/(3*d) - (b^2*(c + d*x)^3)/(6*d) +
(4*a*b*d^2*Cosh[e + f*x])/f^3 + (2*a*b*(c + d*x)^2*Cosh[e + f*x])/f - (4*a*
b*d*(c + d*x)*Sinh[e + f*x])/f^2 + (b^2*d^2*Cosh[e + f*x]*Sinh[e + f*x])/(4
*f^3) + (b^2*(c + d*x)^2*Cosh[e + f*x]*Sinh[e + f*x])/(2*f) - (b^2*d*(c + d
*x)*Sinh[e + f*x]^2)/(2*f^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}\int (c+dx)^2(a+b\sinh(e+fx))^2\,dx &= \int \left(a^2(c+dx)^2+2ab(c+dx)^2\sinh(e+fx)+b^2(c+dx)^2\sinh^2(e+fx)\right)\\
&= \frac{a^2(c+dx)^3}{3d}+(2ab)\int (c+dx)^2\sinh(e+fx)\,dx+b^2\int (c+dx)^2\sinh^2(e\\
&= \frac{a^2(c+dx)^3}{3d}+\frac{2ab(c+dx)^2\cosh(e+fx)}{f}+\frac{b^2(c+dx)^2\cosh(e+fx)\sinh}{2f}\\
&= \frac{a^2(c+dx)^3}{3d}-\frac{b^2(c+dx)^3}{6d}+\frac{2ab(c+dx)^2\cosh(e+fx)}{f}-\frac{4abd(c+dx)\,\mathrm{si}}{f^2}\\
&= -\frac{b^2d^2x}{4f^2}+\frac{a^2(c+dx)^3}{3d}-\frac{b^2(c+dx)^3}{6d}+\frac{4abd^2\cosh(e+fx)}{f^3}+\frac{2ab(c+dx}{}\end{aligned}$$

Mathematica [A] time = 0.73, size = 249, normalized size = 1.37

$$\frac{24a^2c^2f^3x+24a^2cdf^3x^2+8a^2d^2f^3x^3+48ab\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2+2\right)\right)\cosh(e+fx)-96abcdf\sinh(e+$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] (24*a^2*c^2*f^3*x - 12*b^2*c^2*f^3*x + 24*a^2*c*d*f^3*x^2 - 12*b^2*c*d*f^3*
x^2 + 8*a^2*d^2*f^3*x^3 - 4*b^2*d^2*f^3*x^3 + 48*a*b*(c^2*f^2 + 2*c*d*f^2*x
 + d^2*(2 + f^2*x^2))*Cosh[e + f*x] - 6*b^2*d*f*(c + d*x)*Cosh[2*(e + f*x)]
 - 96*a*b*c*d*f*Sinh[e + f*x] - 96*a*b*d^2*f*x*Sinh[e + f*x] + 3*b^2*d^2*Si
nh[2*(e + f*x)] + 6*b^2*c^2*f^2*Sinh[2*(e + f*x)] + 12*b^2*c*d*f^2*x*Sinh[2
*(e + f*x)] + 6*b^2*d^2*f^2*x^2*Sinh[2*(e + f*x)])/(24*f^3)
```

fricas [A] time = 0.67, size = 247, normalized size = 1.36

$$\frac{2\left(2a^2-b^2\right)d^2f^3x^3+6\left(2a^2-b^2\right)cdf^3x^2+6\left(2a^2-b^2\right)c^2f^3x-3\left(b^2d^2fx+b^2cdf\right)\cosh\left(fx+e\right)^2-3\left(b^2d^2fx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/12*(2*(2*a^2 - b^2)*d^2*f^3*x^3 + 6*(2*a^2 - b^2)*c*d*f^3*x^2 + 6*(2*a^2
- b^2)*c^2*f^3*x - 3*(b^2*d^2*f*x + b^2*c*d*f)*cosh(f*x + e)^2 - 3*(b^2*d^2
*f*x + b^2*c*d*f)*sinh(f*x + e)^2 + 24*(a*b*d^2*f^2*x^2 + 2*a*b*c*d*f^2*x +
 a*b*c^2*f^2 + 2*a*b*d^2)*cosh(f*x + e) - 3*(16*a*b*d^2*f*x + 16*a*b*c*d*f
- (2*b^2*d^2*f^2*x^2 + 4*b^2*c*d*f^2*x + 2*b^2*c^2*f^2 + b^2*d^2)*cosh(f*x
+ e))*sinh(f*x + e))/f^3
```

giac [B] time = 0.24, size = 348, normalized size = 1.91

$$\frac{1}{3}a^2d^2x^3-\frac{1}{6}b^2d^2x^3+a^2cdx^2-\frac{1}{2}b^2cdx^2+a^2c^2x-\frac{1}{2}b^2c^2x+\frac{\left(2b^2d^2f^2x^2+4b^2cdf^2x+2b^2c^2f^2-2b^2d^2fx-2b^2cdf\right.}{16f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/3*a^2*d^2*x^3 - 1/6*b^2*d^2*x^3 + a^2*c*d*x^2 - 1/2*b^2*c*d*x^2 + a^2*c^2
*x - 1/2*b^2*c^2*x + 1/16*(2*b^2*d^2*f^2*x^2 + 4*b^2*c*d*f^2*x + 2*b^2*c^2*
f^2 - 2*b^2*d^2*f*x - 2*b^2*c*d*f + b^2*d^2)*e^(2*f*x + 2*e)/f^3 + (a*b*d^2
*f^2*x^2 + 2*a*b*c*d*f^2*x + a*b*c^2*f^2 - 2*a*b*d^2*f*x - 2*a*b*c*d*f + 2*
```

```
a*b*d^2)*e^(f*x + e)/f^3 + (a*b*d^2*f^2*x^2 + 2*a*b*c*d*f^2*x + a*b*c^2*f^2
 + 2*a*b*d^2*f*x + 2*a*b*c*d*f + 2*a*b*d^2)*e^(-f*x - e)/f^3 - 1/16*(2*b^2*
d^2*f^2*x^2 + 4*b^2*c*d*f^2*x + 2*b^2*c^2*f^2 + 2*b^2*d^2*f*x + 2*b^2*c*d*f
 + b^2*d^2)*e^(-2*f*x - 2*e)/f^3
```

maple [B] time = 0.03, size = 535, normalized size = 2.94

$$\frac{\frac{d^2a^2(fx+e)^3}{3f^2}+\frac{2d^2ab\left((fx+e)^2\cosh(fx+e)-2(fx+e)\sinh(fx+e)+2\cosh(fx+e)\right)}{f^2}+\frac{d^2b^2\left(\frac{(fx+e)^2\cosh(fx+e)\sinh(fx+e)}{2}-\frac{(fx+e)^3}{6}-\frac{(fx+e)(\cosh^2(fx+e}{2}\right.}{f^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*(a+b*sinh(f*x+e))^2,x)
```

```
[Out] 1/f*(1/3/f^2*d^2*a^2*(f*x+e)^3+2/f^2*d^2*a*b*((f*x+e)^2*cosh(f*x+e)-2*(f*x+
e)*sinh(f*x+e)+2*cosh(f*x+e))+1/f^2*d^2*b^2*(1/2*(f*x+e)^2*cosh(f*x+e)*sinh
(f*x+e)-1/6*(f*x+e)^3-1/2*(f*x+e)*cosh(f*x+e)^2+1/4*cosh(f*x+e)*sinh(f*x+e)
+1/4*f*x+1/4*e)-1/f^2*d^2*e*a^2*(f*x+e)^2-4/f^2*d^2*e*a*b*((f*x+e)*cosh(f*x
+e)-sinh(f*x+e))-2/f^2*d^2*e*b^2*(1/2*(f*x+e)*cosh(f*x+e)*sinh(f*x+e)-1/4*(
f*x+e)^2-1/4*cosh(f*x+e)^2)+1/f^2*d^2*e^2*a^2*(f*x+e)+2/f^2*d^2*e^2*a*b*cos
h(f*x+e)+1/f^2*d^2*e^2*b^2*(1/2*cosh(f*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e)+1/f*
c*d*a^2*(f*x+e)^2+4/f*c*d*a*b*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))+2/f*c*d*b^2
*(1/2*(f*x+e)*cosh(f*x+e)*sinh(f*x+e)-1/4*(f*x+e)^2-1/4*cosh(f*x+e)^2)-2/f*
c*d*e*a^2*(f*x+e)-4/f*c*d*e*a*b*cosh(f*x+e)-2/f*c*d*e*b^2*(1/2*cosh(f*x+e)*
sinh(f*x+e)-1/2*f*x-1/2*e)+c^2*a^2*(f*x+e)+2*c^2*a*b*cosh(f*x+e)+c^2*b^2*(1
/2*cosh(f*x+e)*sinh(f*x+e)-1/2*f*x-1/2*e))
```

maxima [A] time = 0.42, size = 322, normalized size = 1.77

$$\frac{1}{3}a^2d^2x^3+a^2cdx^2-\frac{1}{8}\left(4x^2-\frac{\left(2fxe^{(2e)}-e^{(2e)}\right)e^{(2fx)}}{f^2}+\frac{(2fx+1)e^{(-2fx-2e)}}{f^2}\right)b^2cd-\frac{1}{48}\left(8x^3-\frac{3\left(2f^2x^2e^{(2e)}-2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/3*a^2*d^2*x^3 + a^2*c*d*x^2 - 1/8*(4*x^2 - (2*f*x*e^(2*e) - e^(2*e))*e^(2
*f*x)/f^2 + (2*f*x + 1)*e^(-2*f*x - 2*e)/f^2)*b^2*c*d - 1/48*(8*x^3 - 3*(2*
f^2*x^2*e^(2*e) - 2*f*x*e^(2*e) + e^(2*e))*e^(2*f*x)/f^3 + 3*(2*f^2*x^2 + 2
*f*x + 1)*e^(-2*f*x - 2*e)/f^3)*b^2*d^2 - 1/8*b^2*c^2*(4*x - e^(2*f*x + 2*e
)/f + e^(-2*f*x - 2*e)/f) + a^2*c^2*x + 2*a*b*c*d*((f*x*e^e - e^e)*e^(f*x)/
f^2 + (f*x + 1)*e^(-f*x - e)/f^2) + a*b*d^2*((f^2*x^2*e^e - 2*f*x*e^e + 2*e
^e)*e^(f*x)/f^3 + (f^2*x^2 + 2*f*x + 2)*e^(-f*x - e)/f^3) + 2*a*b*c^2*cosh(
f*x + e)/f
```

mupad [B] time = 0.55, size = 281, normalized size = 1.54

$$a^2\,c^2\,x-\frac{b^2\,c^2\,x}{2}+\frac{a^2\,d^2\,x^3}{3}-\frac{b^2\,d^2\,x^3}{6}+\frac{b^2\,c^2\,\sinh\left(2\,e+2\,f\,x\right)}{4\,f}+\frac{b^2\,d^2\,\sinh\left(2\,e+2\,f\,x\right)}{8\,f^3}+a^2\,c\,d\,x^2-\frac{b^2\,c\,d\,x^2}{2}+\frac{2\,a\,b\,c^2\,c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))^2*(c + d*x)^2,x)
```

```
[Out] a^2*c^2*x - (b^2*c^2*x)/2 + (a^2*d^2*x^3)/3 - (b^2*d^2*x^3)/6 + (b^2*c^2*si
nh(2*e + 2*f*x))/(4*f) + (b^2*d^2*sinh(2*e + 2*f*x))/(8*f^3) + a^2*c*d*x^2
- (b^2*c*d*x^2)/2 + (2*a*b*c^2*cosh(e + f*x))/f + (4*a*b*d^2*cosh(e + f*x))
/f^3 + (b^2*d^2*x^2*sinh(2*e + 2*f*x))/(4*f) - (b^2*c*d*cosh(2*e + 2*f*x))/
(4*f^2) - (b^2*d^2*x*cosh(2*e + 2*f*x))/(4*f^2) - (4*a*b*c*d*sinh(e + f*x))
/f^2 - (4*a*b*d^2*x*sinh(e + f*x))/f^2 + (2*a*b*d^2*x^2*cosh(e + f*x))/f +
(b^2*c*d*x*sinh(2*e + 2*f*x))/(2*f) + (4*a*b*c*d*x*cosh(e + f*x))/f
```

sympy [A] time = 1.64, size = 456, normalized size = 2.51

$$\begin{cases} a^2c^2x + a^2cdx^2 + \frac{a^2d^2x^3}{3} + \frac{2abc^2\cosh\left(e+fx\right)}{f} + \frac{4abcdx\cosh\left(e+fx\right)}{f} - \frac{4abcd\sinh\left(e+fx\right)}{f^2} + \frac{2abd^2x^2\cosh\left(e+fx\right)}{f} - \frac{4abd^2x\sinh\left(e+fx\right)}{f^2} \\ (a+b\sinh(e))^2\left(c^2x + cdx^2 + \frac{d^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*(a+b*sinh(f*x+e))**2,x)
```

```
[Out] Piecewise((a**2*c**2*x + a**2*c*d*x**2 + a**2*d**2*x**3/3 + 2*a*b*c**2*cosh
(e + f*x)/f + 4*a*b*c*d*x*cosh(e + f*x)/f - 4*a*b*c*d*sinh(e + f*x)/f**2 +
2*a*b*d**2*x**2*cosh(e + f*x)/f - 4*a*b*d**2*x*sinh(e + f*x)/f**2 + 4*a*b*d
**2*cosh(e + f*x)/f**3 + b**2*c**2*x*sinh(e + f*x)**2/2 - b**2*c**2*x*cosh(
e + f*x)**2/2 + b**2*c**2*sinh(e + f*x)*cosh(e + f*x)/(2*f) + b**2*c*d*x**2
*sinh(e + f*x)**2/2 - b**2*c*d*x**2*cosh(e + f*x)**2/2 + b**2*c*d*x*sinh(e
+ f*x)*cosh(e + f*x)/f - b**2*c*d*sinh(e + f*x)**2/(2*f**2) + b**2*d**2*x**
3*sinh(e + f*x)**2/6 - b**2*d**2*x**3*cosh(e + f*x)**2/6 + b**2*d**2*x**2*s
inh(e + f*x)*cosh(e + f*x)/(2*f) - b**2*d**2*x*sinh(e + f*x)**2/(4*f**2) -
b**2*d**2*x*cosh(e + f*x)**2/(4*f**2) + b**2*d**2*sinh(e + f*x)*cosh(e + f*
x)/(4*f**3), Ne(f, 0)), ((a + b*sinh(e))**2*(c**2*x + c*d*x**2 + d**2*x**3/
3), True))
```

3.165 $\int (c+dx)(a+b\sinh(e+fx))^2\,dx$

Optimal. Leaf size=116

$$\frac{a^2(c+dx)^2}{2d}+\frac{2ab(c+dx)\cosh(e+fx)}{f}-\frac{2abd\sinh(e+fx)}{f^2}+\frac{b^2(c+dx)\sinh(e+fx)\cosh(e+fx)}{2f}-\frac{1}{2}b^2cx-\frac{b^2d\,\mathrm{s}\ldots}{}$$

```
[Out] -1/2*b^2*c*x-1/4*b^2*d*x^2+1/2*a^2*(d*x+c)^2/d+2*a*b*(d*x+c)*cosh(f*x+e)/f-
2*a*b*d*sinh(f*x+e)/f^2+1/2*b^2*(d*x+c)*cosh(f*x+e)*sinh(f*x+e)/f-1/4*b^2*d
*sinh(f*x+e)^2/f^2
```

Rubi [A] time = 0.11, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3317, 3296, 2637, 3310}

$$\frac{a^2(c+dx)^2}{2d}+\frac{2ab(c+dx)\cosh(e+fx)}{f}-\frac{2abd\sinh(e+fx)}{f^2}+\frac{b^2(c+dx)\sinh(e+fx)\cosh(e+fx)}{2f}-\frac{1}{2}b^2cx-\frac{b^2d\,\mathrm{s}\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] -(b^2*c*x)/2 - (b^2*d*x^2)/4 + (a^2*(c + d*x)^2)/(2*d) + (2*a*b*(c + d*x)*C
osh[e + f*x])/f - (2*a*b*d*Sinh[e + f*x])/f^2 + (b^2*(c + d*x)*Cosh[e + f*x
]*Sinh[e + f*x])/(2*f) - (b^2*d*Sinh[e + f*x]^2)/(4*f^2)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)(a+b\sinh(e+fx))^2\,dx = \int \left(a^2(c+dx)+2ab(c+dx)\sinh(e+fx)+b^2(c+dx)\sinh^2(e+fx)\right)\,dx$$
$$= \frac{a^2(c+dx)^2}{2d}+(2ab)\int (c+dx)\sinh(e+fx)\,dx+b^2\int (c+dx)\sinh^2(e+fx$$
$$= \frac{a^2(c+dx)^2}{2d}+\frac{2ab(c+dx)\cosh(e+fx)}{f}+\frac{b^2(c+dx)\cosh(e+fx)\sinh(e+}{2f}$$
$$= -\frac{1}{2}b^2cx-\frac{1}{4}b^2dx^2+\frac{a^2(c+dx)^2}{2d}+\frac{2ab(c+dx)\cosh(e+fx)}{f}-\frac{2abd\sinh(e}{f^2}$$

Mathematica [A] time = 0.72, size = 98, normalized size = 0.84

$$-\frac{2\left(2a^2-b^2\right)(e+fx)(d(e-fx)-2cf)-16abf(c+dx)\cosh(e+fx)+16abd\sinh(e+fx)-2b^2f(c+dx)\sinh(}{8f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] -1/8*(2*(2*a^2 - b^2)*(e + f*x)*(-2*c*f + d*(e - f*x)) - 16*a*b*f*(c + d*x)
*Cosh[e + f*x] + b^2*d*Cosh[2*(e + f*x)] + 16*a*b*d*Sinh[e + f*x] - 2*b^2*f
*(c + d*x)*Sinh[2*(e + f*x)])/f^2
```

fricas [A] time = 0.61, size = 128, normalized size = 1.10

$$\frac{2\left(2\,a^2-b^2\right)df^2x^2+4\left(2\,a^2-b^2\right)cf^2x-b^2d\cosh\left(fx+e\right)^2-b^2d\sinh\left(fx+e\right)^2+16\left(abdfx+abcf\right)\cosh\left(fx+\right.}{8\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/8*(2*(2*a^2 - b^2)*d*f^2*x^2 + 4*(2*a^2 - b^2)*c*f^2*x - b^2*d*cosh(f*x +
 e)^2 - b^2*d*sinh(f*x + e)^2 + 16*(a*b*d*f*x + a*b*c*f)*cosh(f*x + e) - 4*
(4*a*b*d - (b^2*d*f*x + b^2*c*f)*cosh(f*x + e))*sinh(f*x + e))/f^2
```

giac [A] time = 0.59, size = 163, normalized size = 1.41

$$\frac{1}{2}\,a^2dx^2-\frac{1}{4}\,b^2dx^2+a^2cx-\frac{1}{2}\,b^2cx+\frac{\left(2\,b^2dfx+2\,b^2cf-b^2d\right)e^{\left(2\,fx+2\,e\right)}}{16\,f^2}+\frac{\left(abdfx+abcf-abd\right)e^{\left(fx+e\right)}}{f^2}+\frac{\left(abdfx+a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/2*a^2*d*x^2 - 1/4*b^2*d*x^2 + a^2*c*x - 1/2*b^2*c*x + 1/16*(2*b^2*d*f*x +
 2*b^2*c*f - b^2*d)*e^(2*f*x + 2*e)/f^2 + (a*b*d*f*x + a*b*c*f - a*b*d)*e^(
f*x + e)/f^2 + (a*b*d*f*x + a*b*c*f + a*b*d)*e^(-f*x - e)/f^2 - 1/16*(2*b^2
*d*f*x + 2*b^2*c*f + b^2*d)*e^(-2*f*x - 2*e)/f^2
```

maple [A] time = 0.03, size = 208, normalized size = 1.79

$$\frac{\frac{d\,a^2\left(fx+e\right)^2}{2f}+\frac{2dab\left(\left(fx+e\right)\cosh\left(fx+e\right)-\sinh\left(fx+e\right)\right)}{f}+\frac{d\,b^2\left(\frac{\left(fx+e\right)\cosh\left(fx+e\right)\sinh\left(fx+e\right)}{2}-\frac{\left(fx+e\right)^2}{4}-\frac{\left(\cosh^2\left(fx+e\right)\right)}{4}\right)}{f}-\frac{de\,a^2\left(fx+e\right)}{f}-\frac{2deab\cosh}{f}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*(a+b*sinh(f*x+e))^2,x)
```

```
[Out] 1/f*(1/2/f*d*a^2*(f*x+e)^2+2/f*d*a*b*((f*x+e)*cosh(f*x+e)-sinh(f*x+e))+1/f*
d*b^2*(1/2*(f*x+e)*cosh(f*x+e)*sinh(f*x+e)-1/4*(f*x+e)^2-1/4*cosh(f*x+e)^2)
-d*e/f*a^2*(f*x+e)-2*d*e/f*a*b*cosh(f*x+e)-d*e/f*b^2*(1/2*cosh(f*x+e)*sinh(
f*x+e)-1/2*f*x-1/2*e)+c*a^2*(f*x+e)+2*c*a*b*cosh(f*x+e)+c*b^2*(1/2*cosh(f*x
+e)*sinh(f*x+e)-1/2*f*x-1/2*e))
```

maxima [A] time = 0.36, size = 164, normalized size = 1.41

$$\frac{1}{2}\,a^2dx^2-\frac{1}{16}\left(4\,x^2-\frac{\left(2\,fxe^{(2\,e)}-e^{(2\,e)}\right)e^{\left(2\,fx\right)}}{f^2}+\frac{\left(2\,fx+1\right)e^{\left(-2\,fx-2\,e\right)}}{f^2}\right)b^2d-\frac{1}{8}\,b^2c\left(4\,x-\frac{e^{\left(2\,fx+2\,e\right)}}{f}+\frac{e^{\left(-2\,fx-2\,e\right)}}{f}\right)+a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*d*x^2 - 1/16*(4*x^2 - (2*f*x*e^(2*e) - e^(2*e))*e^(2*f*x)/f^2 + (2*
f*x + 1)*e^(-2*f*x - 2*e)/f^2)*b^2*d - 1/8*b^2*c*(4*x - e^(2*f*x + 2*e)/f +
 e^(-2*f*x - 2*e)/f) + a^2*c*x + a*b*d*((f*x*e^e - e^e)*e^(f*x)/f^2 + (f*x
+ 1)*e^(-f*x - e)/f^2) + 2*a*b*c*cosh(f*x + e)/f
```

mupad [B] time = 0.15, size = 135, normalized size = 1.16

$$\frac{a^2\,d\,x^2}{2}-\frac{b^2\,d\,x^2}{4}+a^2\,c\,x-\frac{b^2\,c\,x}{2}-\frac{b^2\,d\,{\cosh\left(e+f\,x\right)}^2}{4\,f^2}+\frac{b^2\,c\,\cosh\left(e+f\,x\right)\,\sinh\left(e+f\,x\right)}{2\,f}+\frac{2\,a\,b\,c\,\cosh\left(e+f\,x\right)}{f}-\frac{2\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))^2*(c + d*x),x)
```

```
[Out] (a^2*d*x^2)/2 - (b^2*d*x^2)/4 + a^2*c*x - (b^2*c*x)/2 - (b^2*d*cosh(e + f*x
)^2)/(4*f^2) + (b^2*c*cosh(e + f*x)*sinh(e + f*x))/(2*f) + (2*a*b*c*cosh(e
+ f*x))/f - (2*a*b*d*sinh(e + f*x))/f^2 + (2*a*b*d*x*cosh(e + f*x))/f + (b^
2*d*x*cosh(e + f*x)*sinh(e + f*x))/(2*f)
```

sympy [A] time = 0.65, size = 219, normalized size = 1.89

$$\begin{cases} a^2cx+\frac{a^2dx^2}{2}+\frac{2abc\cosh\left(e+fx\right)}{f}+\frac{2abdx\cosh\left(e+fx\right)}{f}-\frac{2abd\sinh\left(e+fx\right)}{f^2}+\frac{b^2cx\sinh^2\left(e+fx\right)}{2}-\frac{b^2cx\cosh^2\left(e+fx\right)}{2}+\frac{b^2c\sinh\left(e+fx\right)\cosh}{2f} \\ (a+b\sinh(e))^2\left(cx+\frac{dx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sinh(f*x+e))**2,x)
```

```
[Out] Piecewise((a**2*c*x + a**2*d*x**2/2 + 2*a*b*c*cosh(e + f*x)/f + 2*a*b*d*x*c
osh(e + f*x)/f - 2*a*b*d*sinh(e + f*x)/f**2 + b**2*c*x*sinh(e + f*x)**2/2 -
 b**2*c*x*cosh(e + f*x)**2/2 + b**2*c*sinh(e + f*x)*cosh(e + f*x)/(2*f) + b
**2*d*x**2*sinh(e + f*x)**2/4 - b**2*d*x**2*cosh(e + f*x)**2/4 + b**2*d*x*s
inh(e + f*x)*cosh(e + f*x)/(2*f) - b**2*d*sinh(e + f*x)**2/(4*f**2), Ne(f,
0)), ((a + b*sinh(e))**2*(c*x + d*x**2/2), True))
```

3.166 $\int \frac{(a+b\sinh(e+fx))^2}{c+dx}\,dx$

Optimal. Leaf size=156

$$\frac{a^2\log(c+dx)}{d}+\frac{2ab\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d}+\frac{2ab\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d}+\frac{b^2\text{Chi}\left(2xf+\frac{2cf}{d}\right)\cosh\left(2e\right.}{2d}$$

```
[Out] 1/2*b^2*Chi(2*c*f/d+2*f*x)*cosh(-2*e+2*c*f/d)/d+a^2*ln(d*x+c)/d-1/2*b^2*ln(
d*x+c)/d+2*a*b*cosh(-e+c*f/d)*Shi(c*f/d+f*x)/d-1/2*b^2*Shi(2*c*f/d+2*f*x)*s
inh(-2*e+2*c*f/d)/d-2*a*b*Chi(c*f/d+f*x)*sinh(-e+c*f/d)/d
```

Rubi [A] time = 0.33, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3317, 3303, 3298, 3301, 3312}

$$\frac{a^2\log(c+dx)}{d}+\frac{2ab\text{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d}+\frac{2ab\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d}+\frac{b^2\text{Chi}\left(2xf+\frac{2cf}{d}\right)\cosh\left(2e\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sinh[e + f*x])^2/(c + d*x),x]
```

```
[Out] (b^2*Cosh[2*e - (2*c*f)/d]*CoshIntegral[(2*c*f)/d + 2*f*x])/(2*d) + (a^2*Lo
g[c + d*x])/d - (b^2*Log[c + d*x])/(2*d) + (2*a*b*CoshIntegral[(c*f)/d + f*
x]*Sinh[e - (c*f)/d])/d + (2*a*b*Cosh[e - (c*f)/d]*SinhIntegral[(c*f)/d + f
*x])/d + (b^2*Sinh[2*e - (2*c*f)/d]*SinhIntegral[(2*c*f)/d + 2*f*x])/(2*d)
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
```

```
NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int \frac{(a+b\sinh(e+fx))^2}{c+dx}\,dx = \int \left(\frac{a^2}{c+dx}+\frac{2ab\sinh(e+fx)}{c+dx}+\frac{b^2\sinh^2(e+fx)}{c+dx}\right)dx$$

$$= \frac{a^2\log(c+dx)}{d}+(2ab)\int \frac{\sinh(e+fx)}{c+dx}\,dx+b^2\int \frac{\sinh^2(e+fx)}{c+dx}\,dx$$

$$= \frac{a^2\log(c+dx)}{d}-b^2\int \left(\frac{1}{2(c+dx)}-\frac{\cosh(2e+2fx)}{2(c+dx)}\right)dx+\left(2ab\cosh\left(e-\frac{cf}{d}\right)\right)\int$$

$$= \frac{a^2\log(c+dx)}{d}-\frac{b^2\log(c+dx)}{2d}+\frac{2ab\text{Chi}\left(\frac{cf}{d}+fx\right)\sinh\left(e-\frac{cf}{d}\right)}{d}+\frac{2ab\cosh\left(e-\right.}{}$$

$$= \frac{a^2\log(c+dx)}{d}-\frac{b^2\log(c+dx)}{2d}+\frac{2ab\text{Chi}\left(\frac{cf}{d}+fx\right)\sinh\left(e-\frac{cf}{d}\right)}{d}+\frac{2ab\cosh\left(e-\right.}{}$$

$$= \frac{b^2\cosh\left(2e-\frac{2cf}{d}\right)\text{Chi}\left(\frac{2cf}{d}+2fx\right)}{2d}+\frac{a^2\log(c+dx)}{d}-\frac{b^2\log(c+dx)}{2d}+\frac{2ab\text{Chi}\left(\right.}{}$$

Mathematica [A] time = 0.29, size = 134, normalized size = 0.86

$$\frac{2a^2\log(c+dx)+4ab\text{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\sinh\left(e-\frac{cf}{d}\right)+4ab\cosh\left(e-\frac{cf}{d}\right)\text{Shi}\left(f\left(\frac{c}{d}+x\right)\right)+b^2\text{Chi}\left(\frac{2f(c+dx)}{d}\right)\cosh\left(\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sinh[e + f*x])^2/(c + d*x),x]
```

```
[Out] (b^2*Cosh[2*e - (2*c*f)/d]*CoshIntegral[(2*f*(c + d*x))/d] + 2*a^2*Log[c +
d*x] - b^2*Log[c + d*x] + 4*a*b*CoshIntegral[f*(c/d + x)]*Sinh[e - (c*f)/d]
 + 4*a*b*Cosh[e - (c*f)/d]*SinhIntegral[f*(c/d + x)] + b^2*Sinh[2*e - (2*c*
f)/d]*SinhIntegral[(2*f*(c + d*x))/d])/(2*d)
```

fricas [A] time = 0.89, size = 232, normalized size = 1.49

$$\frac{4\left(ab\text{Ei}\left(\frac{dfx+cf}{d}\right)-ab\text{Ei}\left(-\frac{dfx+cf}{d}\right)\right)\cosh\left(-\frac{de-cf}{d}\right)+\left(b^2\text{Ei}\left(\frac{2\left(dfx+cf\right)}{d}\right)+b^2\text{Ei}\left(-\frac{2\left(dfx+cf\right)}{d}\right)\right)\cosh\left(-\frac{2\left(de-cf\right)}{d}\right)+2\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))^2/(d*x+c),x, algorithm="fricas")
```

```
[Out] 1/4*(4*(a*b*Ei((d*f*x + c*f)/d) - a*b*Ei(-(d*f*x + c*f)/d))*cosh(-(d*e - c*
f)/d) + (b^2*Ei(2*(d*f*x + c*f)/d) + b^2*Ei(-2*(d*f*x + c*f)/d))*cosh(-2*(d
*e - c*f)/d) + 2*(2*a^2 - b^2)*log(d*x + c) - 4*(a*b*Ei((d*f*x + c*f)/d) +
a*b*Ei(-(d*f*x + c*f)/d))*sinh(-(d*e - c*f)/d) - (b^2*Ei(2*(d*f*x + c*f)/d)
 - b^2*Ei(-2*(d*f*x + c*f)/d))*sinh(-2*(d*e - c*f)/d))/d
```

giac [A] time = 0.29, size = 148, normalized size = 0.95

$$\frac{b^2\text{Ei}\left(-\frac{2\left(dfx+cf\right)}{d}\right)e^{\left(\frac{2\,cf}{d}-2\,e\right)}-4\,ab\text{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(\frac{cf}{d}-e\right)}+4\,ab\text{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(-\frac{cf}{d}+e\right)}+b^2\text{Ei}\left(\frac{2\left(dfx+cf\right)}{d}\right)e^{\left(-\frac{2\,cf}{d}+2\,e\right)}+4\cdots}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))^2/(d*x+c),x, algorithm="giac")
```

```
[Out] 1/4*(b^2*Ei(-2*(d*f*x + c*f)/d)*e^(2*c*f/d - 2*e) - 4*a*b*Ei(-(d*f*x + c*f)
/d)*e^(c*f/d - e) + 4*a*b*Ei((d*f*x + c*f)/d)*e^(-c*f/d + e) + b^2*Ei(2*(d*
f*x + c*f)/d)*e^(-2*c*f/d + 2*e) + 4*a^2*log(d*x + c) - 2*b^2*log(d*x + c))
/d
```

maple [A] time = 0.19, size = 201, normalized size = 1.29

$$-\frac{ab\,\mathrm{e}^{-\frac{cf-de}{d}}\,\text{Ei}\left(1,-fx-e-\frac{cf-de}{d}\right)}{d}+\frac{a^2\ln\left(dx+c\right)}{d}-\frac{b^2\ln\left(dx+c\right)}{2d}-\frac{b^2\mathrm{e}^{\frac{2cf-2de}{d}}\,\text{Ei}\left(1,2fx+2e+\frac{2cf-2de}{d}\right)}{4d}-\frac{b^2\mathrm{e}^{-\frac{2(cf-\cdots}{d}}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sinh(f*x+e))^2/(d*x+c),x)
```

```
[Out] -a*b/d*exp(-(c*f-d*e)/d)*Ei(1,-f*x-e-(c*f-d*e)/d)+a^2*ln(d*x+c)/d-1/2*b^2*l
n(d*x+c)/d-1/4*b^2/d*exp(2*(c*f-d*e)/d)*Ei(1,2*f*x+2*e+2*(c*f-d*e)/d)-1/4*b
^2/d*exp(-2*(c*f-d*e)/d)*Ei(1,-2*f*x-2*e-2*(c*f-d*e)/d)+a*b/d*exp((c*f-d*e)
/d)*Ei(1,f*x+e+(c*f-d*e)/d)
```

maxima [A] time = 0.40, size = 148, normalized size = 0.95

$$-\frac{1}{4}\,b^2\left(\frac{e^{\left(-2\,e+\frac{2\,cf}{d}\right)}E_1\left(\frac{2\,(dx+c)f}{d}\right)}{d}+\frac{e^{\left(2\,e-\frac{2\,cf}{d}\right)}E_1\left(-\frac{2\,(dx+c)f}{d}\right)}{d}+\frac{2\,\log\left(dx+c\right)}{d}\right)+ab\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_1\left(\frac{(dx+c)f}{d}\right)}{d}-\frac{e^{\left(e-\frac{cf}{d}\right)}E_1\left(\right.}{d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))^2/(d*x+c),x, algorithm="maxima")
```

```
[Out] -1/4*b^2*(e^(-2*e + 2*c*f/d)*exp_integral_e(1, 2*(d*x + c)*f/d)/d + e^(2*e
- 2*c*f/d)*exp_integral_e(1, -2*(d*x + c)*f/d)/d + 2*log(d*x + c)/d) + a*b*
(e^(-e + c*f/d)*exp_integral_e(1, (d*x + c)*f/d)/d - e^(e - c*f/d)*exp_inte
gral_e(1, -(d*x + c)*f/d)/d) + a^2*log(d*x + c)/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\mathrm{sinh}\left(e+f\,x\right)\right)}^2}{c+d\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))^2/(c + d*x),x)
```

```
[Out] int((a + b*sinh(e + f*x))^2/(c + d*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \sinh{\left(e + f x \right)}\right)^{2}}{c + d x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))**2/(d*x+c),x)
```

```
[Out] Integral((a + b*sinh(e + f*x))**2/(c + d*x), x)
```

3.167 $\int \frac{(a+b\sinh(e+fx))^2}{(c+dx)^2}\,dx$

Optimal. Leaf size=183

$$-\frac{a^2}{d(c+dx)}+\frac{2abf\text{Chi}\left(xf+\frac{cf}{d}\right)\cosh\left(e-\frac{cf}{d}\right)}{d^2}+\frac{2abf\sinh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{2ab\sinh(e+fx)}{d(c+dx)}+\frac{b^2f\text{Chi}\left(2\right.}{}$$

```
[Out] -a^2/d/(d*x+c)+2*a*b*f*Chi(c*f/d+f*x)*cosh(-e+c*f/d)/d^2+b^2*f*cosh(-2*e+2*
c*f/d)*Shi(2*c*f/d+2*f*x)/d^2-b^2*f*Chi(2*c*f/d+2*f*x)*sinh(-2*e+2*c*f/d)/d
^2-2*a*b*f*Shi(c*f/d+f*x)*sinh(-e+c*f/d)/d^2-2*a*b*sinh(f*x+e)/d/(d*x+c)-b^
2*sinh(f*x+e)^2/d/(d*x+c)
```

Rubi [A] time = 0.35, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {3317, 3297, 3303, 3298, 3301, 3313, 12}

$$-\frac{a^2}{d(c+dx)}+\frac{2abf\text{Chi}\left(xf+\frac{cf}{d}\right)\cosh\left(e-\frac{cf}{d}\right)}{d^2}+\frac{2abf\sinh\left(e-\frac{cf}{d}\right)\text{Shi}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{2ab\sinh(e+fx)}{d(c+dx)}+\frac{b^2f\text{Chi}\left(2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sinh[e + f*x])^2/(c + d*x)^2,x]
```

```
[Out] -(a^2/(d*(c + d*x))) + (2*a*b*f*Cosh[e - (c*f)/d]*CoshIntegral[(c*f)/d + f*
x])/d^2 + (b^2*f*CoshIntegral[(2*c*f)/d + 2*f*x]*Sinh[2*e - (2*c*f)/d])/d^2
 - (2*a*b*Sinh[e + f*x])/(d*(c + d*x)) - (b^2*Sinh[e + f*x]^2)/(d*(c + d*x)
) + (2*a*b*f*Sinh[e - (c*f)/d]*SinhIntegral[(c*f)/d + f*x])/d^2 + (b^2*f*Co
sh[2*e - (2*c*f)/d]*SinhIntegral[(2*c*f)/d + 2*f*x])/d^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int \frac{(a+b\sinh(e+fx))^2}{(c+dx)^2}\,dx = \int \left(\frac{a^2}{(c+dx)^2} + \frac{2ab\sinh(e+fx)}{(c+dx)^2} + \frac{b^2\sinh^2(e+fx)}{(c+dx)^2}\right) dx$$

$$= -\frac{a^2}{d(c+dx)} + (2ab)\int \frac{\sinh(e+fx)}{(c+dx)^2}\,dx + b^2\int \frac{\sinh^2(e+fx)}{(c+dx)^2}\,dx$$

$$= -\frac{a^2}{d(c+dx)} - \frac{2ab\sinh(e+fx)}{d(c+dx)} - \frac{b^2\sinh^2(e+fx)}{d(c+dx)} + \frac{(2abf)\int \frac{\cosh(e+fx)}{c+dx}\,dx}{d} - \frac{(2i$$

$$= -\frac{a^2}{d(c+dx)} - \frac{2ab\sinh(e+fx)}{d(c+dx)} - \frac{b^2\sinh^2(e+fx)}{d(c+dx)} + \frac{\left(b^2f\right)\int \frac{\sinh(2e+2fx)}{c+dx}\,dx}{d} + \frac{(2$$

$$= -\frac{a^2}{d(c+dx)} + \frac{2abf\cosh\left(e-\frac{cf}{d}\right)\text{Chi}\left(\frac{cf}{d}+fx\right)}{d^2} - \frac{2ab\sinh(e+fx)}{d(c+dx)} - \frac{b^2\sinh^2(e}{d(c+a}$$

$$= -\frac{a^2}{d(c+dx)} + \frac{2abf\cosh\left(e-\frac{cf}{d}\right)\text{Chi}\left(\frac{cf}{d}+fx\right)}{d^2} + \frac{b^2f\text{Chi}\left(\frac{2cf}{d}+2fx\right)\sinh\left(2e-\right.}{d^2}$$

Mathematica [A] time = 0.60, size = 232, normalized size = 1.27

$$\frac{-2a^2d + 4abf(c+dx)\text{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\cosh\left(e-\frac{cf}{d}\right) + 4abcf\sinh\left(e-\frac{cf}{d}\right)\text{Shi}\left(f\left(\frac{c}{d}+x\right)\right) + 4abdfx\sinh\left(e-\frac{c}{d}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sinh[e + f*x])^2/(c + d*x)^2,x]
```

```
[Out] (-2*a^2*d + b^2*d - b^2*d*Cosh[2*(e + f*x)] + 4*a*b*f*(c + d*x)*Cosh[e - (c
*f)/d]*CoshIntegral[f*(c/d + x)] + 2*b^2*f*(c + d*x)*CoshIntegral[(2*f*(c +
 d*x))/d]*Sinh[2*e - (2*c*f)/d] - 4*a*b*d*Sinh[e + f*x] + 4*a*b*c*f*Sinh[e
- (c*f)/d]*SinhIntegral[f*(c/d + x)] + 4*a*b*d*f*x*Sinh[e - (c*f)/d]*SinhIn
tegral[f*(c/d + x)] + 2*b^2*c*f*Cosh[2*e - (2*c*f)/d]*SinhIntegral[(2*f*(c
+ d*x))/d] + 2*b^2*d*f*x*Cosh[2*e - (2*c*f)/d]*SinhIntegral[(2*f*(c + d*x))
/d])/(2*d^2*(c + d*x))
```

fricas [A] time = 0.58, size = 357, normalized size = 1.95

$$-\frac{b^2d\cosh\left(fx+e\right)^2 + b^2d\sinh\left(fx+e\right)^2 + 4\,abd\sinh\left(fx+e\right) + \left(2\,a^2-b^2\right)d - 2\left(\left(abdfx+abcf\right)\text{Ei}\left(\frac{dfx+cf}{d}\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))^2/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*d*cosh(f*x + e)^2 + b^2*d*sinh(f*x + e)^2 + 4*a*b*d*sinh(f*x + e)
 + (2*a^2 - b^2)*d - 2*((a*b*d*f*x + a*b*c*f)*Ei((d*f*x + c*f)/d) + (a*b*d*
f*x + a*b*c*f)*Ei(-(d*f*x + c*f)/d))*cosh(-(d*e - c*f)/d) - ((b^2*d*f*x + b
^2*c*f)*Ei(2*(d*f*x + c*f)/d) - (b^2*d*f*x + b^2*c*f)*Ei(-2*(d*f*x + c*f)/d
))*cosh(-2*(d*e - c*f)/d) + 2*((a*b*d*f*x + a*b*c*f)*Ei((d*f*x + c*f)/d) -
(a*b*d*f*x + a*b*c*f)*Ei(-(d*f*x + c*f)/d))*sinh(-(d*e - c*f)/d) + ((b^2*d*
f*x + b^2*c*f)*Ei(2*(d*f*x + c*f)/d) + (b^2*d*f*x + b^2*c*f)*Ei(-2*(d*f*x +
 c*f)/d))*sinh(-2*(d*e - c*f)/d))/(d^3*x + c*d^2)
```

giac [B] time = 0.32, size = 1227, normalized size = 6.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))^2/(d*x+c)^2,x, algorithm="giac")
```

```
[Out] -1/4*(2*(d*x + c)*b^2*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*Ei(2*((d*x +
c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^(2*(c*f - d*e)/d)
- 2*b^2*c*f^3*Ei(2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d
*e)/d)*e^(2*(c*f - d*e)/d) - 4*(d*x + c)*a*b*(c*f/(d*x + c) - f - d*e/(d*x
+ c))*f^2*Ei(((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)
*e^((c*f - d*e)/d) + 4*a*b*c*f^3*Ei(((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*
x + c)) - c*f + d*e)/d)*e^((c*f - d*e)/d) - 4*(d*x + c)*a*b*(c*f/(d*x + c)
- f - d*e/(d*x + c))*f^2*Ei(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c))
 - c*f + d*e)/d)*e^(-(c*f - d*e)/d) + 4*a*b*c*f^3*Ei(-((d*x + c)*(c*f/(d*x
+ c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^(-(c*f - d*e)/d) - 2*(d*x + c)*
b^2*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*Ei(-2*((d*x + c)*(c*f/(d*x + c)
 - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^(-2*(c*f - d*e)/d) + 2*b^2*c*f^3*Ei
(-2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^(-2*(c
*f - d*e)/d) + 2*b^2*d*f^2*Ei(2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x +
c)) - c*f + d*e)/d)*e^(2*(c*f - d*e)/d + 1) - 4*a*b*d*f^2*Ei(((d*x + c)*(c*
f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e^((c*f - d*e)/d + 1) - 4*
a*b*d*f^2*Ei(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d
)*e^(-(c*f - d*e)/d + 1) - 2*b^2*d*f^2*Ei(-2*((d*x + c)*(c*f/(d*x + c) - f
- d*e/(d*x + c)) - c*f + d*e)/d)*e^(-2*(c*f - d*e)/d + 1) - b^2*d*f^2*e^(2*
(d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c))/d) + 4*a*b*d*f^2*e^((d*x + c)
*(c*f/(d*x + c) - f - d*e/(d*x + c))/d) - 4*a*b*d*f^2*e^(-(d*x + c)*(c*f/(d
*x + c) - f - d*e/(d*x + c))/d) - b^2*d*f^2*e^(-2*(d*x + c)*(c*f/(d*x + c)
- f - d*e/(d*x + c))/d) - 4*a^2*d*f^2 + 2*b^2*d*f^2)*d^2/(((d*x + c)*d^4*(c
*f/(d*x + c) - f - d*e/(d*x + c)) - c*d^4*f + d^5*e)*f)
```

maple [A] time = 0.22, size = 319, normalized size = 1.74

$$-\frac{fab\,\mathrm{e}^{fx+e}}{d^2\left(\frac{cf}{d}+fx\right)}-\frac{fab\,\mathrm{e}^{-\frac{cf-de}{d}}\,\mathrm{Ei}\left(1,-fx-e-\frac{cf-de}{d}\right)}{d^2}-\frac{a^2}{d\left(dx+c\right)}+\frac{b^2}{2d\left(dx+c\right)}-\frac{f\,b^2\mathrm{e}^{-2fx-2e}}{4d\left(dfx+cf\right)}+\frac{f\,b^2\mathrm{e}^{\frac{2cf-2de}{d}}\,\mathrm{Ei}\left(1,2\right.}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sinh(f*x+e))^2/(d*x+c)^2,x)
```

```
[Out] -1/d^2*f*a*b*exp(f*x+e)/(c*f/d+f*x)-1/d^2*f*a*b*exp(-(c*f-d*e)/d)*Ei(1,-f*x
-e-(c*f-d*e)/d)-a^2/d/(d*x+c)+1/2*b^2/d/(d*x+c)-1/4*f*b^2*exp(-2*f*x-2*e)/d
/(d*f*x+c*f)+1/2*f*b^2/d^2*exp(2*(c*f-d*e)/d)*Ei(1,2*f*x+2*e+2*(c*f-d*e)/d)
-1/4*f*b^2/d^2*exp(2*f*x+2*e)/(c*f/d+f*x)-1/2*f*b^2/d^2*exp(-2*(c*f-d*e)/d)
*Ei(1,-2*f*x-2*e-2*(c*f-d*e)/d)+f*a*b*exp(-f*x-e)/d/(d*f*x+c*f)-f*a*b/d^2*e
xp((c*f-d*e)/d)*Ei(1,f*x+e+(c*f-d*e)/d)
```

maxima [A] time = 0.44, size = 181, normalized size = 0.99

$$-\frac{1}{4}\,b^2\left(\frac{e^{\left(-2\,e+\frac{2\,cf}{d}\right)}E_2\left(\frac{2\,(dx+c)f}{d}\right)}{(dx+c)d}+\frac{e^{\left(2\,e-\frac{2\,cf}{d}\right)}E_2\left(-\frac{2\,(dx+c)f}{d}\right)}{(dx+c)d}-\frac{2}{d^2x+cd}\right)+ab\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_2\left(\frac{(dx+c)f}{d}\right)}{(dx+c)d}-\frac{e^{\left(e-\frac{cf}{d}\right)}E_2\left(-\frac{(dx\ldots}{}\right.}{(dx+c)d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))^2/(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] -1/4*b^2*(e^(-2*e + 2*c*f/d)*exp_integral_e(2, 2*(d*x + c)*f/d)/((d*x + c)*
d) + e^(2*e - 2*c*f/d)*exp_integral_e(2, -2*(d*x + c)*f/d)/((d*x + c)*d) -
2/(d^2*x + c*d)) + a*b*(e^(-e + c*f/d)*exp_integral_e(2, (d*x + c)*f/d)/((d
*x + c)*d) - e^(e - c*f/d)*exp_integral_e(2, -(d*x + c)*f/d)/((d*x + c)*d))
 - a^2/(d^2*x + c*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\mathrm{sinh}\left(e+f\,x\right)\right)}^2}{{\left(c+d\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))^2/(c + d*x)^2,x)
```

```
[Out] int((a + b*sinh(e + f*x))^2/(c + d*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\sinh\left(e + fx\right)\right)^2}{(c + dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))**2/(d*x+c)**2,x)
```

```
[Out] Integral((a + b*sinh(e + f*x))**2/(c + d*x)**2, x)
```

3.168 $\int \frac{(a+b\sinh(e+fx))^2}{(c+dx)^3}\,dx$

Optimal. Leaf size=242

$$-\frac{a^2}{2d(c+dx)^2}+\frac{abf^2\mathrm{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d^3}+\frac{abf^2\cosh\left(e-\frac{cf}{d}\right)\mathrm{Shi}\left(xf+\frac{cf}{d}\right)}{d^3}-\frac{abf\cosh(e+fx)}{d^2(c+dx)}-\frac{ab\sinh}{d(c+}$$

```
[Out] -1/2*a^2/d/(d*x+c)^2+b^2*f^2*Chi(2*c*f/d+2*f*x)*cosh(-2*e+2*c*f/d)/d^3-a*b*
f*cosh(f*x+e)/d^2/(d*x+c)+a*b*f^2*cosh(-e+c*f/d)*Shi(c*f/d+f*x)/d^3-b^2*f^2
*Shi(2*c*f/d+2*f*x)*sinh(-2*e+2*c*f/d)/d^3-a*b*f^2*Chi(c*f/d+f*x)*sinh(-e+c
*f/d)/d^3-a*b*sinh(f*x+e)/d/(d*x+c)^2-b^2*f*cosh(f*x+e)*sinh(f*x+e)/d^2/(d*
x+c)-1/2*b^2*sinh(f*x+e)^2/d/(d*x+c)^2
```

Rubi [A] time = 0.45, antiderivative size = 242, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {3317, 3297, 3303, 3298, 3301, 3314, 31, 3312}

$$-\frac{a^2}{2d(c+dx)^2}+\frac{abf^2\mathrm{Chi}\left(xf+\frac{cf}{d}\right)\sinh\left(e-\frac{cf}{d}\right)}{d^3}+\frac{abf^2\cosh\left(e-\frac{cf}{d}\right)\mathrm{Shi}\left(xf+\frac{cf}{d}\right)}{d^3}-\frac{abf\cosh(e+fx)}{d^2(c+dx)}-\frac{ab\sinh}{d(c+}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sinh[e + f*x])^2/(c + d*x)^3,x]
```

```
[Out] -a^2/(2*d*(c + d*x)^2) - (a*b*f*Cosh[e + f*x])/(d^2*(c + d*x)) + (b^2*f^2*C
osh[2*e - (2*c*f)/d]*CoshIntegral[(2*c*f)/d + 2*f*x])/d^3 + (a*b*f^2*CoshIn
tegral[(c*f)/d + f*x]*Sinh[e - (c*f)/d])/d^3 - (a*b*Sinh[e + f*x])/(d*(c +
d*x)^2) - (b^2*f*Cosh[e + f*x]*Sinh[e + f*x])/(d^2*(c + d*x)) - (b^2*Sinh[e
 + f*x]^2)/(2*d*(c + d*x)^2) + (a*b*f^2*Cosh[e - (c*f)/d]*SinhIntegral[(c*f
)/d + f*x])/d^3 + (b^2*f^2*Sinh[2*e - (2*c*f)/d]*SinhIntegral[(2*c*f)/d + 2
*f*x])/d^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int \frac{(a+b\sinh(e+fx))^2}{(c+dx)^3}\,dx = \int \left(\frac{a^2}{(c+dx)^3} + \frac{2ab\sinh(e+fx)}{(c+dx)^3} + \frac{b^2\sinh^2(e+fx)}{(c+dx)^3}\right) dx$$

$$= -\frac{a^2}{2d(c+dx)^2} + (2ab)\int \frac{\sinh(e+fx)}{(c+dx)^3}\,dx + b^2\int \frac{\sinh^2(e+fx)}{(c+dx)^3}\,dx$$

$$= -\frac{a^2}{2d(c+dx)^2} - \frac{ab\sinh(e+fx)}{d(c+dx)^2} - \frac{b^2f\cosh(e+fx)\sinh(e+fx)}{d^2(c+dx)} - \frac{b^2\sinh^2(e+}{2d(c+dx)}$$

$$= -\frac{a^2}{2d(c+dx)^2} - \frac{abf\cosh(e+fx)}{d^2(c+dx)} + \frac{b^2f^2\log(c+dx)}{d^3} - \frac{ab\sinh(e+fx)}{d(c+dx)^2} - \frac{b^2f\,\mathrm{co}}{}$$

$$= -\frac{a^2}{2d(c+dx)^2} - \frac{abf\cosh(e+fx)}{d^2(c+dx)} - \frac{ab\sinh(e+fx)}{d(c+dx)^2} - \frac{b^2f\cosh(e+fx)\sinh(e+}{d^2(c+dx)}$$

$$= -\frac{a^2}{2d(c+dx)^2} - \frac{abf\cosh(e+fx)}{d^2(c+dx)} + \frac{abf^2\mathrm{Chi}\left(\frac{cf}{d}+fx\right)\sinh\left(e-\frac{cf}{d}\right)}{d^3} - \frac{ab\sinh(}{d(c+}$$

$$= -\frac{a^2}{2d(c+dx)^2} - \frac{abf\cosh(e+fx)}{d^2(c+dx)} + \frac{b^2f^2\cosh\left(2e-\frac{2cf}{d}\right)\mathrm{Chi}\left(\frac{2cf}{d}+2fx\right)}{d^3} + \frac{abf}{}$$

Mathematica [A] time = 0.90, size = 395, normalized size = 1.63

$$\frac{-2a^2d^2 + 4abc^2f^2\cosh\left(e-\frac{cf}{d}\right)\mathrm{Shi}\left(f\left(\frac{c}{d}+x\right)\right) + 4abf^2(c+dx)^2\mathrm{Chi}\left(f\left(\frac{c}{d}+x\right)\right)\sinh\left(e-\frac{cf}{d}\right) + 4abd^2f^2x^2\cos}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sinh[e + f*x])^2/(c + d*x)^3,x]
```

```
[Out] (-2*a^2*d^2 + b^2*d^2 - 4*a*b*c*d*f*Cosh[e + f*x] - 4*a*b*d^2*f*x*Cosh[e +
f*x] - b^2*d^2*Cosh[2*(e + f*x)] + 4*b^2*f^2*(c + d*x)^2*Cosh[2*e - (2*c*f)
/d]*CoshIntegral[(2*f*(c + d*x))/d] + 4*a*b*f^2*(c + d*x)^2*CoshIntegral[f*
(c/d + x)]*Sinh[e - (c*f)/d] - 4*a*b*d^2*Sinh[e + f*x] - 2*b^2*c*d*f*Sinh[2
*(e + f*x)] - 2*b^2*d^2*f*x*Sinh[2*(e + f*x)] + 4*a*b*c^2*f^2*Cosh[e - (c*f
)/d]*SinhIntegral[f*(c/d + x)] + 8*a*b*c*d*f^2*x*Cosh[e - (c*f)/d]*SinhInte
gral[f*(c/d + x)] + 4*a*b*d^2*f^2*x^2*Cosh[e - (c*f)/d]*SinhIntegral[f*(c/d
 + x)] + 4*b^2*c^2*f^2*Sinh[2*e - (2*c*f)/d]*SinhIntegral[(2*f*(c + d*x))/d
] + 8*b^2*c*d*f^2*x*Sinh[2*e - (2*c*f)/d]*SinhIntegral[(2*f*(c + d*x))/d] +
 4*b^2*d^2*f^2*x^2*Sinh[2*e - (2*c*f)/d]*SinhIntegral[(2*f*(c + d*x))/d])/(
4*d^3*(c + d*x)^2)
```

fricas [B] time = 0.50, size = 590, normalized size = 2.44

$$-\frac{b^2d^2\cosh\left(fx+e\right)^2+b^2d^2\sinh\left(fx+e\right)^2+\left(2\,a^2-b^2\right)d^2+4\left(abd^2fx+abcdf\right)\cosh\left(fx+e\right)-2\left(\left(abd^2f^2x^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))^2/(d*x+c)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(b^2*d^2*cosh(f*x + e)^2 + b^2*d^2*sinh(f*x + e)^2 + (2*a^2 - b^2)*d^2
 + 4*(a*b*d^2*f*x + a*b*c*d*f)*cosh(f*x + e) - 2*((a*b*d^2*f^2*x^2 + 2*a*b*
c*d*f^2*x + a*b*c^2*f^2)*Ei((d*f*x + c*f)/d) - (a*b*d^2*f^2*x^2 + 2*a*b*c*d
*f^2*x + a*b*c^2*f^2)*Ei(-(d*f*x + c*f)/d))*cosh(-(d*e - c*f)/d) - 2*((b^2*
d^2*f^2*x^2 + 2*b^2*c*d*f^2*x + b^2*c^2*f^2)*Ei(2*(d*f*x + c*f)/d) + (b^2*d
^2*f^2*x^2 + 2*b^2*c*d*f^2*x + b^2*c^2*f^2)*Ei(-2*(d*f*x + c*f)/d))*cosh(-2
*(d*e - c*f)/d) + 4*(a*b*d^2 + (b^2*d^2*f*x + b^2*c*d*f)*cosh(f*x + e))*sin
h(f*x + e) + 2*((a*b*d^2*f^2*x^2 + 2*a*b*c*d*f^2*x + a*b*c^2*f^2)*Ei((d*f*x
 + c*f)/d) + (a*b*d^2*f^2*x^2 + 2*a*b*c*d*f^2*x + a*b*c^2*f^2)*Ei(-(d*f*x +
 c*f)/d))*sinh(-(d*e - c*f)/d) + 2*((b^2*d^2*f^2*x^2 + 2*b^2*c*d*f^2*x + b^
2*c^2*f^2)*Ei(2*(d*f*x + c*f)/d) - (b^2*d^2*f^2*x^2 + 2*b^2*c*d*f^2*x + b^2
*c^2*f^2)*Ei(-2*(d*f*x + c*f)/d))*sinh(-2*(d*e - c*f)/d))/(d^5*x^2 + 2*c*d^
4*x + c^2*d^3)
```

giac [B] time = 0.19, size = 702, normalized size = 2.90

$$\frac{4\,b^2d^2f^2x^2\mathrm{Ei}\left(-\frac{2\left(dfx+cf\right)}{d}\right)e^{\left(\frac{2\,cf}{d}-2\,e\right)}-4\,abd^2f^2x^2\mathrm{Ei}\left(-\frac{dfx+cf}{d}\right)e^{\left(\frac{cf}{d}-e\right)}+4\,abd^2f^2x^2\mathrm{Ei}\left(\frac{dfx+cf}{d}\right)e^{\left(-\frac{cf}{d}+e\right)}+4\,b^2d^2f^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))^2/(d*x+c)^3,x, algorithm="giac")
```

```
[Out] 1/8*(4*b^2*d^2*f^2*x^2*Ei(-2*(d*f*x + c*f)/d)*e^(2*c*f/d - 2*e) - 4*a*b*d^2
*f^2*x^2*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) + 4*a*b*d^2*f^2*x^2*Ei((d*f*x +
 c*f)/d)*e^(-c*f/d + e) + 4*b^2*d^2*f^2*x^2*Ei(2*(d*f*x + c*f)/d)*e^(-2*c*f
/d + 2*e) + 8*b^2*c*d*f^2*x*Ei(-2*(d*f*x + c*f)/d)*e^(2*c*f/d - 2*e) - 8*a*
b*c*d*f^2*x*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) + 8*a*b*c*d*f^2*x*Ei((d*f*x
+ c*f)/d)*e^(-c*f/d + e) + 8*b^2*c*d*f^2*x*Ei(2*(d*f*x + c*f)/d)*e^(-2*c*f/
d + 2*e) + 4*b^2*c^2*f^2*Ei(-2*(d*f*x + c*f)/d)*e^(2*c*f/d - 2*e) - 4*a*b*c
^2*f^2*Ei(-(d*f*x + c*f)/d)*e^(c*f/d - e) + 4*a*b*c^2*f^2*Ei((d*f*x + c*f)/
d)*e^(-c*f/d + e) + 4*b^2*c^2*f^2*Ei(2*(d*f*x + c*f)/d)*e^(-2*c*f/d + 2*e)
- 2*b^2*d^2*f*x*e^(2*f*x + 2*e) - 4*a*b*d^2*f*x*e^(f*x + e) - 4*a*b*d^2*f*x
*e^(-f*x - e) + 2*b^2*d^2*f*x*e^(-2*f*x - 2*e) - 2*b^2*c*d*f*e^(2*f*x + 2*e
```

```
) - 4*a*b*c*d*f*e^(f*x + e) - 4*a*b*c*d*f*e^(-f*x - e) + 2*b^2*c*d*f*e^(-2*
f*x - 2*e) - b^2*d^2*e^(2*f*x + 2*e) - 4*a*b*d^2*e^(f*x + e) + 4*a*b*d^2*e^
(-f*x - e) - b^2*d^2*e^(-2*f*x - 2*e) - 4*a^2*d^2 + 2*b^2*d^2)/(d^5*x^2 + 2
*c*d^4*x + c^2*d^3)
```

maple [B] time = 0.23, size = 626, normalized size = 2.59

$$-\frac{f^2 ab\, \mathrm{e}^{fx+e}}{2d^3\left(\frac{cf}{d}+fx\right)^2}-\frac{f^2 ab\, \mathrm{e}^{fx+e}}{2d^3\left(\frac{cf}{d}+fx\right)}-\frac{f^2 ab\, \mathrm{e}^{-\frac{cf-de}{d}}\operatorname{Ei}\left(1,-fx-e-\frac{cf-de}{d}\right)}{2d^3}-\frac{a^2}{2d\left(dx+c\right)^2}+\frac{b^2}{4d\left(dx+c\right)^2}+\frac{f^3b^2}{4d\left(d^2f^2x^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sinh(f*x+e))^2/(d*x+c)^3,x)
```

```
[Out] -1/2/d^3*f^2*a*b*exp(f*x+e)/(c*f/d+f*x)^2-1/2/d^3*f^2*a*b*exp(f*x+e)/(c*f/d
+f*x)-1/2/d^3*f^2*a*b*exp(-(c*f-d*e)/d)*Ei(1,-f*x-e-(c*f-d*e)/d)-1/2*a^2/d/
(d*x+c)^2+1/4*b^2/d/(d*x+c)^2+1/4*f^3*b^2*exp(-2*f*x-2*e)/d/(d^2*f^2*x^2+2*
c*d*f^2*x+c^2*f^2)*x+1/4*f^3*b^2*exp(-2*f*x-2*e)/d^2/(d^2*f^2*x^2+2*c*d*f^2
*x+c^2*f^2)*c-1/8*f^2*b^2*exp(-2*f*x-2*e)/d/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^
2)-1/2*f^2*b^2/d^3*exp(2*(c*f-d*e)/d)*Ei(1,2*f*x+2*e+2*(c*f-d*e)/d)-1/8*f^2
*b^2/d^3*exp(2*f*x+2*e)/(c*f/d+f*x)^2-1/4*f^2*b^2/d^3*exp(2*f*x+2*e)/(c*f/d
+f*x)-1/2*f^2*b^2/d^3*exp(-2*(c*f-d*e)/d)*Ei(1,-2*f*x-2*e-2*(c*f-d*e)/d)-1/
2*f^3*a*b*exp(-f*x-e)/d/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)*x-1/2*f^3*a*b*exp
(-f*x-e)/d^2/(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)*c+1/2*f^2*a*b*exp(-f*x-e)/d/
(d^2*f^2*x^2+2*c*d*f^2*x+c^2*f^2)+1/2*f^2*a*b/d^3*exp((c*f-d*e)/d)*Ei(1,f*x
+e+(c*f-d*e)/d)
```

maxima [A] time = 0.46, size = 203, normalized size = 0.84

$$\frac{1}{4}b^2\left(\frac{1}{d^3x^2+2\,cd^2x+c^2d}-\frac{e^{\left(-2\,e+\frac{2\,cf}{d}\right)}E_3\left(\frac{2\,(dx+c)f}{d}\right)}{(dx+c)^2d}-\frac{e^{\left(2\,e-\frac{2\,cf}{d}\right)}E_3\left(-\frac{2\,(dx+c)f}{d}\right)}{(dx+c)^2d}\right)+ab\left(\frac{e^{\left(-e+\frac{cf}{d}\right)}E_3\left(\frac{(dx+c)f}{d}\right)}{(dx+c)^2d}-\frac{e^{\left(e-\frac{cf}{d}\right.}}{(\ }\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))^2/(d*x+c)^3,x, algorithm="maxima")
```

```
[Out] 1/4*b^2*(1/(d^3*x^2 + 2*c*d^2*x + c^2*d) - e^(-2*e + 2*c*f/d)*exp_integral_
e(3, 2*(d*x + c)*f/d)/((d*x + c)^2*d) - e^(2*e - 2*c*f/d)*exp_integral_e(3,
 -2*(d*x + c)*f/d)/((d*x + c)^2*d)) + a*b*(e^(-e + c*f/d)*exp_integral_e(3,
 (d*x + c)*f/d)/((d*x + c)^2*d) - e^(e - c*f/d)*exp_integral_e(3, -(d*x + c
)*f/d)/((d*x + c)^2*d)) - 1/2*a^2/(d^3*x^2 + 2*c*d^2*x + c^2*d)
```

<u>**mupad**</u> **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\sinh\left(e+f\,x\right)\right)^2}{(c+d\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))^2/(c + d*x)^3,x)
[Out] int((a + b*sinh(e + f*x))^2/(c + d*x)^3, x)
```

<u>**sympy**</u> **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sinh\left(e+fx\right)\right)^2}{(c+dx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sinh(f*x+e))**2/(d*x+c)**3,x)
[Out] Integral((a + b*sinh(e + f*x))**2/(c + d*x)**3, x)
```

3.169 $\int \frac{(c+dx)^3}{a+b\sinh(e+fx)}\,dx$

Optimal. Leaf size=404

$$-\frac{6d^2(c+dx)\mathrm{Li}_3\left(-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^3\sqrt{a^2+b^2}}+\frac{6d^2(c+dx)\mathrm{Li}_3\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{f^3\sqrt{a^2+b^2}}+\frac{3d(c+dx)^2\mathrm{Li}_2\left(-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^2\sqrt{a^2+b^2}}-\frac{3d(c+dx)^2\mathrm{Li}_2\left(-\frac{b}{a+}\right.}{f^2\sqrt{a^2+b^2}}$$

```
[Out] (d*x+c)^3*ln(1+b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/f/(a^2+b^2)^(1/2)-(d*x+c)^
3*ln(1+b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/f/(a^2+b^2)^(1/2)+3*d*(d*x+c)^2*po
lylog(2,-b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/f^2/(a^2+b^2)^(1/2)-3*d*(d*x+c)^
2*polylog(2,-b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/f^2/(a^2+b^2)^(1/2)-6*d^2*(d
*x+c)*polylog(3,-b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/f^3/(a^2+b^2)^(1/2)+6*d^
2*(d*x+c)*polylog(3,-b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/f^3/(a^2+b^2)^(1/2)+
6*d^3*polylog(4,-b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/f^4/(a^2+b^2)^(1/2)-6*d^
3*polylog(4,-b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/f^4/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.83, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {3322, 2264, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6d^2(c+dx)\mathrm{PolyLog}\left(3,-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^3\sqrt{a^2+b^2}}+\frac{6d^2(c+dx)\mathrm{PolyLog}\left(3,-\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}\right)}{f^3\sqrt{a^2+b^2}}+\frac{3d(c+dx)^2\mathrm{PolyLog}\left(2,-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right.}{f^2\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3/(a + b*Sinh[e + f*x]),x]
```

```
[Out] ((c + d*x)^3*Log[1 + (b*E^(e + f*x))/(a - Sqrt[a^2 + b^2])])/(Sqrt[a^2 + b^
2]*f) - ((c + d*x)^3*Log[1 + (b*E^(e + f*x))/(a + Sqrt[a^2 + b^2])])/(Sqrt[
a^2 + b^2]*f) + (3*d*(c + d*x)^2*PolyLog[2, -((b*E^(e + f*x))/(a - Sqrt[a^2
 + b^2]))])/(Sqrt[a^2 + b^2]*f^2) - (3*d*(c + d*x)^2*PolyLog[2, -((b*E^(e +
 f*x))/(a + Sqrt[a^2 + b^2]))])/(Sqrt[a^2 + b^2]*f^2) - (6*d^2*(c + d*x)*Po
lyLog[3, -((b*E^(e + f*x))/(a - Sqrt[a^2 + b^2]))])/(Sqrt[a^2 + b^2]*f^3) +
 (6*d^2*(c + d*x)*PolyLog[3, -((b*E^(e + f*x))/(a + Sqrt[a^2 + b^2]))])/(Sq
rt[a^2 + b^2]*f^3) + (6*d^3*PolyLog[4, -((b*E^(e + f*x))/(a - Sqrt[a^2 + b^
2]))])/(Sqrt[a^2 + b^2]*f^4) - (6*d^3*PolyLog[4, -((b*E^(e + f*x))/(a + Sqr
t[a^2 + b^2]))])/(Sqrt[a^2 + b^2]*f^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
```

```
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(c+dx)^3}{a+b\sinh(e+fx)}\,dx = 2\int \frac{e^{e+fx}(c+dx)^3}{-b+2ae^{e+fx}+be^{2(e+fx)}}\,dx$$

$$= \frac{(2b)\int \frac{e^{e+fx}(c+dx)^3}{2a-2\sqrt{a^2+b^2}+2be^{e+fx}}\,dx}{\sqrt{a^2+b^2}} - \frac{(2b)\int \frac{e^{e+fx}(c+dx)^3}{2a+2\sqrt{a^2+b^2}+2be^{e+fx}}\,dx}{\sqrt{a^2+b^2}}$$

$$= \frac{(c+dx)^3\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)^3\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(3d)\int(c+dx)^2\log\left(\cdots\right.}{\sqrt{a^2+\cdots}}$$

$$= \frac{(c+dx)^3\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)^3\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} + \frac{3d(c+dx)^2\text{Li}_2\left(-\frac{b\cdots}{a-\cdots}\right.}{\sqrt{a^2+b^2}\,f^2}$$

$$= \frac{(c+dx)^3\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)^3\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} + \frac{3d(c+dx)^2\text{Li}_2\left(-\frac{b\cdots}{a-\cdots}\right.}{\sqrt{a^2+b^2}\,f^2}$$

$$= \frac{(c+dx)^3\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)^3\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} + \frac{3d(c+dx)^2\text{Li}_2\left(-\frac{b\cdots}{a-\cdots}\right.}{\sqrt{a^2+b^2}\,f^2}$$

$$= \frac{(c+dx)^3\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)^3\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} + \frac{3d(c+dx)^2\text{Li}_2\left(-\frac{b\cdots}{a-\cdots}\right.}{\sqrt{a^2+b^2}\,f^2}$$

Mathematica [A] time = 0.25, size = 318, normalized size = 0.79

$$\frac{\frac{3d\left(f^2(c+dx)^2\text{Li}_2\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}-a}\right)-2df(c+dx)\text{Li}_3\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}-a}\right)+2d^2\text{Li}_4\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}-a}\right)\right)}{f^3} - \frac{3d\left(f^2(c+dx)^2\text{Li}_2\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)-2df(c+dx)\text{Li}_3\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)+2d\cdots\right.}{f^3}}{f\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3/(a + b*Sinh[e + f*x]),x]
```

```
[Out] ((c + d*x)^3*Log[1 + (b*E^(e + f*x))/(a - Sqrt[a^2 + b^2])] - (c + d*x)^3*L
og[1 + (b*E^(e + f*x))/(a + Sqrt[a^2 + b^2])] + (3*d*(f^2*(c + d*x)^2*PolyL
```

```
og[2, (b*E^(e + f*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*f*(c + d*x)*PolyLog[3,
(b*E^(e + f*x))/(-a + Sqrt[a^2 + b^2])] + 2*d^2*PolyLog[4, (b*E^(e + f*x))/
(-a + Sqrt[a^2 + b^2])]))/f^3 - (3*d*(f^2*(c + d*x)^2*PolyLog[2, -((b*E^(e
+ f*x))/(a + Sqrt[a^2 + b^2]))] - 2*d*f*(c + d*x)*PolyLog[3, -((b*E^(e + f*
x))/(a + Sqrt[a^2 + b^2]))] + 2*d^2*PolyLog[4, -((b*E^(e + f*x))/(a + Sqrt[
a^2 + b^2]))]))/f^3)/(Sqrt[a^2 + b^2]*f)
```

fricas [C] time = 0.74, size = 1004, normalized size = 2.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+b*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] (6*b*d^3*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(f*x + e) + a*sinh(f*x + e
) + (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))/b) - 6*b*d^3
*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(f*x + e) + a*sinh(f*x + e) - (b*c
osh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))/b) + 3*(b*d^3*f^2*x^
2 + 2*b*c*d^2*f^2*x + b*c^2*d*f^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(f*x
+ e) + a*sinh(f*x + e) + (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^
2)/b^2) - b)/b + 1) - 3*(b*d^3*f^2*x^2 + 2*b*c*d^2*f^2*x + b*c^2*d*f^2)*sqr
t((a^2 + b^2)/b^2)*dilog((a*cosh(f*x + e) + a*sinh(f*x + e) - (b*cosh(f*x +
 e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (b*d^3*e^3 - 3*b
*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt((a^2 + b^2)/b^2)*log(2*b*c
osh(f*x + e) + 2*b*sinh(f*x + e) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b*d^
3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt((a^2 + b^2)/b^2
)*log(2*b*cosh(f*x + e) + 2*b*sinh(f*x + e) - 2*b*sqrt((a^2 + b^2)/b^2) + 2
*a) + (b*d^3*f^3*x^3 + 3*b*c*d^2*f^3*x^2 + 3*b*c^2*d*f^3*x + b*d^3*e^3 - 3*
b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(f*x + e
) + a*sinh(f*x + e) + (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/
b^2) - b)/b) - (b*d^3*f^3*x^3 + 3*b*c*d^2*f^3*x^2 + 3*b*c^2*d*f^3*x + b*d^3
*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cos
h(f*x + e) + a*sinh(f*x + e) - (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^
2 + b^2)/b^2) - b)/b) - 6*(b*d^3*f*x + b*c*d^2*f)*sqrt((a^2 + b^2)/b^2)*pol
ylog(3, (a*cosh(f*x + e) + a*sinh(f*x + e) + (b*cosh(f*x + e) + b*sinh(f*x
+ e))*sqrt((a^2 + b^2)/b^2))/b) + 6*(b*d^3*f*x + b*c*d^2*f)*sqrt((a^2 + b^2
)/b^2)*polylog(3, (a*cosh(f*x + e) + a*sinh(f*x + e) - (b*cosh(f*x + e) + b
*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))/b))/((a^2 + b^2)*f^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^3}{b\sinh\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+b*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3/(b*sinh(f*x + e) + a), x)
```

maple [F] time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^3}{a+b\sinh\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3/(a+b*sinh(f*x+e)),x)
```

```
[Out] int((d*x+c)^3/(a+b*sinh(f*x+e)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^3\log\left(\frac{be^{(-fx-e)}-a-\sqrt{a^2+b^2}}{be^{(-fx-e)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f}+\int \frac{2\,d^3x^3}{b\left(e^{(fx+e)}-e^{(-fx-e)}\right)+2\,a}+\frac{6\,cd^2x^2}{b\left(e^{(fx+e)}-e^{(-fx-e)}\right)+2\,a}+\frac{6\,c^2dx}{b\left(e^{(fx+e)}-e^{(-fx-e)}\right)+2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+b*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] c^3*log((b*e^(-f*x - e) - a - sqrt(a^2 + b^2))/(b*e^(-f*x - e) - a + sqrt(a
^2 + b^2)))/(sqrt(a^2 + b^2)*f) + integrate(2*d^3*x^3/(b*(e^(f*x + e) - e^(
-f*x - e)) + 2*a) + 6*c*d^2*x^2/(b*(e^(f*x + e) - e^(-f*x - e)) + 2*a) + 6*
c^2*d*x/(b*(e^(f*x + e) - e^(-f*x - e)) + 2*a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c+d\,x\right)}^3}{a+b\,\mathrm{sinh}\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^3/(a + b*sinh(e + f*x)),x)
```

```
[Out] int((c + d*x)^3/(a + b*sinh(e + f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^3}{a+b\sinh\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3/(a+b*sinh(f*x+e)),x)
```

```
[Out] Integral((c + d*x)**3/(a + b*sinh(e + f*x)), x)
```

3.170 $\int \frac{(c+dx)^2}{a+b\sinh(e+fx)}\,dx$

Optimal. Leaf size=296

$$\frac{2d(c+dx)\text{Li}_2\left(-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^2\sqrt{a^2+b^2}}-\frac{2d(c+dx)\text{Li}_2\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{f^2\sqrt{a^2+b^2}}+\frac{(c+dx)^2\log\left(\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}+1\right)}{f\sqrt{a^2+b^2}}-\frac{(c+dx)^2\log\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}\right.}{f\sqrt{a^2+b^2}}$$

```
[Out] (d*x+c)^2*ln(1+b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/f/(a^2+b^2)^(1/2)-(d*x+c)^
2*ln(1+b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/f/(a^2+b^2)^(1/2)+2*d*(d*x+c)*poly
log(2,-b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/f^2/(a^2+b^2)^(1/2)-2*d*(d*x+c)*po
lylog(2,-b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/f^2/(a^2+b^2)^(1/2)-2*d^2*polylo
g(3,-b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/f^3/(a^2+b^2)^(1/2)+2*d^2*polylog(3,
-b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/f^3/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.67, antiderivative size = 296, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {3322, 2264, 2190, 2531, 2282, 6589}

$$\frac{2d(c+dx)\text{PolyLog}\left(2,-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^2\sqrt{a^2+b^2}}-\frac{2d(c+dx)\text{PolyLog}\left(2,-\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}\right)}{f^2\sqrt{a^2+b^2}}-\frac{2d^2\text{PolyLog}\left(3,-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^3\sqrt{a^2+b^2}}+\frac{2d^2\text{Poly}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2/(a + b*Sinh[e + f*x]),x]
```

```
[Out] ((c + d*x)^2*Log[1 + (b*E^(e + f*x))/(a - Sqrt[a^2 + b^2])])/(Sqrt[a^2 + b^
2]*f) - ((c + d*x)^2*Log[1 + (b*E^(e + f*x))/(a + Sqrt[a^2 + b^2])])/(Sqrt[
a^2 + b^2]*f) + (2*d*(c + d*x)*PolyLog[2, -((b*E^(e + f*x))/(a - Sqrt[a^2 +
 b^2]))])/(Sqrt[a^2 + b^2]*f^2) - (2*d*(c + d*x)*PolyLog[2, -((b*E^(e + f*x
))/(a + Sqrt[a^2 + b^2]))])/(Sqrt[a^2 + b^2]*f^2) - (2*d^2*PolyLog[3, -((b*
E^(e + f*x))/(a - Sqrt[a^2 + b^2]))])/(Sqrt[a^2 + b^2]*f^3) + (2*d^2*PolyLo
g[3, -((b*E^(e + f*x))/(a + Sqrt[a^2 + b^2]))])/(Sqrt[a^2 + b^2]*f^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(c+dx)^2}{a+b\sinh(e+fx)}\,dx = 2\int \frac{e^{e+fx}(c+dx)^2}{-b+2ae^{e+fx}+be^{2(e+fx)}}\,dx$$

$$= \frac{(2b)\int \frac{e^{e+fx}(c+dx)^2}{2a-2\sqrt{a^2+b^2}+2be^{e+fx}}\,dx}{\sqrt{a^2+b^2}} - \frac{(2b)\int \frac{e^{e+fx}(c+dx)^2}{2a+2\sqrt{a^2+b^2}+2be^{e+fx}}\,dx}{\sqrt{a^2+b^2}}$$

$$= \frac{(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(2d)\int(c+dx)\log\left(1\right.}{\sqrt{a^2+}}$$

$$= \frac{(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} + \frac{2d(c+dx)\text{Li}_2\left(-\frac{be}{a-\sqrt{}}\right.}{\sqrt{a^2+b^2}\,f^2}$$

$$= \frac{(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} + \frac{2d(c+dx)\text{Li}_2\left(-\frac{be}{a-\sqrt{}}\right.}{\sqrt{a^2+b^2}\,f^2}$$

$$= \frac{(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} + \frac{2d(c+dx)\text{Li}_2\left(-\frac{be}{a-\sqrt{}}\right.}{\sqrt{a^2+b^2}\,f^2}$$

Mathematica [A] time = 0.13, size = 233, normalized size = 0.79

$$\frac{\frac{2d\left(f(c+dx)\text{Li}_2\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}-a}\right)-d\text{Li}_3\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}-a}\right)\right)}{f^2} - \frac{2d\left(f(c+dx)\text{Li}_2\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)-d\text{Li}_3\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)\right)}{f^2} + (c+dx)^2\log\left(\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}+1\right) - (c}{f\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2/(a + b*Sinh[e + f*x]),x]
```

```
[Out] ((c + d*x)^2*Log[1 + (b*E^(e + f*x))/(a - Sqrt[a^2 + b^2])] - (c + d*x)^2*L
og[1 + (b*E^(e + f*x))/(a + Sqrt[a^2 + b^2])] + (2*d*(f*(c + d*x)*PolyLog[2
, (b*E^(e + f*x))/(-a + Sqrt[a^2 + b^2])] - d*PolyLog[3, (b*E^(e + f*x))/(-
a + Sqrt[a^2 + b^2])]))/f^2 - (2*d*(f*(c + d*x)*PolyLog[2, -((b*E^(e + f*x)
)/(a + Sqrt[a^2 + b^2]))] - d*PolyLog[3, -((b*E^(e + f*x))/(a + Sqrt[a^2 +
b^2]))]))/f^2)/(Sqrt[a^2 + b^2]*f)
```

fricas [C] time = 0.52, size = 708, normalized size = 2.39

$$-\frac{2\,bd^2\sqrt{\frac{a^2+b^2}{b^2}}\,\mathrm{polylog}\left(3,\frac{a\cosh\left(fx+e\right)+a\sinh\left(fx+e\right)+\left(b\cosh\left(fx+e\right)+b\sinh\left(fx+e\right)\right)\sqrt{\frac{a^2+b^2}{b^2}}}{b}\right)-2\,bd^2\sqrt{\frac{a^2+b^2}{b^2}}\,\mathrm{polylog}\left(3,\frac{a\cosh\left(\cdots\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] -(2*b*d^2*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(f*x + e) + a*sinh(f*x +
e) + (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))/b) - 2*b*d^
2*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(f*x + e) + a*sinh(f*x + e) - (b*
cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))/b) - 2*(b*d^2*f*x +
 b*c*d*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(f*x + e) + a*sinh(f*x + e) +
(b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(
b*d^2*f*x + b*c*d*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(f*x + e) + a*sinh(
f*x + e) - (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b
 + 1) + (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sqrt((a^2 + b^2)/b^2)*log(2*b
*cosh(f*x + e) + 2*b*sinh(f*x + e) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b*
d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(f*x +
 e) + 2*b*sinh(f*x + e) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b*d^2*f^2*x^2
 + 2*b*c*d*f^2*x - b*d^2*e^2 + 2*b*c*d*e*f)*sqrt((a^2 + b^2)/b^2)*log(-(a*c
osh(f*x + e) + a*sinh(f*x + e) + (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((
a^2 + b^2)/b^2) - b)/b) + (b*d^2*f^2*x^2 + 2*b*c*d*f^2*x - b*d^2*e^2 + 2*b*
c*d*e*f)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(f*x + e) + a*sinh(f*x + e) - (b
*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b))/((a^2 + b^
2)*f^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(dx+c\right)^2}{b\sinh\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^2/(b*sinh(f*x + e) + a), x)
```

maple [F] time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\left(dx+c\right)^2}{a+b\sinh\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2/(a+b*sinh(f*x+e)),x)
[Out] int((d*x+c)^2/(a+b*sinh(f*x+e)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^2 \log\left(\frac{be^{(-fx-e)}-a-\sqrt{a^2+b^2}}{be^{(-fx-e)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\, f} + \int \frac{2\,d^2x^2}{b\left(e^{(fx+e)}-e^{(-fx-e)}\right)+2\,a} + \frac{4\,cdx}{b\left(e^{(fx+e)}-e^{(-fx-e)}\right)+2\,a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sinh(f*x+e)),x, algorithm="maxima")
[Out] c^2*log((b*e^(-f*x - e) - a - sqrt(a^2 + b^2))/(b*e^(-f*x - e) - a + sqrt(a
^2 + b^2)))/(sqrt(a^2 + b^2)*f) + integrate(2*d^2*x^2/(b*(e^(f*x + e) - e^(
-f*x - e)) + 2*a) + 4*c*d*x/(b*(e^(f*x + e) - e^(-f*x - e)) + 2*a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c+d\,x)^2}{a+b\sinh\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^2/(a + b*sinh(e + f*x)),x)
[Out] int((c + d*x)^2/(a + b*sinh(e + f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^2}{a+b\sinh\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2/(a+b*sinh(f*x+e)),x)
[Out] Integral((c + d*x)**2/(a + b*sinh(e + f*x)), x)
```

3.171 $\int \frac{c+dx}{a+b\sinh(e+fx)}\,dx$

Optimal. Leaf size=187

$$\frac{(c+dx)\log\left(\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}+1\right)}{f\sqrt{a^2+b^2}}-\frac{(c+dx)\log\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}+1\right)}{f\sqrt{a^2+b^2}}+\frac{d\text{Li}_2\left(-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^2\sqrt{a^2+b^2}}-\frac{d\text{Li}_2\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{f^2\sqrt{a^2+b^2}}$$

```
[Out] (d*x+c)*ln(1+b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/f/(a^2+b^2)^(1/2)-(d*x+c)*ln
(1+b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/f/(a^2+b^2)^(1/2)+d*polylog(2,-b*exp(f
*x+e)/(a-(a^2+b^2)^(1/2)))/f^2/(a^2+b^2)^(1/2)-d*polylog(2,-b*exp(f*x+e)/(a
+(a^2+b^2)^(1/2)))/f^2/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.37, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3322, 2264, 2190, 2279, 2391}

$$\frac{d\text{PolyLog}\left(2,-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^2\sqrt{a^2+b^2}}-\frac{d\text{PolyLog}\left(2,-\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}\right)}{f^2\sqrt{a^2+b^2}}+\frac{(c+dx)\log\left(\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}+1\right)}{f\sqrt{a^2+b^2}}-\frac{(c+dx)\log\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}+1\right)}{f\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)/(a + b*Sinh[e + f*x]),x]
```

```
[Out] ((c + d*x)*Log[1 + (b*E^(e + f*x))/(a - Sqrt[a^2 + b^2])])/(Sqrt[a^2 + b^2]
*f) - ((c + d*x)*Log[1 + (b*E^(e + f*x))/(a + Sqrt[a^2 + b^2])])/(Sqrt[a^2
+ b^2]*f) + (d*PolyLog[2, -((b*E^(e + f*x))/(a - Sqrt[a^2 + b^2]))])/(Sqrt[
a^2 + b^2]*f^2) - (d*PolyLog[2, -((b*E^(e + f*x))/(a + Sqrt[a^2 + b^2]))])/
(Sqrt[a^2 + b^2]*f^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
```

```
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{c+dx}{a+b\sinh(e+fx)}\,dx &= 2\int \frac{e^{e+fx}(c+dx)}{-b+2ae^{e+fx}+be^{2(e+fx)}}\,dx \\
&= \frac{(2b)\int \frac{e^{e+fx}(c+dx)}{2a-2\sqrt{a^2+b^2}+2be^{e+fx}}\,dx}{\sqrt{a^2+b^2}} - \frac{(2b)\int \frac{e^{e+fx}(c+dx)}{2a+2\sqrt{a^2+b^2}+2be^{e+fx}}\,dx}{\sqrt{a^2+b^2}} \\
&= \frac{(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{d\int \log\left(1+\frac{2be^{e+fx}}{2a-2\sqrt{a^2+b^2}}\right) \cdots}{\sqrt{a^2+b^2}\,f} \cdots \\
&= \frac{(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{d\,\mathrm{Subst}\left(\int \frac{\log\left(1+\frac{2bx}{2a-2\sqrt{a^2 \cdots}}\right)}{x} \cdots\right)}{\sqrt{a^2+b^2} \cdots} \cdots \\
&= \frac{(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} - \frac{(c+dx)\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f} + \frac{d\mathrm{Li}_2\left(-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f^2} - \cdots
\end{aligned}$$

Mathematica [A] time = 0.04, size = 142, normalized size = 0.76

$$\frac{f(c+dx)\left(\log\left(\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}+1\right)-\log\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}+1\right)\right)+d\text{Li}_2\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}-a}\right)-d\text{Li}_2\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{f^2\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)/(a + b*Sinh[e + f*x]),x]
```

```
[Out] (f*(c + d*x)*(Log[1 + (b*E^(e + f*x))/(a - Sqrt[a^2 + b^2])] - Log[1 + (b*E
^(e + f*x))/(a + Sqrt[a^2 + b^2])]) + d*PolyLog[2, (b*E^(e + f*x))/(-a + Sq
rt[a^2 + b^2])] - d*PolyLog[2, -((b*E^(e + f*x))/(a + Sqrt[a^2 + b^2]))])/(
Sqrt[a^2 + b^2]*f^2)
```

fricas [B] time = 0.47, size = 455, normalized size = 2.43

$$bd\sqrt{\frac{a^2+b^2}{b^2}}\,\text{Li}_2\left(\frac{a\cosh\left(fx+e\right)+a\sinh\left(fx+e\right)+\left(b\cosh\left(fx+e\right)+b\sinh\left(fx+e\right)\right)\sqrt{\frac{a^2+b^2}{b^2}}-b}{b}+1\right)-bd\sqrt{\frac{a^2+b^2}{b^2}}\,\text{Li}_2\left(\frac{a\cosh\left(fx+e\right)+a\sinh\left(fx+e\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] (b*d*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(f*x + e) + a*sinh(f*x + e) + (b*co
sh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - b*d*sqrt
((a^2 + b^2)/b^2)*dilog((a*cosh(f*x + e) + a*sinh(f*x + e) - (b*cosh(f*x +
e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (b*d*e - b*c*f)*s
qrt((a^2 + b^2)/b^2)*log(2*b*cosh(f*x + e) + 2*b*sinh(f*x + e) + 2*b*sqrt((
a^2 + b^2)/b^2) + 2*a) - (b*d*e - b*c*f)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh
(f*x + e) + 2*b*sinh(f*x + e) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b*d*f*x
 + b*d*e)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(f*x + e) + a*sinh(f*x + e) + (
b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b*d*f*x
 + b*d*e)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(f*x + e) + a*sinh(f*x + e) - (
b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b))/((a^2 + b
^2)*f^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{dx+c}{b\sinh\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)/(b*sinh(f*x + e) + a), x)
```

maple [B] time = 0.09, size = 393, normalized size = 2.10

$$-\frac{2c\,\mathrm{arctanh}\left(\frac{2b\,\mathrm{e}^{fx+e}+2a}{2\sqrt{a^2+b^2}}\right)}{f\sqrt{a^2+b^2}}+\frac{d\ln\left(\frac{-b\,\mathrm{e}^{fx+e}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{f\sqrt{a^2+b^2}}+\frac{d\ln\left(\frac{-b\,\mathrm{e}^{fx+e}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)e}{f^2\sqrt{a^2+b^2}}-\frac{d\ln\left(\frac{b\,\mathrm{e}^{fx+e}+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{f\sqrt{a^2+b^2}}-\frac{d\ln\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(a+b*sinh(f*x+e)),x)
```

```
[Out] -2/f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(f*x+e)+2*a)/(a^2+b^2)^(1/2))+1/
f*d/(a^2+b^2)^(1/2)*ln((-b*exp(f*x+e)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2
)))*x+1/f^2*d/(a^2+b^2)^(1/2)*ln((-b*exp(f*x+e)+(a^2+b^2)^(1/2)-a)/(-a+(a^2
+b^2)^(1/2)))*e-1/f*d/(a^2+b^2)^(1/2)*ln((b*exp(f*x+e)+(a^2+b^2)^(1/2)+a)/(
a+(a^2+b^2)^(1/2)))*x-1/f^2*d/(a^2+b^2)^(1/2)*ln((b*exp(f*x+e)+(a^2+b^2)^(1
/2)+a)/(a+(a^2+b^2)^(1/2)))*e+1/f^2*d/(a^2+b^2)^(1/2)*dilog((-b*exp(f*x+e)+
(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/f^2*d/(a^2+b^2)^(1/2)*dilog((b*e
xp(f*x+e)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+2/f^2*d*e/(a^2+b^2)^(1/2)
*arctanh(1/2*(2*b*exp(f*x+e)+2*a)/(a^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$d\int\frac{2\,x}{b\left(e^{(fx+e)}-e^{(-fx-e)}\right)+2\,a}\,dx+\frac{c\log\left(\frac{be^{(-fx-e)}-a-\sqrt{a^2+b^2}}{be^{(-fx-e)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] d*integrate(2*x/(b*(e^(f*x + e) - e^(-f*x - e)) + 2*a), x) + c*log((b*e^(-f
*x - e) - a - sqrt(a^2 + b^2))/(b*e^(-f*x - e) - a + sqrt(a^2 + b^2)))/(sqr
t(a^2 + b^2)*f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{c+d\,x}{a+b\sinh\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/(a + b*sinh(e + f*x)),x)
```

```
[Out] int((c + d*x)/(a + b*sinh(e + f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{c+dx}{a+b\sinh\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sinh(f*x+e)),x)
[Out] Integral((c + d*x)/(a + b*sinh(e + f*x)), x)
```

3.172 $\int \frac{1}{(c+dx)(a+b\sinh(e+fx))}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c+dx)(a+b\sinh(e+fx))},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)/(a+b*sinh(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)(a+b\sinh(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)*(a + b*Sinh[e + f*x])),x]
```

```
[Out] Defer[Int][1/((c + d*x)*(a + b*Sinh[e + f*x])), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)(a+b\sinh(e+fx))}\,dx = \int \frac{1}{(c+dx)(a+b\sinh(e+fx))}\,dx$$

Mathematica [A] time = 0.99, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)(a+b\sinh(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)*(a + b*Sinh[e + f*x])),x]
```

```
[Out] Integrate[1/((c + d*x)*(a + b*Sinh[e + f*x])), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{adx+ac+(bdx+bc)\sinh\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sinh(f*x+e)),x, algorithm="fricas")
[Out] integral(1/(a*d*x + a*c + (b*d*x + b*c)*sinh(f*x + e)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(b\sinh\left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sinh(f*x+e)),x, algorithm="giac")
[Out] integrate(1/((d*x + c)*(b*sinh(f*x + e) + a)), x)
```

maple [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(a+b\sinh\left(fx+e\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)/(a+b*sinh(f*x+e)),x)
[Out] int(1/(d*x+c)/(a+b*sinh(f*x+e)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(b\sinh\left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sinh(f*x+e)),x, algorithm="maxima")
[Out] integrate(1/((d*x + c)*(b*sinh(f*x + e) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\sinh\left(e+f\,x\right)\right)\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*sinh(e + f*x))*(c + d*x)),x)
[Out] int(1/((a + b*sinh(e + f*x))*(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\sinh\left(e+fx\right)\right)\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sinh(f*x+e)),x)
```

```
[Out] Integral(1/((a + b*sinh(e + f*x))*(c + d*x)), x)
```

3.173 $\int \frac{1}{(c+dx)^2(a+b\sinh(e+fx))}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c+dx)^2(a+b\sinh(e+fx))},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)^2/(a+b*sinh(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)^2(a+b\sinh(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)^2*(a + b*Sinh[e + f*x])),x]
[Out] Defer[Int][1/((c + d*x)^2*(a + b*Sinh[e + f*x])), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)^2(a+b\sinh(e+fx))}\,dx = \int \frac{1}{(c+dx)^2(a+b\sinh(e+fx))}\,dx$$

Mathematica [A] time = 0.92, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)^2(a+b\sinh(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)^2*(a + b*Sinh[e + f*x])),x]
[Out] Integrate[1/((c + d*x)^2*(a + b*Sinh[e + f*x])), x]
```

fricas [A] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{ad^2x^2 + 2\,acdx + ac^2 + \left(bd^2x^2 + 2\,bcdx + bc^2\right)\sinh\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*d^2*x^2 + 2*a*c*d*x + a*c^2 + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)
*sinh(f*x + e)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2 \left(b \sinh \left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)^2*(b*sinh(f*x + e) + a)), x)
```

maple [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2 \left(a+b \sinh \left(fx+e\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^2/(a+b*sinh(f*x+e)),x)
```

```
[Out] int(1/(d*x+c)^2/(a+b*sinh(f*x+e)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2 \left(b \sinh \left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*x + c)^2*(b*sinh(f*x + e) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b \sinh \left(e+f\,x\right)\right)\,{\left(c+d\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*sinh(e + f*x))*(c + d*x)^2),x)
```

```
[Out] int(1/((a + b*sinh(e + f*x))*(c + d*x)^2), x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \sinh\left(e + fx\right)\right)(c + dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)**2/(a+b*sinh(f*x+e)),x)
```

```
[Out] Integral(1/((a + b*sinh(e + f*x))*(c + d*x)**2), x)
```

3.174 $\int \frac{(c+dx)^2}{(a+b\sinh(e+fx))^2}\,dx$

Optimal. Leaf size=549

$$\frac{2ad(c+dx)\text{Li}_2\left(-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^2\left(a^2+b^2\right)^{3/2}}-\frac{2ad(c+dx)\text{Li}_2\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{f^2\left(a^2+b^2\right)^{3/2}}+\frac{2d(c+dx)\log\left(\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}+1\right)}{f^2\left(a^2+b^2\right)}+\frac{2d(c+dx)\log\left(\frac{be}{\sqrt{a^2}}\right.}{f^2\left(a^2+b^2\right.}$$

```
[Out] -(d*x+c)^2/(a^2+b^2)/f+2*d*(d*x+c)*ln(1+b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/(
a^2+b^2)/f^2+a*(d*x+c)^2*ln(1+b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(
3/2)/f+2*d*(d*x+c)*ln(1+b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/f^2-a*(
d*x+c)^2*ln(1+b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/f+2*d^2*pol
ylog(2,-b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/f^3+2*a*d*(d*x+c)*polyl
og(2,-b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/f^2+2*d^2*polylog(2
,-b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/f^3-2*a*d*(d*x+c)*polylog(2,-
b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/f^2-2*a*d^2*polylog(3,-b*
exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/f^3+2*a*d^2*polylog(3,-b*ex
p(f*x+e)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/f^3-b*(d*x+c)^2*cosh(f*x+e)/(
a^2+b^2)/f/(a+b*sinh(f*x+e))
```

Rubi [A] time = 1.04, antiderivative size = 549, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {3324, 3322, 2264, 2190, 2531, 2282, 6589, 5561, 2279, 2391}

$$\frac{2ad(c+dx)\text{PolyLog}\left(2,-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^2\left(a^2+b^2\right)^{3/2}}-\frac{2ad(c+dx)\text{PolyLog}\left(2,-\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}\right)}{f^2\left(a^2+b^2\right)^{3/2}}+\frac{2d^2\text{PolyLog}\left(2,-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^3\left(a^2+b^2\right)}+\frac{2d^2\text{P}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2/(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] -((c + d*x)^2/((a^2 + b^2)*f)) + (2*d*(c + d*x)*Log[1 + (b*E^(e + f*x))/(a
- Sqrt[a^2 + b^2])])/((a^2 + b^2)*f^2) + (a*(c + d*x)^2*Log[1 + (b*E^(e + f
*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*f) + (2*d*(c + d*x)*Log[1 +
 (b*E^(e + f*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)*f^2) - (a*(c + d*x)^2
*Log[1 + (b*E^(e + f*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*f) + (2
*d^2*PolyLog[2, -((b*E^(e + f*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)*f^3
) + (2*a*d*(c + d*x)*PolyLog[2, -((b*E^(e + f*x))/(a - Sqrt[a^2 + b^2]))])/
((a^2 + b^2)^(3/2)*f^2) + (2*d^2*PolyLog[2, -((b*E^(e + f*x))/(a + Sqrt[a^2
 + b^2]))])/((a^2 + b^2)*f^3) - (2*a*d*(c + d*x)*PolyLog[2, -((b*E^(e + f*x
))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*f^2) - (2*a*d^2*PolyLog[3, -
```

```
((b*E^(e + f*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*f^3) + (2*a*d^
2*PolyLog[3, -((b*E^(e + f*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*
f^3) - (b*(c + d*x)^2*Cosh[e + f*x])/((a^2 + b^2)*f*(a + b*Sinh[e + f*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(c+dx)^2}{(a+b\sinh(e+fx))^2}\,dx = -\frac{b(c+dx)^2\cosh(e+fx)}{\left(a^2+b^2\right)f(a+b\sinh(e+fx))} + \frac{a\int \frac{(c+dx)^2}{a+b\sinh(e+fx)}\,dx}{a^2+b^2} + \frac{(2bd)\int \frac{(c+dx)\cosh(e+fx)}{a+b\sinh(e+fx)}\,d\!\!}{\left(a^2+b^2\right)f}$$

$$= -\frac{(c+dx)^2}{\left(a^2+b^2\right)f} - \frac{b(c+dx)^2\cosh(e+fx)}{\left(a^2+b^2\right)f(a+b\sinh(e+fx))} + \frac{(2a)\int \frac{e^{e+fx}(c+dx)^2}{-b+2ae^{e+fx}+be^{2(e+fx)}}\,dx}{a^2+b^2} + \frac{(2l}{}$$

$$= -\frac{(c+dx)^2}{\left(a^2+b^2\right)f} + \frac{2d(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)f^2} + \frac{2d(c+dx)\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)f^2} - \frac{}{(}$$

$$= -\frac{(c+dx)^2}{\left(a^2+b^2\right)f} + \frac{2d(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)f^2} + \frac{a(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}f} + \frac{2}{}$$

$$= -\frac{(c+dx)^2}{\left(a^2+b^2\right)f} + \frac{2d(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)f^2} + \frac{a(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}f} + \frac{2}{}$$

$$= -\frac{(c+dx)^2}{\left(a^2+b^2\right)f} + \frac{2d(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)f^2} + \frac{a(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}f} + \frac{2}{}$$

$$= -\frac{(c+dx)^2}{\left(a^2+b^2\right)f} + \frac{2d(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)f^2} + \frac{a(c+dx)^2\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}f} + \frac{2}{}$$

Mathematica [A] time = 1.74, size = 428, normalized size = 0.78

$$-\frac{a\left(-f^2(c+dx)^2\log\left(\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}+1\right)+f^2(c+dx)^2\log\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}+1\right)-2df(c+dx)\mathrm{Li}_2\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}-a}\right)+2df(c+dx)\mathrm{Li}_2\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)+2d^2\mathrm{Li}_3\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}-a}\right)-2d^2\mathrm{I}}{\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2/(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] (-(f^2*(c + d*x)^2) + 2*d*f*(c + d*x)*Log[1 + (b*E^(e + f*x))/(a - Sqrt[a^2
 + b^2])] + 2*d*f*(c + d*x)*Log[1 + (b*E^(e + f*x))/(a + Sqrt[a^2 + b^2])]
+ 2*d^2*PolyLog[2, (b*E^(e + f*x))/(-a + Sqrt[a^2 + b^2])] + 2*d^2*PolyLog[
```

```
2, -((b*E^(e + f*x))/(a + Sqrt[a^2 + b^2]))] - (a*(-(f^2*(c + d*x)^2*Log[1
+ (b*E^(e + f*x))/(a - Sqrt[a^2 + b^2])]) + f^2*(c + d*x)^2*Log[1 + (b*E^(e
 + f*x))/(a + Sqrt[a^2 + b^2])] - 2*d*f*(c + d*x)*PolyLog[2, (b*E^(e + f*x)
)/(-a + Sqrt[a^2 + b^2])] + 2*d*f*(c + d*x)*PolyLog[2, -((b*E^(e + f*x))/(a
 + Sqrt[a^2 + b^2]))] + 2*d^2*PolyLog[3, (b*E^(e + f*x))/(-a + Sqrt[a^2 + b
^2])] - 2*d^2*PolyLog[3, -((b*E^(e + f*x))/(a + Sqrt[a^2 + b^2]))]))/Sqrt[a
^2 + b^2] - (b*f^2*(c + d*x)^2*Cosh[e + f*x])/(a + b*Sinh[e + f*x]))/((a^2
+ b^2)*f^3)
```

fricas [C] time = 0.79, size = 3957, normalized size = 7.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] -(2*(a^2*b + b^3)*d^2*e^2 - 4*(a^2*b + b^3)*c*d*e*f + 2*(a^2*b + b^3)*c^2*f
^2 + 2*((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*c*d*f^2*x - (a^2*b + b^
3)*d^2*e^2 + 2*(a^2*b + b^3)*c*d*e*f)*cosh(f*x + e)^2 + 2*((a^2*b + b^3)*d^
2*f^2*x^2 + 2*(a^2*b + b^3)*c*d*f^2*x - (a^2*b + b^3)*d^2*e^2 + 2*(a^2*b +
b^3)*c*d*e*f)*sinh(f*x + e)^2 + 2*(a*b^2*d^2*cosh(f*x + e)^2 + a*b^2*d^2*si
nh(f*x + e)^2 + 2*a^2*b*d^2*cosh(f*x + e) - a*b^2*d^2 + 2*(a*b^2*d^2*cosh(f
*x + e) + a^2*b*d^2)*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cos
h(f*x + e) + a*sinh(f*x + e) + (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^
2 + b^2)/b^2))/b) - 2*(a*b^2*d^2*cosh(f*x + e)^2 + a*b^2*d^2*sinh(f*x + e)^
2 + 2*a^2*b*d^2*cosh(f*x + e) - a*b^2*d^2 + 2*(a*b^2*d^2*cosh(f*x + e) + a^
2*b*d^2)*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(f*x + e) +
 a*sinh(f*x + e) - (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2
))/b) + 2*((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*c*d*f^2*x - 2*(a^3 +
 a*b^2)*d^2*e^2 + 4*(a^3 + a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*cosh(f*x
 + e) - 2*((a^2*b + b^3)*d^2*cosh(f*x + e)^2 + (a^2*b + b^3)*d^2*sinh(f*x +
 e)^2 + 2*(a^3 + a*b^2)*d^2*cosh(f*x + e) - (a^2*b + b^3)*d^2 + 2*((a^2*b +
 b^3)*d^2*cosh(f*x + e) + (a^3 + a*b^2)*d^2)*sinh(f*x + e) - (a*b^2*d^2*f*x
 + a*b^2*c*d*f - (a*b^2*d^2*f*x + a*b^2*c*d*f)*cosh(f*x + e)^2 - (a*b^2*d^2
*f*x + a*b^2*c*d*f)*sinh(f*x + e)^2 - 2*(a^2*b*d^2*f*x + a^2*b*c*d*f)*cosh(
f*x + e) - 2*(a^2*b*d^2*f*x + a^2*b*c*d*f + (a*b^2*d^2*f*x + a*b^2*c*d*f)*c
osh(f*x + e))*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))*dilog((a*cosh(f*x + e)
+ a*sinh(f*x + e) + (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^
2) - b)/b + 1) - 2*((a^2*b + b^3)*d^2*cosh(f*x + e)^2 + (a^2*b + b^3)*d^2*s
inh(f*x + e)^2 + 2*(a^3 + a*b^2)*d^2*cosh(f*x + e) - (a^2*b + b^3)*d^2 + 2*
((a^2*b + b^3)*d^2*cosh(f*x + e) + (a^3 + a*b^2)*d^2)*sinh(f*x + e) + (a*b^
2*d^2*f*x + a*b^2*c*d*f - (a*b^2*d^2*f*x + a*b^2*c*d*f)*cosh(f*x + e)^2 - (
a*b^2*d^2*f*x + a*b^2*c*d*f)*sinh(f*x + e)^2 - 2*(a^2*b*d^2*f*x + a^2*b*c*d
*f)*cosh(f*x + e) - 2*(a^2*b*d^2*f*x + a^2*b*c*d*f + (a*b^2*d^2*f*x + a*b^2
*c*d*f)*cosh(f*x + e))*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))*dilog((a*cosh(
```

f*x + e) + a*sinh(f*x + e) - (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2
+ b^2)/b^2) - b)/b + 1) - (2*(a^2*b + b^3)*d^2*e - 2*(a^2*b + b^3)*c*d*f -
2*((a^2*b + b^3)*d^2*e - (a^2*b + b^3)*c*d*f)*cosh(f*x + e)^2 - 2*((a^2*b +
b^3)*d^2*e - (a^2*b + b^3)*c*d*f)*sinh(f*x + e)^2 - 4*((a^3 + a*b^2)*d^2*e
- (a^3 + a*b^2)*c*d*f)*cosh(f*x + e) - 4*((a^3 + a*b^2)*d^2*e - (a^3 + a*b
^2)*c*d*f + ((a^2*b + b^3)*d^2*e - (a^2*b + b^3)*c*d*f)*cosh(f*x + e))*sinh
(f*x + e) + (a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2 - (a*b^2*d^2*e
^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(f*x + e)^2 - (a*b^2*d^2*e^2 - 2*
a*b^2*c*d*e*f + a*b^2*c^2*f^2)*sinh(f*x + e)^2 - 2*(a^2*b*d^2*e^2 - 2*a^2*b
*c*d*e*f + a^2*b*c^2*f^2)*cosh(f*x + e) - 2*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*
f + a^2*b*c^2*f^2 + (a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(
f*x + e))*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))*log(2*b*cosh(f*x + e) + 2*b
*sinh(f*x + e) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (2*(a^2*b + b^3)*d^2*e
- 2*(a^2*b + b^3)*c*d*f - 2*((a^2*b + b^3)*d^2*e - (a^2*b + b^3)*c*d*f)*cos
h(f*x + e)^2 - 2*((a^2*b + b^3)*d^2*e - (a^2*b + b^3)*c*d*f)*sinh(f*x + e)^
2 - 4*((a^3 + a*b^2)*d^2*e - (a^3 + a*b^2)*c*d*f)*cosh(f*x + e) - 4*((a^3 +
a*b^2)*d^2*e - (a^3 + a*b^2)*c*d*f + ((a^2*b + b^3)*d^2*e - (a^2*b + b^3)*
c*d*f)*cosh(f*x + e))*sinh(f*x + e) - (a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*
b^2*c^2*f^2 - (a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(f*x +
e)^2 - (a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*sinh(f*x + e)^2 -
2*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(f*x + e) - 2*(a^2*
b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2 + (a*b^2*d^2*e^2 - 2*a*b^2*c*d*
e*f + a*b^2*c^2*f^2)*cosh(f*x + e))*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))*l
og(2*b*cosh(f*x + e) + 2*b*sinh(f*x + e) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a)
+ (2*(a^2*b + b^3)*d^2*f*x + 2*(a^2*b + b^3)*d^2*e - 2*((a^2*b + b^3)*d^2*
f*x + (a^2*b + b^3)*d^2*e)*cosh(f*x + e)^2 - 2*((a^2*b + b^3)*d^2*f*x + (a^
2*b + b^3)*d^2*e)*sinh(f*x + e)^2 - 4*((a^3 + a*b^2)*d^2*f*x + (a^3 + a*b^2
)*d^2*e)*cosh(f*x + e) - 4*((a^3 + a*b^2)*d^2*f*x + (a^3 + a*b^2)*d^2*e + (
(a^2*b + b^3)*d^2*f*x + (a^2*b + b^3)*d^2*e)*cosh(f*x + e))*sinh(f*x + e) +
(a*b^2*d^2*f^2*x^2 + 2*a*b^2*c*d*f^2*x - a*b^2*d^2*e^2 + 2*a*b^2*c*d*e*f -
(a*b^2*d^2*f^2*x^2 + 2*a*b^2*c*d*f^2*x - a*b^2*d^2*e^2 + 2*a*b^2*c*d*e*f)*
cosh(f*x + e)^2 - (a*b^2*d^2*f^2*x^2 + 2*a*b^2*c*d*f^2*x - a*b^2*d^2*e^2 +
2*a*b^2*c*d*e*f)*sinh(f*x + e)^2 - 2*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*c*d*f^2*x
- a^2*b*d^2*e^2 + 2*a^2*b*c*d*e*f)*cosh(f*x + e) - 2*(a^2*b*d^2*f^2*x^2 +
2*a^2*b*c*d*f^2*x - a^2*b*d^2*e^2 + 2*a^2*b*c*d*e*f + (a*b^2*d^2*f^2*x^2 +
2*a*b^2*c*d*f^2*x - a*b^2*d^2*e^2 + 2*a*b^2*c*d*e*f)*cosh(f*x + e))*sinh(f*
x + e))*sqrt((a^2 + b^2)/b^2))*log(-(a*cosh(f*x + e) + a*sinh(f*x + e) + (b
*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b) + (2*(a^2*b
+ b^3)*d^2*f*x + 2*(a^2*b + b^3)*d^2*e - 2*((a^2*b + b^3)*d^2*f*x + (a^2*b
+ b^3)*d^2*e)*cosh(f*x + e)^2 - 2*((a^2*b + b^3)*d^2*f*x + (a^2*b + b^3)*d
^2*e)*sinh(f*x + e)^2 - 4*((a^3 + a*b^2)*d^2*f*x + (a^3 + a*b^2)*d^2*e)*cos
h(f*x + e) - 4*((a^3 + a*b^2)*d^2*f*x + (a^3 + a*b^2)*d^2*e + ((a^2*b + b^3
)*d^2*f*x + (a^2*b + b^3)*d^2*e)*cosh(f*x + e))*sinh(f*x + e) - (a*b^2*d^2*
f^2*x^2 + 2*a*b^2*c*d*f^2*x - a*b^2*d^2*e^2 + 2*a*b^2*c*d*e*f - (a*b^2*d^2*
f^2*x^2 + 2*a*b^2*c*d*f^2*x - a*b^2*d^2*e^2 + 2*a*b^2*c*d*e*f)*cosh(f*x + e

```
)^2 - (a*b^2*d^2*f^2*x^2 + 2*a*b^2*c*d*f^2*x - a*b^2*d^2*e^2 + 2*a*b^2*c*d*
e*f)*sinh(f*x + e)^2 - 2*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*c*d*f^2*x - a^2*b*d^2
*e^2 + 2*a^2*b*c*d*e*f)*cosh(f*x + e) - 2*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*c*d*
f^2*x - a^2*b*d^2*e^2 + 2*a^2*b*c*d*e*f + (a*b^2*d^2*f^2*x^2 + 2*a*b^2*c*d*
f^2*x - a*b^2*d^2*e^2 + 2*a*b^2*c*d*e*f)*cosh(f*x + e))*sinh(f*x + e))*sqrt
((a^2 + b^2)/b^2))*log(-(a*cosh(f*x + e) + a*sinh(f*x + e) - (b*cosh(f*x +
e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*((a^3 + a*b^2)*d^2*
f^2*x^2 + 2*(a^3 + a*b^2)*c*d*f^2*x - 2*(a^3 + a*b^2)*d^2*e^2 + 4*(a^3 + a*
b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2 + 2*((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^
2*b + b^3)*c*d*f^2*x - (a^2*b + b^3)*d^2*e^2 + 2*(a^2*b + b^3)*c*d*e*f)*cos
h(f*x + e))*sinh(f*x + e))/((a^4*b + 2*a^2*b^3 + b^5)*f^3*cosh(f*x + e)^2 +
 (a^4*b + 2*a^2*b^3 + b^5)*f^3*sinh(f*x + e)^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4
)*f^3*cosh(f*x + e) - (a^4*b + 2*a^2*b^3 + b^5)*f^3 + 2*((a^4*b + 2*a^2*b^3
 + b^5)*f^3*cosh(f*x + e) + (a^5 + 2*a^3*b^2 + a*b^4)*f^3)*sinh(f*x + e))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^2}{\left(b\sinh\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^2/(b*sinh(f*x + e) + a)^2, x)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^2}{\left(a+b\sinh\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2/(a+b*sinh(f*x+e))^2,x)
```

```
[Out] int((d*x+c)^2/(a+b*sinh(f*x+e))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,ad^2f\int \frac{x^2e^{\left(fx+e\right)}}{a^2bfe^{\left(2\,fx+2\,e\right)}+b^3fe^{\left(2\,fx+2\,e\right)}+2\,a^3fe^{\left(fx+e\right)}+2\,ab^2fe^{\left(fx+e\right)}-a^2bf-b^3f}\,dx+4\,acdf\int \frac{}{a^2bfe^{\left(2\,fx+2\,e\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 2*a*d^2*f*integrate(x^2*e^(f*x + e)/(a^2*b*f*e^(2*f*x + 2*e) + b^3*f*e^(2*f
*x + 2*e) + 2*a^3*f*e^(f*x + e) + 2*a*b^2*f*e^(f*x + e) - a^2*b*f - b^3*f),
 x) + 4*a*c*d*f*integrate(x*e^(f*x + e)/(a^2*b*f*e^(2*f*x + 2*e) + b^3*f*e^
(2*f*x + 2*e) + 2*a^3*f*e^(f*x + e) + 2*a*b^2*f*e^(f*x + e) - a^2*b*f - b^3
*f), x) + 2*b*c*d*(a*log((b*e^(f*x + e) + a - sqrt(a^2 + b^2))/(b*e^(f*x +
e) + a + sqrt(a^2 + b^2)))/((a^2*b + b^3)*sqrt(a^2 + b^2)*f^2) - 2*(f*x + e
)/((a^2*b + b^3)*f^2) + log(b*e^(2*f*x + 2*e) + 2*a*e^(f*x + e) - b)/((a^2*
b + b^3)*f^2)) - 4*a*d^2*integrate(x*e^(f*x + e)/(a^2*b*f*e^(2*f*x + 2*e) +
 b^3*f*e^(2*f*x + 2*e) + 2*a^3*f*e^(f*x + e) + 2*a*b^2*f*e^(f*x + e) - a^2*
b*f - b^3*f), x) + 4*b*d^2*integrate(x/(a^2*b*f*e^(2*f*x + 2*e) + b^3*f*e^(
2*f*x + 2*e) + 2*a^3*f*e^(f*x + e) + 2*a*b^2*f*e^(f*x + e) - a^2*b*f - b^3*
f), x) + c^2*(a*log((b*e^(-f*x - e) - a - sqrt(a^2 + b^2))/(b*e^(-f*x - e)
- a + sqrt(a^2 + b^2)))/((a^2 + b^2)^(3/2)*f) - 2*(a*e^(-f*x - e) + b)/((a^
2*b + b^3 + 2*(a^3 + a*b^2)*e^(-f*x - e) - (a^2*b + b^3)*e^(-2*f*x - 2*e))*
f)) - 2*a*c*d*log((b*e^(f*x + e) + a - sqrt(a^2 + b^2))/(b*e^(f*x + e) + a
+ sqrt(a^2 + b^2)))/((a^2 + b^2)^(3/2)*f^2) + 2*(b*d^2*x^2 + 2*b*c*d*x - (a
*d^2*x^2*e^e + 2*a*c*d*x*e^e)*e^(f*x))/(a^2*b*f + b^3*f - (a^2*b*f*e^(2*e)
+ b^3*f*e^(2*e))*e^(2*f*x) - 2*(a^3*f*e^e + a*b^2*f*e^e)*e^(f*x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c+d\,x)^2}{\left(a+b\sinh\left(e+f\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^2/(a + b*sinh(e + f*x))^2,x)
```

```
[Out] int((c + d*x)^2/(a + b*sinh(e + f*x))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2/(a+b*sinh(f*x+e))**2,x)
```

```
[Out] Timed out
```

3.175 $\int \frac{c+dx}{(a+b\sinh(e+fx))^2}\,dx$

Optimal. Leaf size=254

$$\frac{a(c+dx)\log\left(\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}+1\right)}{f\left(a^2+b^2\right)^{3/2}}-\frac{a(c+dx)\log\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}+1\right)}{f\left(a^2+b^2\right)^{3/2}}-\frac{b(c+dx)\cosh(e+fx)}{f\left(a^2+b^2\right)(a+b\sinh(e+fx))}+\frac{ad\mathrm{Li}_2\left(-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right.}{f^2\left(a^2+b^2\right)^{3/2}}$$

```
[Out] d*ln(a+b*sinh(f*x+e))/(a^2+b^2)/f^2+a*(d*x+c)*ln(1+b*exp(f*x+e)/(a-(a^2+b^2
)^(1/2)))/(a^2+b^2)^(3/2)/f-a*(d*x+c)*ln(1+b*exp(f*x+e)/(a+(a^2+b^2)^(1/2))
)/(a^2+b^2)^(3/2)/f+a*d*polylog(2,-b*exp(f*x+e)/(a-(a^2+b^2)^(1/2)))/(a^2+b
^2)^(3/2)/f^2-a*d*polylog(2,-b*exp(f*x+e)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3
/2)/f^2-b*(d*x+c)*cosh(f*x+e)/(a^2+b^2)/f/(a+b*sinh(f*x+e))
```

Rubi [A] time = 0.44, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {3324, 3322, 2264, 2190, 2279, 2391, 2668, 31}

$$\frac{ad\,\mathrm{PolyLog}\left(2,-\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{f^2\left(a^2+b^2\right)^{3/2}}-\frac{ad\,\mathrm{PolyLog}\left(2,-\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}\right)}{f^2\left(a^2+b^2\right)^{3/2}}+\frac{a(c+dx)\log\left(\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}+1\right)}{f\left(a^2+b^2\right)^{3/2}}-\frac{a(c+dx)\log\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}\right.}{f\left(a^2+b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)/(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] (a*(c + d*x)*Log[1 + (b*E^(e + f*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)^(
3/2)*f) - (a*(c + d*x)*Log[1 + (b*E^(e + f*x))/(a + Sqrt[a^2 + b^2])])/((a^
2 + b^2)^(3/2)*f) + (d*Log[a + b*Sinh[e + f*x]])/((a^2 + b^2)*f^2) + (a*d*P
olyLog[2, -((b*E^(e + f*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*f^2
) - (a*d*PolyLog[2, -((b*E^(e + f*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)
^(3/2)*f^2) - (b*(c + d*x)*Cosh[e + f*x])/((a^2 + b^2)*f*(a + b*Sinh[e + f*
x]))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rubi steps

$$\int \frac{c+dx}{(a+b\sinh(e+fx))^2}\,dx = -\frac{b(c+dx)\cosh(e+fx)}{\left(a^2+b^2\right)f(a+b\sinh(e+fx))} + \frac{a\int \frac{c+dx}{a+b\sinh(e+fx)}\,dx}{a^2+b^2} + \frac{(bd)\int \frac{\cosh(e+fx)}{a+b\sinh(e+fx)}\,dx}{\left(a^2+b^2\right)f}$$

$$= -\frac{b(c+dx)\cosh(e+fx)}{\left(a^2+b^2\right)f(a+b\sinh(e+fx))} + \frac{(2a)\int \frac{e^{e+fx}(c+dx)}{-b+2ae^{e+fx}+be^{2(e+fx)}}\,dx}{a^2+b^2} + \frac{d\,\text{Subst}\left(\int \frac{1}{a+x}\right.}{\left(a^2\right.}$$

$$= \frac{d\log(a+b\sinh(e+fx))}{\left(a^2+b^2\right)f^2} - \frac{b(c+dx)\cosh(e+fx)}{\left(a^2+b^2\right)f(a+b\sinh(e+fx))} + \frac{(2ab)\int \frac{e^{e+fx}(c+}{2a-2\sqrt{a^2+b^2}}}{\left(a^2+b^2\right)^3}$$

$$= \frac{a(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}f} - \frac{a(c+dx)\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}f} + \frac{d\log(a+b\sinh(e}{\left(a^2+b^2\right)f}$$

$$= \frac{a(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}f} - \frac{a(c+dx)\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}f} + \frac{d\log(a+b\sinh(e}{\left(a^2+b^2\right)f}$$

$$= \frac{a(c+dx)\log\left(1+\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}f} - \frac{a(c+dx)\log\left(1+\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}f} + \frac{d\log(a+b\sinh(e}{\left(a^2+b^2\right)f}$$

Mathematica [A] time = 1.03, size = 194, normalized size = 0.76

$$\frac{\frac{a\left(f(c+dx)\left(\log\left(\frac{be^{e+fx}}{a-\sqrt{a^2+b^2}}+1\right)-\log\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}+a}+1\right)\right)+d\text{Li}_2\left(\frac{be^{e+fx}}{\sqrt{a^2+b^2}-a}\right)-d\text{Li}_2\left(-\frac{be^{e+fx}}{a+\sqrt{a^2+b^2}}\right)\right)}{\sqrt{a^2+b^2}} - \frac{bf(c+dx)\cosh(e+fx)}{a+b\sinh(e+fx)} + d\log(a+b\sinh(e+}{f^2\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)/(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] (d*Log[a + b*Sinh[e + f*x]] + (a*(f*(c + d*x)*(Log[1 + (b*E^(e + f*x))/(a -
 Sqrt[a^2 + b^2])] - Log[1 + (b*E^(e + f*x))/(a + Sqrt[a^2 + b^2])]) + d*Po
lyLog[2, (b*E^(e + f*x))/(-a + Sqrt[a^2 + b^2])] - d*PolyLog[2, -((b*E^(e +
 f*x))/(a + Sqrt[a^2 + b^2]))]))/Sqrt[a^2 + b^2] - (b*f*(c + d*x)*Cosh[e +
f*x])/(a + b*Sinh[e + f*x]))/((a^2 + b^2)*f^2)
```

fricas [B] time = 0.50, size = 1717, normalized size = 6.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)/(a+b*sinh(f*x+e))^2,x, algorithm="fricas")

[Out] (2*(a^2*b + b^3)*d*e - 2*(a^2*b + b^3)*c*f - 2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e)*cosh(f*x + e)^2 - 2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e)*sinh(f*x + e)^2 + (a*b^2*d*cosh(f*x + e)^2 + a*b^2*d*sinh(f*x + e)^2 + 2*a^2*b*d*cosh(f*x + e) - a*b^2*d + 2*(a*b^2*d*cosh(f*x + e) + a^2*b*d)*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(f*x + e) + a*sinh(f*x + e) + (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (a*b^2*d*cosh(f*x + e)^2 + a*b^2*d*sinh(f*x + e)^2 + 2*a^2*b*d*cosh(f*x + e) - a*b^2*d + 2*(a*b^2*d*cosh(f*x + e) + a^2*b*d)*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(f*x + e) + a*sinh(f*x + e) - (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (a*b^2*d*f*x + a*b^2*d*e - (a*b^2*d*f*x + a*b^2*d*e)*cosh(f*x + e)^2 - (a*b^2*d*f*x + a*b^2*d*e)*sinh(f*x + e)^2 - 2*(a^2*b*d*f*x + a^2*b*d*e)*cosh(f*x + e) - 2*(a^2*b*d*f*x + a^2*b*d*e + (a*b^2*d*f*x + a*b^2*d*e)*cosh(f*x + e))*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(f*x + e) + a*sinh(f*x + e) + (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b) + (a*b^2*d*f*x + a*b^2*d*e - (a*b^2*d*f*x + a*b^2*d*e)*cosh(f*x + e)^2 - (a*b^2*d*f*x + a*b^2*d*e)*sinh(f*x + e)^2 - 2*(a^2*b*d*f*x + a^2*b*d*e)*cosh(f*x + e) - 2*(a^2*b*d*f*x + a^2*b*d*e + (a*b^2*d*f*x + a*b^2*d*e)*cosh(f*x + e))*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(f*x + e) + a*sinh(f*x + e) - (b*cosh(f*x + e) + b*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*((a^3 + a*b^2)*d*f*x + 2*(a^3 + a*b^2)*d*e - (a^3 + a*b^2)*c*f)*cosh(f*x + e) + ((a^2*b + b^3)*d*cosh(f*x + e)^2 + (a^2*b + b^3)*d*sinh(f*x + e)^2 + 2*(a^3 + a*b^2)*d*cosh(f*x + e) - (a^2*b + b^3)*d + 2*((a^2*b + b^3)*d*cosh(f*x + e) + (a^3 + a*b^2)*d)*sinh(f*x + e) - (a*b^2*d*e - a*b^2*c*f - (a*b^2*d*e - a*b^2*c*f)*cosh(f*x + e)^2 - (a*b^2*d*e - a*b^2*c*f)*sinh(f*x + e)^2 - 2*(a^2*b*d*e - a^2*b*c*f)*cosh(f*x + e) - 2*(a^2*b*d*e - a^2*b*c*f + (a*b^2*d*e - a*b^2*c*f)*cosh(f*x + e))*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))*log(2*b*cosh(f*x + e) + 2*b*sinh(f*x + e) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + ((a^2*b + b^3)*d*cosh(f*x + e)^2 + (a^2*b + b^3)*d*sinh(f*x + e)^2 + 2*(a^3 + a*b^2)*d*cosh(f*x + e) - (a^2*b + b^3)*d + 2*((a^2*b + b^3)*d*cosh(f*x + e) + (a^3 + a*b^2)*d)*sinh(f*x + e) + (a*b^2*d*e - a*b^2*c*f - (a*b^2*d*e - a*b^2*c*f)*cosh(f*x + e)^2 - (a*b^2*d*e - a*b^2*c*f)*sinh(f*x + e)^2 - 2*(a^2*b*d*e - a^2*b*c*f)*cosh(f*x + e) - 2*(a^2*b*d*e - a^2*b*c*f + (a*b^2*d*e - a*b^2*c*f)*cosh(f*x + e))*sinh(f*x + e))*sqrt((a^2 + b^2)/b^2))*log(2*b*cosh(f*x + e) + 2*b*sinh(f*x + e) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*((a^3 + a*b^2)*d*f*x + 2*(a^3 + a*b^2)*d*e - (a^3 + a*b^2)*c*f + 2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e)*cosh(f*x + e))*sinh(f*x + e))/((a^4*b + 2*a^2*b^3 + b^5)*f^2*cosh(f*x + e)^2 + (a^4*b + 2*a^2*b^3 + b^5)*f^2*sinh(f*x + e)^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*f^2*cosh(f*x + e) - (a^4*b + 2*a^2*b^3 + b^5)*f^2 + 2*((a^4*b + 2*a^2*b^3 + b^5)*f^2*cosh(f*x + e) + (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*sinh(f*x + e))

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{dx + c}{\left(b \sinh\left(fx + e\right) + a\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)/(b*sinh(f*x + e) + a)^2, x)
```

maple [B] time = 0.16, size = 519, normalized size = 2.04

$$\frac{2\,(dx+c)\left(a\,\mathrm{e}^{fx+e}-b\right)}{f\left(a^2+b^2\right)\left(b\,\mathrm{e}^{2fx+2e}+2a\,\mathrm{e}^{fx+e}-b\right)}-\frac{2d\ln\left(\mathrm{e}^{fx+e}\right)}{f^2\left(a^2+b^2\right)}+\frac{d\ln\left(b\,\mathrm{e}^{2fx+2e}+2a\,\mathrm{e}^{fx+e}-b\right)}{f^2\left(a^2+b^2\right)}-\frac{2ac\,\mathrm{arctanh}\left(\frac{2b\,\mathrm{e}^{fx+e}+2a}{2\sqrt{a^2+b^2}}\right)}{f\left(a^2+b^2\right)^{\frac{3}{2}}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(a+b*sinh(f*x+e))^2,x)
```

```
[Out] 2*(d*x+c)*(a*exp(f*x+e)-b)/f/(a^2+b^2)/(b*exp(2*f*x+2*e)+2*a*exp(f*x+e)-b)-
2/f^2/(a^2+b^2)*d*ln(exp(f*x+e))+1/f^2/(a^2+b^2)*d*ln(b*exp(2*f*x+2*e)+2*a*
exp(f*x+e)-b)-2/f/(a^2+b^2)^(3/2)*a*c*arctanh(1/2*(2*b*exp(f*x+e)+2*a)/(a^2
+b^2)^(1/2))+1/f/(a^2+b^2)^(3/2)*d*a*ln((-b*exp(f*x+e)+(a^2+b^2)^(1/2)-a)/(
-a+(a^2+b^2)^(1/2)))*x+1/f^2/(a^2+b^2)^(3/2)*d*a*ln((-b*exp(f*x+e)+(a^2+b^2
)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*e-1/f/(a^2+b^2)^(3/2)*d*a*ln((b*exp(f*x+e)
+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/f^2/(a^2+b^2)^(3/2)*d*a*ln((b*
exp(f*x+e)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*e+1/f^2/(a^2+b^2)^(3/2)*
d*a*dilog((-b*exp(f*x+e)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/f^2/(a^
2+b^2)^(3/2)*d*a*dilog((b*exp(f*x+e)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2))
)+2/f^2/(a^2+b^2)^(3/2)*a*d*e*arctanh(1/2*(2*b*exp(f*x+e)+2*a)/(a^2+b^2)^(1
/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(2\,af\int \frac{xe^{\left(fx+e\right)}}{a^2bfe^{\left(2\,fx+2\,e\right)}+b^3fe^{\left(2\,fx+2\,e\right)}+2\,a^3fe^{\left(fx+e\right)}+2\,ab^2fe^{\left(fx+e\right)}-a^2bf-b^3f}\,dx+b\left(\frac{a\log\left(\frac{be^{\left(fx+e\right)}+a-\sqrt{a^2+b^2}}{be^{\left(fx+e\right)}+a+\sqrt{a^2+b^2}}\right)}{\left(a^2b+b^3\right)\sqrt{a^2+b^2}\,f}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] (2*a*f*integrate(x*e^(f*x + e)/(a^2*b*f*e^(2*f*x + 2*e) + b^3*f*e^(2*f*x +
2*e) + 2*a^3*f*e^(f*x + e) + 2*a*b^2*f*e^(f*x + e) - a^2*b*f - b^3*f), x) +
 b*(a*log((b*e^(f*x + e) + a - sqrt(a^2 + b^2))/(b*e^(f*x + e) + a + sqrt(a
^2 + b^2)))/((a^2*b + b^3)*sqrt(a^2 + b^2)*f^2) - 2*(f*x + e)/((a^2*b + b^3
)*f^2) + log(b*e^(2*f*x + 2*e) + 2*a*e^(f*x + e) - b)/((a^2*b + b^3)*f^2))
- 2*(a*x*e^(f*x + e) - b*x)/(a^2*b*f + b^3*f - (a^2*b*f*e^(2*e) + b^3*f*e^(
2*e))*e^(2*f*x) - 2*(a^3*f*e^e + a*b^2*f*e^e)*e^(f*x)) - a*log((b*e^(f*x +
e) + a - sqrt(a^2 + b^2))/(b*e^(f*x + e) + a + sqrt(a^2 + b^2)))/((a^2 + b^
2)^(3/2)*f^2))*d + c*(a*log((b*e^(-f*x - e) - a - sqrt(a^2 + b^2))/(b*e^(-f
*x - e) - a + sqrt(a^2 + b^2)))/((a^2 + b^2)^(3/2)*f) - 2*(a*e^(-f*x - e) +
 b)/((a^2*b + b^3 + 2*(a^3 + a*b^2)*e^(-f*x - e) - (a^2*b + b^3)*e^(-2*f*x
- 2*e))*f))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{c + d\,x}{\left(a + b\sinh\left(e + f\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/(a + b*sinh(e + f*x))^2,x)
```

```
[Out] int((c + d*x)/(a + b*sinh(e + f*x))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sinh(f*x+e))**2,x)
```

```
[Out] Timed out
```

3.176 $\int \frac{1}{(c+dx)(a+b\sinh(e+fx))^2}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c+dx)(a+b\sinh(e+fx))^2},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)/(a+b*sinh(f*x+e))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)(a+b\sinh(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)*(a + b*Sinh[e + f*x])^2),x]
[Out] Defer[Int][1/((c + d*x)*(a + b*Sinh[e + f*x])^2), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)(a+b\sinh(e+fx))^2}\,dx = \int \frac{1}{(c+dx)(a+b\sinh(e+fx))^2}\,dx$$

Mathematica [A] time = 50.23, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)(a+b\sinh(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)*(a + b*Sinh[e + f*x])^2),x]
[Out] Integrate[1/((c + d*x)*(a + b*Sinh[e + f*x])^2), x]
```

fricas [A] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^2dx+a^2c+\left(b^2dx+b^2c\right)\sinh\left(fx+e\right)^2+2\left(abdx+abc\right)\sinh\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*d*x + a^2*c + (b^2*d*x + b^2*c)*sinh(f*x + e)^2 + 2*(a*b*d*
x + a*b*c)*sinh(f*x + e)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(b\sinh\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)*(b*sinh(f*x + e) + a)^2), x)
```

maple [A] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(a+b\sinh\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)/(a+b*sinh(f*x+e))^2,x)
```

```
[Out] int(1/(d*x+c)/(a+b*sinh(f*x+e))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(ae^{\left(fx+e\right)}-b\right)}{a^2bcf+b^3cf+\left(a^2bdf+b^3df\right)x-\left(a^2bcfe^{(2e)}+b^3cfe^{(2e)}+\left(a^2bdfe^{(2e)}+b^3dfe^{(2e)}\right)x\right)e^{\left(2fx\right)}-2\left(a^3cfe^e+ab^2c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] -2*(a*e^(f*x + e) - b)/(a^2*b*c*f + b^3*c*f + (a^2*b*d*f + b^3*d*f)*x - (a^
2*b*c*f*e^(2*e) + b^3*c*f*e^(2*e) + (a^2*b*d*f*e^(2*e) + b^3*d*f*e^(2*e))*x
)*e^(2*f*x) - 2*(a^3*c*f*e^e + a*b^2*c*f*e^e + (a^3*d*f*e^e + a*b^2*d*f*e^e
)*x)*e^(f*x)) + integrate(2*(b*d - (a*d*f*x*e^e + (c*f*e^e + d*e^e)*a)*e^(f
*x))/(a^2*b*c^2*f + b^3*c^2*f + (a^2*b*d^2*f + b^3*d^2*f)*x^2 + 2*(a^2*b*c*
d*f + b^3*c*d*f)*x - (a^2*b*c^2*f*e^(2*e) + b^3*c^2*f*e^(2*e) + (a^2*b*d^2*
f*e^(2*e) + b^3*d^2*f*e^(2*e))*x^2 + 2*(a^2*b*c*d*f*e^(2*e) + b^3*c*d*f*e^(
2*e))*x)*e^(2*f*x) - 2*(a^3*c^2*f*e^e + a*b^2*c^2*f*e^e + (a^3*d^2*f*e^e +
a*b^2*d^2*f*e^e)*x^2 + 2*(a^3*c*d*f*e^e + a*b^2*c*d*f*e^e)*x)*e^(f*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\sinh\left(e+f\,x\right)\right)^2\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*sinh(e + f*x))^2*(c + d*x)),x)
[Out] int(1/((a + b*sinh(e + f*x))^2*(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sinh(f*x+e))**2,x)
[Out] Timed out
```

3.177 $\int \frac{1}{(c+dx)^2(a+b\sinh(e+fx))^2}\,dx$

Optimal. Leaf size=23

$$\mathrm{Int}\left(\frac{1}{(c+dx)^2(a+b\sinh(e+fx))^2},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)^2/(a+b*sinh(f*x+e))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)^2(a+b\sinh(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)^2*(a + b*Sinh[e + f*x])^2),x]
[Out] Defer[Int][1/((c + d*x)^2*(a + b*Sinh[e + f*x])^2), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)^2(a+b\sinh(e+fx))^2}\,dx = \int \frac{1}{(c+dx)^2(a+b\sinh(e+fx))^2}\,dx$$

Mathematica [A] time = 52.74, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)^2(a+b\sinh(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)^2*(a + b*Sinh[e + f*x])^2),x]
[Out] Integrate[1/((c + d*x)^2*(a + b*Sinh[e + f*x])^2), x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{1}{a^2d^2x^2+2\,a^2cdx+a^2c^2+\left(b^2d^2x^2+2\,b^2cdx+b^2c^2\right)\sinh\left(fx+e\right)^2+2\left(abd^2x^2+2\,abcdx+abc^2\right)\sinh\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*d^2*x^2 + 2*a^2*c*d*x + a^2*c^2 + (b^2*d^2*x^2 + 2*b^2*c*d*
x + b^2*c^2)*sinh(f*x + e)^2 + 2*(a*b*d^2*x^2 + 2*a*b*c*d*x + a*b*c^2)*sinh
(f*x + e)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2\left(b\sinh\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)^2*(b*sinh(f*x + e) + a)^2), x)
```

maple [A] time = 0.61, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2\left(a+b\sinh\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^2/(a+b*sinh(f*x+e))^2,x)
```

```
[Out] int(1/(d*x+c)^2/(a+b*sinh(f*x+e))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{}{a^2bc^2f+b^3c^2f+(a^2bd^2f+b^3d^2f)x^2+2(a^2bcdf+b^3cdf)x-(a^2bc^2fe^{(2e)}+b^3c^2fe^{(2e)}+(a^2bd^2fe^{(2e)}+b^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] -2*(a*e^(f*x + e) - b)/(a^2*b*c^2*f + b^3*c^2*f + (a^2*b*d^2*f + b^3*d^2*f)
*x^2 + 2*(a^2*b*c*d*f + b^3*c*d*f)*x - (a^2*b*c^2*f*e^(2*e) + b^3*c^2*f*e^(
2*e) + (a^2*b*d^2*f*e^(2*e) + b^3*d^2*f*e^(2*e))*x^2 + 2*(a^2*b*c*d*f*e^(2*
e) + b^3*c*d*f*e^(2*e))*x)*e^(2*f*x) - 2*(a^3*c^2*f*e^e + a*b^2*c^2*f*e^e +
 (a^3*d^2*f*e^e + a*b^2*d^2*f*e^e)*x^2 + 2*(a^3*c*d*f*e^e + a*b^2*c*d*f*e^e
)*x)*e^(f*x)) + integrate(2*(2*b*d - (a*d*f*x*e^e + (c*f*e^e + 2*d*e^e)*a)*
e^(f*x))/(a^2*b*c^3*f + b^3*c^3*f + (a^2*b*d^3*f + b^3*d^3*f)*x^3 + 3*(a^2*
b*c*d^2*f + b^3*c*d^2*f)*x^2 + 3*(a^2*b*c^2*d*f + b^3*c^2*d*f)*x - (a^2*b*c
```

```
^3*f*e^(2*e) + b^3*c^3*f*e^(2*e) + (a^2*b*d^3*f*e^(2*e) + b^3*d^3*f*e^(2*e)
)*x^3 + 3*(a^2*b*c*d^2*f*e^(2*e) + b^3*c*d^2*f*e^(2*e))*x^2 + 3*(a^2*b*c^2*
d*f*e^(2*e) + b^3*c^2*d*f*e^(2*e))*x)*e^(2*f*x) - 2*(a^3*c^3*f*e^e + a*b^2*
c^3*f*e^e + (a^3*d^3*f*e^e + a*b^2*d^3*f*e^e)*x^3 + 3*(a^3*c*d^2*f*e^e + a*
b^2*c*d^2*f*e^e)*x^2 + 3*(a^3*c^2*d*f*e^e + a*b^2*c^2*d*f*e^e)*x)*e^(f*x)),
 x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\sinh\left(e+f\,x\right)\right)^2\,\left(c+d\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*sinh(e + f*x))^2*(c + d*x)^2),x)
```

```
[Out] int(1/((a + b*sinh(e + f*x))^2*(c + d*x)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)**2/(a+b*sinh(f*x+e))**2,x)
```

```
[Out] Timed out
```

3.178 $\int \frac{e+fx}{(a+b\sinh(c+dx))^3}\,dx$

Optimal. Leaf size=544

$$\frac{3a^2f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2d^2\left(a^2+b^2\right)^{5/2}}-\frac{3a^2f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{2d^2\left(a^2+b^2\right)^{5/2}}-\frac{f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2d^2\left(a^2+b^2\right)^{3/2}}+\frac{f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{2d^2\left(a^2+b^2\right)^{3/2}}-\frac{f}{2d^2\left(a^2+b^2\right)(a+b\sinh(}$$

```
[Out] 3/2*a*f*ln(a+b*sinh(d*x+c))/(a^2+b^2)^2/d^2+3/2*a^2*(f*x+e)*ln(1+b*exp(d*x+
c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(5/2)/d-1/2*(f*x+e)*ln(1+b*exp(d*x+c)/(a-
(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d-3/2*a^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a
^2+b^2)^(1/2)))/(a^2+b^2)^(5/2)/d+1/2*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2
)^(1/2)))/(a^2+b^2)^(3/2)/d+3/2*a^2*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^
(1/2)))/(a^2+b^2)^(5/2)/d^2-1/2*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2
)))/(a^2+b^2)^(3/2)/d^2-3/2*a^2*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2
)))/(a^2+b^2)^(5/2)/d^2+1/2*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/
(a^2+b^2)^(3/2)/d^2-1/2*b*(f*x+e)*cosh(d*x+c)/(a^2+b^2)/d/(a+b*sinh(d*x+c))
^2-1/2*f/(a^2+b^2)/d^2/(a+b*sinh(d*x+c))-3/2*a*b*(f*x+e)*cosh(d*x+c)/(a^2+b
^2)^2/d/(a+b*sinh(d*x+c))
```

Rubi [A] time = 2.08, antiderivative size = 544, normalized size of antiderivative = 1.00, number of steps used = 35, number of rules used = 11, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.611, Rules used = {3325, 3324, 3322, 2264, 2190, 2279, 2391, 2668, 31, 6742, 32}

$$\frac{3a^2f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2d^2\left(a^2+b^2\right)^{5/2}}-\frac{3a^2f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{2d^2\left(a^2+b^2\right)^{5/2}}-\frac{f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2d^2\left(a^2+b^2\right)^{3/2}}+\frac{f\text{PolyLog}\left(2,-\frac{be^{c+}}{\sqrt{a^2+b}}\right)}{2d^2\left(a^2+b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] (3*a^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(2*(a^2 +
b^2)^(5/2)*d) - ((e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/
(2*(a^2 + b^2)^(3/2)*d) - (3*a^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqr
t[a^2 + b^2])])/(2*(a^2 + b^2)^(5/2)*d) + ((e + f*x)*Log[1 + (b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2])])/(2*(a^2 + b^2)^(3/2)*d) + (3*a*f*Log[a + b*Sinh[c
 + d*x]])/(2*(a^2 + b^2)^2*d^2) + (3*a^2*f*PolyLog[2, -((b*E^(c + d*x))/(a
- Sqrt[a^2 + b^2]))])/(2*(a^2 + b^2)^(5/2)*d^2) - (f*PolyLog[2, -((b*E^(c +
 d*x))/(a - Sqrt[a^2 + b^2]))])/(2*(a^2 + b^2)^(3/2)*d^2) - (3*a^2*f*PolyLo
g[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(2*(a^2 + b^2)^(5/2)*d^2) +
 (f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(2*(a^2 + b^2)^(3
/2)*d^2) - (b*(e + f*x)*Cosh[c + d*x])/(2*(a^2 + b^2)*d*(a + b*Sinh[c + d*x
```

```
])^2) - f/(2*(a^2 + b^2)*d^2*(a + b*Sinh[c + d*x])) - (3*a*b*(e + f*x)*Cosh
[c + d*x])/(2*(a^2 + b^2)^2*d*(a + b*Sinh[c + d*x]))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
```

```
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3325

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> -Simp[(b*(c + d*x)^m*Cos[e + f*x]*(a + b*Sin[e + f*x])^(n + 1
))/(f*(n + 1)*(a^2 - b^2)), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m*(a +
b*Sin[e + f*x])^(n + 1), x], x] - Dist[(b*(n + 2))/((n + 1)*(a^2 - b^2)), I
nt[(c + d*x)^m*Sin[e + f*x]*(a + b*Sin[e + f*x])^(n + 1), x], x] + Dist[(b*
d*m)/(f*(n + 1)*(a^2 - b^2)), Int[(c + d*x)^(m - 1)*Cos[e + f*x]*(a + b*Sin
[e + f*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && ILtQ[n, -2] && IGtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{e+fx}{(a+b\sinh(c+dx))^3}\,dx = -\frac{b(e+fx)\cosh(c+dx)}{2\left(a^2+b^2\right)d(a+b\sinh(c+dx))^2} + \frac{a\int \frac{e+fx}{(a+b\sinh(c+dx))^2}\,dx}{a^2+b^2} - \frac{b\int \frac{(e+fx)\sinh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx}{2\left(a^2+b^2\right)}$$

$$= -\frac{b(e+fx)\cosh(c+dx)}{2\left(a^2+b^2\right)d(a+b\sinh(c+dx))^2} - \frac{ab(e+fx)\cosh(c+dx)}{\left(a^2+b^2\right)^2 d(a+b\sinh(c+dx))} + \frac{a^2\int \frac{e}{a+b\,\mathrm{si}}}{\left(a^2+\right.}$$

$$= -\frac{b(e+fx)\cosh(c+dx)}{2\left(a^2+b^2\right)d(a+b\sinh(c+dx))^2} - \frac{f}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} - \frac{ab(e}{\left(a^2+b^2\right.}$$

$$= \frac{af\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)^2 d^2} - \frac{b(e+fx)\cosh(c+dx)}{2\left(a^2+b^2\right)d(a+b\sinh(c+dx))^2} - \frac{f}{2\left(a^2+b^2\right)d^2(a\ldots}$$

$$= \frac{a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{5/2} d} - \frac{a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{5/2} d} + \frac{af\log(a+b\sinh}{\left(a^2+b^2\right)^2}$$

$$= \frac{a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{5/2} d} - \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2\left(a^2+b^2\right)^{3/2} d} - \frac{a^2(e+fx)\log\left(1+\right.}{\left(a^2+b^2\right)^{5/2}}$$

$$= \frac{3a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2\left(a^2+b^2\right)^{5/2} d} - \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2\left(a^2+b^2\right)^{3/2} d} - \frac{3a^2(e+fx)\log\left(1\right.}{2\left(a^2+b^2\right.}$$

$$= \frac{3a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2\left(a^2+b^2\right)^{5/2} d} - \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2\left(a^2+b^2\right)^{3/2} d} - \frac{3a^2(e+fx)\log\left(1\right.}{2\left(a^2+b^2\right.}$$

$$= \frac{3a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2\left(a^2+b^2\right)^{5/2} d} - \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2\left(a^2+b^2\right)^{3/2} d} - \frac{3a^2(e+fx)\log\left(1\right.}{2\left(a^2+b^2\right.}$$

Mathematica [A] time = 9.76, size = 836, normalized size = 1.54

$$\frac{-bde\cosh(c+dx)+bcf\cosh(c+dx)-bf(c+dx)\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))^2} - \frac{6\sqrt{a^2+b^2}\,f\tan^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{-a^2-b^2}}\right)a^2-4\sqrt{-a^2-b^2}\,\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] -1/2*(-3*a*Sqrt[-(a^2 + b^2)^2]*f*(c + d*x) + 6*a^2*Sqrt[a^2 + b^2]*f*ArcTa
n[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]] - 4*a^2*Sqrt[-a^2 - b^2]*d*e*ArcTan
h[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 2*b^2*Sqrt[-a^2 - b^2]*d*e*ArcTanh
[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 6*a^2*Sqrt[-a^2 - b^2]*f*ArcTanh[(a
 + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 4*a^2*Sqrt[-a^2 - b^2]*c*f*ArcTanh[(a
+ b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 2*b^2*Sqrt[-a^2 - b^2]*c*f*ArcTanh[(a +
 b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 2*a^2*Sqrt[-a^2 - b^2]*f*(c + d*x)*Log[1
 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - b^2*Sqrt[-a^2 - b^2]*f*(c + d*x
)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 2*a^2*Sqrt[-a^2 - b^2]*f
*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + b^2*Sqrt[-a^2 -
 b^2]*f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 3*a*Sqrt
[-(a^2 + b^2)^2]*f*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))] + Sqrt[-
a^2 - b^2]*(2*a^2 - b^2)*f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2]
)] + Sqrt[-a^2 - b^2]*(-2*a^2 + b^2)*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sq
rt[a^2 + b^2]))]])/((-(a^2 + b^2)^2)^(3/2)*d^2) + (-(b*d*e*Cosh[c + d*x]) +
b*c*f*Cosh[c + d*x] - b*f*(c + d*x)*Cosh[c + d*x])/(2*(a^2 + b^2)*d^2*(a +
b*Sinh[c + d*x])^2) + (-(a^2*f) - b^2*f - 3*a*b*d*e*Cosh[c + d*x] + 3*a*b*c
*f*Cosh[c + d*x] - 3*a*b*f*(c + d*x)*Cosh[c + d*x])/(2*(a^2 + b^2)^2*d^2*(a
 + b*Sinh[c + d*x]))
```

fricas [B] time = 0.67, size = 6396, normalized size = 11.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)/(a+b*sinh(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] -1/2*(6*((a^3*b^2 + a*b^4)*d*f*x + (a^3*b^2 + a*b^4)*c*f)*cosh(d*x + c)^4 +
 6*((a^3*b^2 + a*b^4)*d*f*x + (a^3*b^2 + a*b^4)*c*f)*sinh(d*x + c)^4 + 2*((
10*a^4*b + 11*a^2*b^3 + b^5)*d*f*x - (2*a^4*b + a^2*b^3 - b^5)*d*e + (a^4*b
 + 2*a^2*b^3 + b^5 + 12*(a^4*b + a^2*b^3)*c)*f)*cosh(d*x + c)^3 + 2*((10*a^
4*b + 11*a^2*b^3 + b^5)*d*f*x - (2*a^4*b + a^2*b^3 - b^5)*d*e + (a^4*b + 2*
a^2*b^3 + b^5 + 12*(a^4*b + a^2*b^3)*c)*f + 12*((a^3*b^2 + a*b^4)*d*f*x + (
a^3*b^2 + a*b^4)*c*f)*cosh(d*x + c))*sinh(d*x + c)^3 - 6*(a^3*b^2 + a*b^4)*
d*e + 6*(a^3*b^2 + a*b^4)*c*f + 2*(3*(2*a^5 + a^3*b^2 - a*b^4)*d*f*x - 3*(2
*a^5 + a^3*b^2 - a*b^4)*d*e + 2*(a^5 + 2*a^3*b^2 + a*b^4 + 3*(2*a^5 + a^3*b
^2 - a*b^4)*c)*f)*cosh(d*x + c)^2 + 2*(3*(2*a^5 + a^3*b^2 - a*b^4)*d*f*x -
3*(2*a^5 + a^3*b^2 - a*b^4)*d*e + 18*((a^3*b^2 + a*b^4)*d*f*x + (a^3*b^2 +
a*b^4)*c*f)*cosh(d*x + c)^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4 + 3*(2*a^5 + a^3*b
^2 - a*b^4)*c)*f + 3*((10*a^4*b + 11*a^2*b^3 + b^5)*d*f*x - (2*a^4*b + a^2*
b^3 - b^5)*d*e + (a^4*b + 2*a^2*b^3 + b^5 + 12*(a^4*b + a^2*b^3)*c)*f)*cosh
```

(d*x + c))*sinh(d*x + c)^2 - ((2*a^2*b^3 - b^5)*f*cosh(d*x + c)^4 + (2*a^2*
b^3 - b^5)*f*sinh(d*x + c)^4 + 4*(2*a^3*b^2 - a*b^4)*f*cosh(d*x + c)^3 + 2*
(4*a^4*b - 4*a^2*b^3 + b^5)*f*cosh(d*x + c)^2 + 4*((2*a^2*b^3 - b^5)*f*cosh
(d*x + c) + (2*a^3*b^2 - a*b^4)*f)*sinh(d*x + c)^3 - 4*(2*a^3*b^2 - a*b^4)*
f*cosh(d*x + c) + 2*(3*(2*a^2*b^3 - b^5)*f*cosh(d*x + c)^2 + 6*(2*a^3*b^2 -
 a*b^4)*f*cosh(d*x + c) + (4*a^4*b - 4*a^2*b^3 + b^5)*f)*sinh(d*x + c)^2 +
(2*a^2*b^3 - b^5)*f + 4*((2*a^2*b^3 - b^5)*f*cosh(d*x + c)^3 + 3*(2*a^3*b^2
 - a*b^4)*f*cosh(d*x + c)^2 + (4*a^4*b - 4*a^2*b^3 + b^5)*f*cosh(d*x + c) -
 (2*a^3*b^2 - a*b^4)*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(
d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2) - b)/b + 1) + ((2*a^2*b^3 - b^5)*f*cosh(d*x + c)^4 + (2*a^2*b^3
 - b^5)*f*sinh(d*x + c)^4 + 4*(2*a^3*b^2 - a*b^4)*f*cosh(d*x + c)^3 + 2*(4*
a^4*b - 4*a^2*b^3 + b^5)*f*cosh(d*x + c)^2 + 4*((2*a^2*b^3 - b^5)*f*cosh(d*
x + c) + (2*a^3*b^2 - a*b^4)*f)*sinh(d*x + c)^3 - 4*(2*a^3*b^2 - a*b^4)*f*c
osh(d*x + c) + 2*(3*(2*a^2*b^3 - b^5)*f*cosh(d*x + c)^2 + 6*(2*a^3*b^2 - a*
b^4)*f*cosh(d*x + c) + (4*a^4*b - 4*a^2*b^3 + b^5)*f)*sinh(d*x + c)^2 + (2*
a^2*b^3 - b^5)*f + 4*((2*a^2*b^3 - b^5)*f*cosh(d*x + c)^3 + 3*(2*a^3*b^2 -
a*b^4)*f*cosh(d*x + c)^2 + (4*a^4*b - 4*a^2*b^3 + b^5)*f*cosh(d*x + c) - (2
*a^3*b^2 - a*b^4)*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x
 + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2) - b)/b + 1) - (((2*a^2*b^3 - b^5)*d*f*x + (2*a^2*b^3 - b^5)*c*f)*c
osh(d*x + c)^4 + ((2*a^2*b^3 - b^5)*d*f*x + (2*a^2*b^3 - b^5)*c*f)*sinh(d*x
 + c)^4 + (2*a^2*b^3 - b^5)*d*f*x + 4*((2*a^3*b^2 - a*b^4)*d*f*x + (2*a^3*b
^2 - a*b^4)*c*f)*cosh(d*x + c)^3 + 4*((2*a^3*b^2 - a*b^4)*d*f*x + (2*a^3*b^
2 - a*b^4)*c*f + ((2*a^2*b^3 - b^5)*d*f*x + (2*a^2*b^3 - b^5)*c*f)*cosh(d*x
 + c))*sinh(d*x + c)^3 + (2*a^2*b^3 - b^5)*c*f + 2*((4*a^4*b - 4*a^2*b^3 +
b^5)*d*f*x + (4*a^4*b - 4*a^2*b^3 + b^5)*c*f)*cosh(d*x + c)^2 + 2*((4*a^4*b
 - 4*a^2*b^3 + b^5)*d*f*x + (4*a^4*b - 4*a^2*b^3 + b^5)*c*f + 3*((2*a^2*b^3
 - b^5)*d*f*x + (2*a^2*b^3 - b^5)*c*f)*cosh(d*x + c)^2 + 6*((2*a^3*b^2 - a*
b^4)*d*f*x + (2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*((
2*a^3*b^2 - a*b^4)*d*f*x + (2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x + c) - 4*((2*a
^3*b^2 - a*b^4)*d*f*x - ((2*a^2*b^3 - b^5)*d*f*x + (2*a^2*b^3 - b^5)*c*f)*c
osh(d*x + c)^3 + (2*a^3*b^2 - a*b^4)*c*f - 3*((2*a^3*b^2 - a*b^4)*d*f*x + (
2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x + c)^2 - ((4*a^4*b - 4*a^2*b^3 + b^5)*d*f*
x + (4*a^4*b - 4*a^2*b^3 + b^5)*c*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (((2*a^2*b^3 - b^5)*d*f*x
+ (2*a^2*b^3 - b^5)*c*f)*cosh(d*x + c)^4 + ((2*a^2*b^3 - b^5)*d*f*x + (2*a^
2*b^3 - b^5)*c*f)*sinh(d*x + c)^4 + (2*a^2*b^3 - b^5)*d*f*x + 4*((2*a^3*b^2
 - a*b^4)*d*f*x + (2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x + c)^3 + 4*((2*a^3*b^2
- a*b^4)*d*f*x + (2*a^3*b^2 - a*b^4)*c*f + ((2*a^2*b^3 - b^5)*d*f*x + (2*a^
2*b^3 - b^5)*c*f)*cosh(d*x + c))*sinh(d*x + c)^3 + (2*a^2*b^3 - b^5)*c*f +
2*((4*a^4*b - 4*a^2*b^3 + b^5)*d*f*x + (4*a^4*b - 4*a^2*b^3 + b^5)*c*f)*cos
h(d*x + c)^2 + 2*((4*a^4*b - 4*a^2*b^3 + b^5)*d*f*x + (4*a^4*b - 4*a^2*b^3
+ b^5)*c*f + 3*((2*a^2*b^3 - b^5)*d*f*x + (2*a^2*b^3 - b^5)*c*f)*cosh(d*x +

```
c)^2 + 6*((2*a^3*b^2 - a*b^4)*d*f*x + (2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x +
c))*sinh(d*x + c)^2 - 4*((2*a^3*b^2 - a*b^4)*d*f*x + (2*a^3*b^2 - a*b^4)*c*
f)*cosh(d*x + c) - 4*((2*a^3*b^2 - a*b^4)*d*f*x - ((2*a^2*b^3 - b^5)*d*f*x
+ (2*a^2*b^3 - b^5)*c*f)*cosh(d*x + c)^3 + (2*a^3*b^2 - a*b^4)*c*f - 3*((2*
a^3*b^2 - a*b^4)*d*f*x + (2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x + c)^2 - ((4*a^4
*b - 4*a^2*b^3 + b^5)*d*f*x + (4*a^4*b - 4*a^2*b^3 + b^5)*c*f)*cosh(d*x + c
))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x
+ c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) -
2*((2*a^4*b + a^2*b^3 - b^5)*d*f*x - (10*a^4*b + 11*a^2*b^3 + b^5)*d*e + (a
^4*b + 2*a^2*b^3 + b^5 + 12*(a^4*b + a^2*b^3)*c)*f)*cosh(d*x + c) - (3*(a^3
*b^2 + a*b^4)*f*cosh(d*x + c)^4 + 3*(a^3*b^2 + a*b^4)*f*sinh(d*x + c)^4 + 1
2*(a^4*b + a^2*b^3)*f*cosh(d*x + c)^3 + 6*(2*a^5 + a^3*b^2 - a*b^4)*f*cosh(
d*x + c)^2 + 12*((a^3*b^2 + a*b^4)*f*cosh(d*x + c) + (a^4*b + a^2*b^3)*f)*s
inh(d*x + c)^3 - 12*(a^4*b + a^2*b^3)*f*cosh(d*x + c) + 6*(3*(a^3*b^2 + a*b
^4)*f*cosh(d*x + c)^2 + 6*(a^4*b + a^2*b^3)*f*cosh(d*x + c) + (2*a^5 + a^3*
b^2 - a*b^4)*f)*sinh(d*x + c)^2 + 3*(a^3*b^2 + a*b^4)*f + 12*((a^3*b^2 + a*
b^4)*f*cosh(d*x + c)^3 + 3*(a^4*b + a^2*b^3)*f*cosh(d*x + c)^2 + (2*a^5 + a
^3*b^2 - a*b^4)*f*cosh(d*x + c) - (a^4*b + a^2*b^3)*f)*sinh(d*x + c) - (((2
*a^2*b^3 - b^5)*d*e - (2*a^2*b^3 - b^5)*c*f)*cosh(d*x + c)^4 + ((2*a^2*b^3
- b^5)*d*e - (2*a^2*b^3 - b^5)*c*f)*sinh(d*x + c)^4 + 4*((2*a^3*b^2 - a*b^4
)*d*e - (2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x + c)^3 + 4*((2*a^3*b^2 - a*b^4)*d
*e - (2*a^3*b^2 - a*b^4)*c*f + ((2*a^2*b^3 - b^5)*d*e - (2*a^2*b^3 - b^5)*c
*f)*cosh(d*x + c))*sinh(d*x + c)^3 + (2*a^2*b^3 - b^5)*d*e - (2*a^2*b^3 - b
^5)*c*f + 2*((4*a^4*b - 4*a^2*b^3 + b^5)*d*e - (4*a^4*b - 4*a^2*b^3 + b^5)*
c*f)*cosh(d*x + c)^2 + 2*((4*a^4*b - 4*a^2*b^3 + b^5)*d*e - (4*a^4*b - 4*a^
2*b^3 + b^5)*c*f + 3*((2*a^2*b^3 - b^5)*d*e - (2*a^2*b^3 - b^5)*c*f)*cosh(d
*x + c)^2 + 6*((2*a^3*b^2 - a*b^4)*d*e - (2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x
+ c))*sinh(d*x + c)^2 - 4*((2*a^3*b^2 - a*b^4)*d*e - (2*a^3*b^2 - a*b^4)*c*
f)*cosh(d*x + c) + 4*(((2*a^2*b^3 - b^5)*d*e - (2*a^2*b^3 - b^5)*c*f)*cosh(
d*x + c)^3 - (2*a^3*b^2 - a*b^4)*d*e + (2*a^3*b^2 - a*b^4)*c*f + 3*((2*a^3*
b^2 - a*b^4)*d*e - (2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x + c)^2 + ((4*a^4*b - 4
*a^2*b^3 + b^5)*d*e - (4*a^4*b - 4*a^2*b^3 + b^5)*c*f)*cosh(d*x + c))*sinh(
d*x + c))*sqrt((a^2 + b^2)/b^2))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c)
+ 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (3*(a^3*b^2 + a*b^4)*f*cosh(d*x + c)^4
 + 3*(a^3*b^2 + a*b^4)*f*sinh(d*x + c)^4 + 12*(a^4*b + a^2*b^3)*f*cosh(d*x
+ c)^3 + 6*(2*a^5 + a^3*b^2 - a*b^4)*f*cosh(d*x + c)^2 + 12*((a^3*b^2 + a*b
^4)*f*cosh(d*x + c) + (a^4*b + a^2*b^3)*f)*sinh(d*x + c)^3 - 12*(a^4*b + a^
2*b^3)*f*cosh(d*x + c) + 6*(3*(a^3*b^2 + a*b^4)*f*cosh(d*x + c)^2 + 6*(a^4*
b + a^2*b^3)*f*cosh(d*x + c) + (2*a^5 + a^3*b^2 - a*b^4)*f)*sinh(d*x + c)^2
 + 3*(a^3*b^2 + a*b^4)*f + 12*((a^3*b^2 + a*b^4)*f*cosh(d*x + c)^3 + 3*(a^4
*b + a^2*b^3)*f*cosh(d*x + c)^2 + (2*a^5 + a^3*b^2 - a*b^4)*f*cosh(d*x + c)
 - (a^4*b + a^2*b^3)*f)*sinh(d*x + c) + (((2*a^2*b^3 - b^5)*d*e - (2*a^2*b^
3 - b^5)*c*f)*cosh(d*x + c)^4 + ((2*a^2*b^3 - b^5)*d*e - (2*a^2*b^3 - b^5)*
c*f)*sinh(d*x + c)^4 + 4*((2*a^3*b^2 - a*b^4)*d*e - (2*a^3*b^2 - a*b^4)*c*f
)*cosh(d*x + c)^3 + 4*((2*a^3*b^2 - a*b^4)*d*e - (2*a^3*b^2 - a*b^4)*c*f +
```

```
((2*a^2*b^3 - b^5)*d*e - (2*a^2*b^3 - b^5)*c*f)*cosh(d*x + c))*sinh(d*x + c
)^3 + (2*a^2*b^3 - b^5)*d*e - (2*a^2*b^3 - b^5)*c*f + 2*((4*a^4*b - 4*a^2*b
^3 + b^5)*d*e - (4*a^4*b - 4*a^2*b^3 + b^5)*c*f)*cosh(d*x + c)^2 + 2*((4*a^
4*b - 4*a^2*b^3 + b^5)*d*e - (4*a^4*b - 4*a^2*b^3 + b^5)*c*f + 3*((2*a^2*b^
3 - b^5)*d*e - (2*a^2*b^3 - b^5)*c*f)*cosh(d*x + c)^2 + 6*((2*a^3*b^2 - a*b
^4)*d*e - (2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*((2*a
^3*b^2 - a*b^4)*d*e - (2*a^3*b^2 - a*b^4)*c*f)*cosh(d*x + c) + 4*(((2*a^2*b
^3 - b^5)*d*e - (2*a^2*b^3 - b^5)*c*f)*cosh(d*x + c)^3 - (2*a^3*b^2 - a*b^4
)*d*e + (2*a^3*b^2 - a*b^4)*c*f + 3*((2*a^3*b^2 - a*b^4)*d*e - (2*a^3*b^2 -
 a*b^4)*c*f)*cosh(d*x + c)^2 + ((4*a^4*b - 4*a^2*b^3 + b^5)*d*e - (4*a^4*b
- 4*a^2*b^3 + b^5)*c*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2
*a) - 2*((2*a^4*b + a^2*b^3 - b^5)*d*f*x - 12*((a^3*b^2 + a*b^4)*d*f*x + (a
^3*b^2 + a*b^4)*c*f)*cosh(d*x + c)^3 - (10*a^4*b + 11*a^2*b^3 + b^5)*d*e -
3*((10*a^4*b + 11*a^2*b^3 + b^5)*d*f*x - (2*a^4*b + a^2*b^3 - b^5)*d*e + (a
^4*b + 2*a^2*b^3 + b^5 + 12*(a^4*b + a^2*b^3)*c)*f)*cosh(d*x + c)^2 + (a^4*
b + 2*a^2*b^3 + b^5 + 12*(a^4*b + a^2*b^3)*c)*f - 2*(3*(2*a^5 + a^3*b^2 - a
*b^4)*d*f*x - 3*(2*a^5 + a^3*b^2 - a*b^4)*d*e + 2*(a^5 + 2*a^3*b^2 + a*b^4
+ 3*(2*a^5 + a^3*b^2 - a*b^4)*c)*f)*cosh(d*x + c))*sinh(d*x + c))/((a^6*b^2
 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d^2*cosh(d*x + c)^4 + (a^6*b^2 + 3*a^4*b^4
+ 3*a^2*b^6 + b^8)*d^2*sinh(d*x + c)^4 + 4*(a^7*b + 3*a^5*b^3 + 3*a^3*b^5 +
 a*b^7)*d^2*cosh(d*x + c)^3 + 2*(2*a^8 + 5*a^6*b^2 + 3*a^4*b^4 - a^2*b^6 -
b^8)*d^2*cosh(d*x + c)^2 - 4*(a^7*b + 3*a^5*b^3 + 3*a^3*b^5 + a*b^7)*d^2*co
sh(d*x + c) + 4*((a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d^2*cosh(d*x + c)
+ (a^7*b + 3*a^5*b^3 + 3*a^3*b^5 + a*b^7)*d^2)*sinh(d*x + c)^3 + (a^6*b^2 +
 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d^2 + 2*(3*(a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 +
 b^8)*d^2*cosh(d*x + c)^2 + 6*(a^7*b + 3*a^5*b^3 + 3*a^3*b^5 + a*b^7)*d^2*c
osh(d*x + c) + (2*a^8 + 5*a^6*b^2 + 3*a^4*b^4 - a^2*b^6 - b^8)*d^2)*sinh(d*
x + c)^2 + 4*((a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d^2*cosh(d*x + c)^3 +
 3*(a^7*b + 3*a^5*b^3 + 3*a^3*b^5 + a*b^7)*d^2*cosh(d*x + c)^2 + (2*a^8 + 5
*a^6*b^2 + 3*a^4*b^4 - a^2*b^6 - b^8)*d^2*cosh(d*x + c) - (a^7*b + 3*a^5*b^
3 + 3*a^3*b^5 + a*b^7)*d^2)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{fx+e}{(b\sinh{(dx+c)}+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)/(a+b*sinh(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)/(b*sinh(d*x + c) + a)^3, x)
```

maple [B] time = 0.28, size = 1232, normalized size = 2.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)/(a+b*sinh(d*x+c))^3,x)
```

```
[Out] (2*a^2*b*d*f*x*exp(3*d*x+3*c)-b^3*d*f*x*exp(3*d*x+3*c)+6*a^3*d*f*x*exp(2*d*
x+2*c)+2*a^2*b*d*e*exp(3*d*x+3*c)-3*a*b^2*d*f*x*exp(2*d*x+2*c)-b^3*d*e*exp(
3*d*x+3*c)+6*a^3*d*e*exp(2*d*x+2*c)-10*a^2*b*d*f*x*exp(d*x+c)-a^2*b*f*exp(3
*d*x+3*c)-3*a*b^2*d*e*exp(2*d*x+2*c)-b^3*d*f*x*exp(d*x+c)-b^3*f*exp(3*d*x+3
*c)-2*a^3*f*exp(2*d*x+2*c)-10*a^2*b*d*e*exp(d*x+c)+3*a*b^2*d*f*x-2*a*b^2*f*
exp(2*d*x+2*c)-b^3*d*e*exp(d*x+c)+a^2*b*f*exp(d*x+c)+3*a*b^2*d*e+b^3*f*exp(
d*x+c))/d^2/(a^2+b^2)^2/(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)^2-1/(a^2+b^2)^(
5/2)/d^2*b^2*f*c*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+3/2/(a^2
+b^2)^2/d^2*a*f*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-3/(a^2+b^2)^2/d^2*a*f
*ln(exp(d*x+c))-2/(a^2+b^2)^(5/2)/d*a^2*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/
(a^2+b^2)^(1/2))+2/(a^2+b^2)^(5/2)/d^2*a^2*f*c*arctanh(1/2*(2*b*exp(d*x+c)+
2*a)/(a^2+b^2)^(1/2))+1/(a^2+b^2)^(5/2)/d*a^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)
^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/(a^2+b^2)^(5/2)/d^2*a^2*f*ln((-b*exp(d*
x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/(a^2+b^2)^(5/2)/d*a^2*f*l
n((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/(a^2+b^2)^(5/2)
/d^2*a^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/(a^
2+b^2)^(5/2)/d^2*a^2*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2
)^(1/2)))-1/(a^2+b^2)^(5/2)/d^2*a^2*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a
)/(a+(a^2+b^2)^(1/2)))+1/(a^2+b^2)^(5/2)/d*b^2*e*arctanh(1/2*(2*b*exp(d*x+c
)+2*a)/(a^2+b^2)^(1/2))-1/2/(a^2+b^2)^(5/2)/d*b^2*f*ln((-b*exp(d*x+c)+(a^2+
b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/2/(a^2+b^2)^(5/2)/d^2*b^2*f*ln((-b*
exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/2/(a^2+b^2)^(5/2)/d
*b^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/2/(a^2+
b^2)^(5/2)/d^2*b^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)
))*c-1/2/(a^2+b^2)^(5/2)/d^2*b^2*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/
(-a+(a^2+b^2)^(1/2)))+1/2/(a^2+b^2)^(5/2)/d^2*b^2*f*dilog((b*exp(d*x+c)+(a^
2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)/(a+b*sinh(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/2*(4*a^2*d*integrate(x*e^(d*x + c)/(a^4*b*d*e^(2*d*x + 2*c) + 2*a^2*b^3*d
*e^(2*d*x + 2*c) + b^5*d*e^(2*d*x + 2*c) + 2*a^5*d*e^(d*x + c) + 4*a^3*b^2*
d*e^(d*x + c) + 2*a*b^4*d*e^(d*x + c) - a^4*b*d - 2*a^2*b^3*d - b^5*d), x)
- 2*b^2*d*integrate(x*e^(d*x + c)/(a^4*b*d*e^(2*d*x + 2*c) + 2*a^2*b^3*d*e^
(2*d*x + 2*c) + b^5*d*e^(2*d*x + 2*c) + 2*a^5*d*e^(d*x + c) + 4*a^3*b^2*d*e
^(d*x + c) + 2*a*b^4*d*e^(d*x + c) - a^4*b*d - 2*a^2*b^3*d - b^5*d), x) + 3
```

```
*a*b*(a*log((b*e^(d*x + c) + a - sqrt(a^2 + b^2))/(b*e^(d*x + c) + a + sqrt
(a^2 + b^2)))/((a^4*b + 2*a^2*b^3 + b^5)*sqrt(a^2 + b^2)*d^2) - 2*(d*x + c)
/((a^4*b + 2*a^2*b^3 + b^5)*d^2) + log(b*e^(2*d*x + 2*c) + 2*a*e^(d*x + c)
- b)/((a^4*b + 2*a^2*b^3 + b^5)*d^2)) + 2*(3*a*b^2*d*x - (a^2*b*e^(3*c) + b
^3*e^(3*c) - (2*a^2*b*d*e^(3*c) - b^3*d*e^(3*c))*x)*e^(3*d*x) - (2*a^3*e^(2
*c) + 2*a*b^2*e^(2*c) - 3*(2*a^3*d*e^(2*c) - a*b^2*d*e^(2*c))*x)*e^(2*d*x)
+ (a^2*b*e^c + b^3*e^c - (10*a^2*b*d*e^c + b^3*d*e^c)*x)*e^(d*x))/(a^4*b^2*
d^2 + 2*a^2*b^4*d^2 + b^6*d^2 + (a^4*b^2*d^2*e^(4*c) + 2*a^2*b^4*d^2*e^(4*c
) + b^6*d^2*e^(4*c))*e^(4*d*x) + 4*(a^5*b*d^2*e^(3*c) + 2*a^3*b^3*d^2*e^(3*
c) + a*b^5*d^2*e^(3*c))*e^(3*d*x) + 2*(2*a^6*d^2*e^(2*c) + 3*a^4*b^2*d^2*e^
(2*c) - b^6*d^2*e^(2*c))*e^(2*d*x) - 4*(a^5*b*d^2*e^c + 2*a^3*b^3*d^2*e^c +
 a*b^5*d^2*e^c)*e^(d*x)) - 3*a^2*log((b*e^(d*x + c) + a - sqrt(a^2 + b^2))/
(b*e^(d*x + c) + a + sqrt(a^2 + b^2)))/((a^4 + 2*a^2*b^2 + b^4)*sqrt(a^2 +
b^2)*d^2))*f + 1/2*e*((2*a^2 - b^2)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^
2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^4 + 2*a^2*b^2 + b^4)*sqrt(a
^2 + b^2)*d) - 2*(3*a*b^2 + (10*a^2*b + b^3)*e^(-d*x - c) + 3*(2*a^3 - a*b^
2)*e^(-2*d*x - 2*c) - (2*a^2*b - b^3)*e^(-3*d*x - 3*c))/((a^4*b^2 + 2*a^2*b
^4 + b^6 + 4*(a^5*b + 2*a^3*b^3 + a*b^5)*e^(-d*x - c) + 2*(2*a^6 + 3*a^4*b^
2 - b^6)*e^(-2*d*x - 2*c) - 4*(a^5*b + 2*a^3*b^3 + a*b^5)*e^(-3*d*x - 3*c)
+ (a^4*b^2 + 2*a^2*b^4 + b^6)*e^(-4*d*x - 4*c))*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+fx}{(a+b\sinh(c+dx))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(a + b*sinh(c + d*x))^3,x)
```

```
[Out] int((e + f*x)/(a + b*sinh(c + d*x))^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)/(a+b*sinh(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.179 $\int \frac{1}{(e+fx)(a+b\sinh(c+dx))^3}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(e+fx)(a+b\sinh(c+dx))^3},x\right)$$

```
[Out] Unintegrable(1/(f*x+e)/(a+b*sinh(d*x+c))^3,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(e+fx)(a+b\sinh(c+dx))^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((e + f*x)*(a + b*Sinh[c + d*x])^3),x]
[Out] Defer[Int][1/((e + f*x)*(a + b*Sinh[c + d*x])^3), x]
```

Rubi steps

$$\int \frac{1}{(e+fx)(a+b\sinh(c+dx))^3}\,dx=\int \frac{1}{(e+fx)(a+b\sinh(c+dx))^3}\,dx$$

Mathematica [A] time = 100.76, size = 0, normalized size = 0.00

$$\int \frac{1}{(e+fx)(a+b\sinh(c+dx))^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((e + f*x)*(a + b*Sinh[c + d*x])^3),x]
[Out] Integrate[1/((e + f*x)*(a + b*Sinh[c + d*x])^3), x]
```

fricas [A] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^3fx+a^3e+\left(b^3fx+b^3e\right)\sinh\left(dx+c\right)^3+3\left(ab^2fx+ab^2e\right)\sinh\left(dx+c\right)^2+3\left(a^2bfx+a^2be\right)\sinh\left(\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x+e)/(a+b*sinh(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*f*x + a^3*e + (b^3*f*x + b^3*e)*sinh(d*x + c)^3 + 3*(a*b^2*
f*x + a*b^2*e)*sinh(d*x + c)^2 + 3*(a^2*b*f*x + a^2*b*e)*sinh(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(fx+e)(b\sinh(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x+e)/(a+b*sinh(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((f*x + e)*(b*sinh(d*x + c) + a)^3), x)
```

maple [A] time = 0.72, size = 0, normalized size = 0.00

$$\int \frac{1}{(fx+e)\,(a+b\sinh(dx+c))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(f*x+e)/(a+b*sinh(d*x+c))^3,x)
```

```
[Out] int(1/(f*x+e)/(a+b*sinh(d*x+c))^3,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x+e)/(a+b*sinh(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] (3*a*b^2*d*f*x + 3*a*b^2*d*e + ((2*d*e + f)*a^2*b*e^(3*c) - (d*e - f)*b^3*e
^(3*c) + (2*a^2*b*d*f*e^(3*c) - b^3*d*f*e^(3*c))*x)*e^(3*d*x) + (2*(3*d*e +
 f)*a^3*e^(2*c) - (3*d*e - 2*f)*a*b^2*e^(2*c) + 3*(2*a^3*d*f*e^(2*c) - a*b^
2*d*f*e^(2*c))*x)*e^(2*d*x) - ((10*d*e + f)*a^2*b*e^c + (d*e + f)*b^3*e^c +
 (10*a^2*b*d*f*e^c + b^3*d*f*e^c)*x)*e^(d*x))/(a^4*b^2*d^2*e^2 + 2*a^2*b^4*
d^2*e^2 + b^6*d^2*e^2 + (a^4*b^2*d^2*f^2 + 2*a^2*b^4*d^2*f^2 + b^6*d^2*f^2)
*x^2 + 2*(a^4*b^2*d^2*e*f + 2*a^2*b^4*d^2*e*f + b^6*d^2*e*f)*x + (a^4*b^2*d
^2*e^2*e^(4*c) + 2*a^2*b^4*d^2*e^2*e^(4*c) + b^6*d^2*e^2*e^(4*c) + (a^4*b^2
*d^2*f^2*e^(4*c) + 2*a^2*b^4*d^2*f^2*e^(4*c) + b^6*d^2*f^2*e^(4*c))*x^2 + 2
*(a^4*b^2*d^2*e*f*e^(4*c) + 2*a^2*b^4*d^2*e*f*e^(4*c) + b^6*d^2*e*f*e^(4*c)
)*x)*e^(4*d*x) + 4*(a^5*b*d^2*e^2*e^(3*c) + 2*a^3*b^3*d^2*e^2*e^(3*c) + a*b
^5*d^2*e^2*e^(3*c) + (a^5*b*d^2*f^2*e^(3*c) + 2*a^3*b^3*d^2*f^2*e^(3*c) + a
```

```
*b^5*d^2*f^2*e^(3*c))*x^2 + 2*(a^5*b*d^2*e*f*e^(3*c) + 2*a^3*b^3*d^2*e*f*e^
(3*c) + a*b^5*d^2*e*f*e^(3*c))*x)*e^(3*d*x) + 2*(2*a^6*d^2*e^2*e^(2*c) + 3*
a^4*b^2*d^2*e^2*e^(2*c) - b^6*d^2*e^2*e^(2*c) + (2*a^6*d^2*f^2*e^(2*c) + 3*
a^4*b^2*d^2*f^2*e^(2*c) - b^6*d^2*f^2*e^(2*c))*x^2 + 2*(2*a^6*d^2*e*f*e^(2*
c) + 3*a^4*b^2*d^2*e*f*e^(2*c) - b^6*d^2*e*f*e^(2*c))*x)*e^(2*d*x) - 4*(a^5
*b*d^2*e^2*e^c + 2*a^3*b^3*d^2*e^2*e^c + a*b^5*d^2*e^2*e^c + (a^5*b*d^2*f^2
*e^c + 2*a^3*b^3*d^2*f^2*e^c + a*b^5*d^2*f^2*e^c)*x^2 + 2*(a^5*b*d^2*e*f*e^
c + 2*a^3*b^3*d^2*e*f*e^c + a*b^5*d^2*e*f*e^c)*x)*e^(d*x)) + integrate((3*a
*b*d*f^2*x + 3*a*b*d*e*f - ((2*d^2*e^2 + 3*d*e*f + 2*f^2)*a^2*e^c - (d^2*e^
2 - 2*f^2)*b^2*e^c + (2*a^2*d^2*f^2*e^c - b^2*d^2*f^2*e^c)*x^2 - (2*b^2*d^2
*e*f*e^c - (4*d^2*e*f + 3*d*f^2)*a^2*e^c)*x)*e^(d*x))/(a^4*b*d^2*e^3 + 2*a^
2*b^3*d^2*e^3 + b^5*d^2*e^3 + (a^4*b*d^2*f^3 + 2*a^2*b^3*d^2*f^3 + b^5*d^2*
f^3)*x^3 + 3*(a^4*b*d^2*e*f^2 + 2*a^2*b^3*d^2*e*f^2 + b^5*d^2*e*f^2)*x^2 +
3*(a^4*b*d^2*e^2*f + 2*a^2*b^3*d^2*e^2*f + b^5*d^2*e^2*f)*x - (a^4*b*d^2*e^
3*e^(2*c) + 2*a^2*b^3*d^2*e^3*e^(2*c) + b^5*d^2*e^3*e^(2*c) + (a^4*b*d^2*f^
3*e^(2*c) + 2*a^2*b^3*d^2*f^3*e^(2*c) + b^5*d^2*f^3*e^(2*c))*x^3 + 3*(a^4*b
*d^2*e*f^2*e^(2*c) + 2*a^2*b^3*d^2*e*f^2*e^(2*c) + b^5*d^2*e*f^2*e^(2*c))*x
^2 + 3*(a^4*b*d^2*e^2*f*e^(2*c) + 2*a^2*b^3*d^2*e^2*f*e^(2*c) + b^5*d^2*e^2
*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^5*d^2*e^3*e^c + 2*a^3*b^2*d^2*e^3*e^c + a*b
^4*d^2*e^3*e^c + (a^5*d^2*f^3*e^c + 2*a^3*b^2*d^2*f^3*e^c + a*b^4*d^2*f^3*e
^c)*x^3 + 3*(a^5*d^2*e*f^2*e^c + 2*a^3*b^2*d^2*e*f^2*e^c + a*b^4*d^2*e*f^2*
e^c)*x^2 + 3*(a^5*d^2*e^2*f*e^c + 2*a^3*b^2*d^2*e^2*f*e^c + a*b^4*d^2*e^2*f
*e^c)*x)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(e+f\,x\right)\,{\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((e + f*x)*(a + b*sinh(c + d*x))^3),x)
```

```
[Out] int(1/((e + f*x)*(a + b*sinh(c + d*x))^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x+e)/(a+b*sinh(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.180 $\int \frac{1}{(e+fx)^2(a+b\sinh(c+dx))^3}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(e+fx)^2(a+b\sinh(c+dx))^3},x\right)$$

```
[Out] Unintegrable(1/(f*x+e)^2/(a+b*sinh(d*x+c))^3,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(e+fx)^2(a+b\sinh(c+dx))^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((e + f*x)^2*(a + b*Sinh[c + d*x])^3),x]
```

```
[Out] Defer[Int][1/((e + f*x)^2*(a + b*Sinh[c + d*x])^3), x]
```

Rubi steps

$$\int \frac{1}{(e+fx)^2(a+b\sinh(c+dx))^3}\,dx=\int \frac{1}{(e+fx)^2(a+b\sinh(c+dx))^3}\,dx$$

Mathematica [A] time = 93.77, size = 0, normalized size = 0.00

$$\int \frac{1}{(e+fx)^2(a+b\sinh(c+dx))^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((e + f*x)^2*(a + b*Sinh[c + d*x])^3),x]
```

```
[Out] Integrate[1/((e + f*x)^2*(a + b*Sinh[c + d*x])^3), x]
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^3f^2x^2+2\,a^3efx+a^3e^2+\left(b^3f^2x^2+2\,b^3efx+b^3e^2\right)\sinh\left(dx+c\right)^3+3\left(ab^2f^2x^2+2\,ab^2efx+ab^2e^2\right)\text{s}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x+e)^2/(a+b*sinh(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*f^2*x^2 + 2*a^3*e*f*x + a^3*e^2 + (b^3*f^2*x^2 + 2*b^3*e*f*
x + b^3*e^2)*sinh(d*x + c)^3 + 3*(a*b^2*f^2*x^2 + 2*a*b^2*e*f*x + a*b^2*e^2
)*sinh(d*x + c)^2 + 3*(a^2*b*f^2*x^2 + 2*a^2*b*e*f*x + a^2*b*e^2)*sinh(d*x
+ c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x+e)^2/(a+b*sinh(d*x+c))^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 1.08, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(fx+e\right)^{2} \left(a+b\sinh \left(dx+c\right)\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(f*x+e)^2/(a+b*sinh(d*x+c))^3,x)
```

```
[Out] int(1/(f*x+e)^2/(a+b*sinh(d*x+c))^3,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x+e)^2/(a+b*sinh(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] (3*a*b^2*d*f*x + 3*a*b^2*d*e + (2*(d*e + f)*a^2*b*e^(3*c) - (d*e - 2*f)*b^3
*e^(3*c) + (2*a^2*b*d*f*e^(3*c) - b^3*d*f*e^(3*c))*x)*e^(3*d*x) + (2*(3*d*e
 + 2*f)*a^3*e^(2*c) - (3*d*e - 4*f)*a*b^2*e^(2*c) + 3*(2*a^3*d*f*e^(2*c) -
a*b^2*d*f*e^(2*c))*x)*e^(2*d*x) - (2*(5*d*e + f)*a^2*b*e^c + (d*e + 2*f)*b^
3*e^c + (10*a^2*b*d*f*e^c + b^3*d*f*e^c)*x)*e^(d*x))/(a^4*b^2*d^2*e^3 + 2*a
^2*b^4*d^2*e^3 + b^6*d^2*e^3 + (a^4*b^2*d^2*f^3 + 2*a^2*b^4*d^2*f^3 + b^6*d
^2*f^3)*x^3 + 3*(a^4*b^2*d^2*e*f^2 + 2*a^2*b^4*d^2*e*f^2 + b^6*d^2*e*f^2)*x
^2 + 3*(a^4*b^2*d^2*e^2*f + 2*a^2*b^4*d^2*e^2*f + b^6*d^2*e^2*f)*x + (a^4*b
^2*d^2*e^3*e^(4*c) + 2*a^2*b^4*d^2*e^3*e^(4*c) + b^6*d^2*e^3*e^(4*c) + (a^4
*b^2*d^2*f^3*e^(4*c) + 2*a^2*b^4*d^2*f^3*e^(4*c) + b^6*d^2*f^3*e^(4*c))*x^3
 + 3*(a^4*b^2*d^2*e*f^2*e^(4*c) + 2*a^2*b^4*d^2*e*f^2*e^(4*c) + b^6*d^2*e*f
```

```
^2*e^(4*c))*x^2 + 3*(a^4*b^2*d^2*e^2*f*e^(4*c) + 2*a^2*b^4*d^2*e^2*f*e^(4*c
) + b^6*d^2*e^2*f*e^(4*c))*x)*e^(4*d*x) + 4*(a^5*b*d^2*e^3*e^(3*c) + 2*a^3*
b^3*d^2*e^3*e^(3*c) + a*b^5*d^2*e^3*e^(3*c) + (a^5*b*d^2*f^3*e^(3*c) + 2*a^
3*b^3*d^2*f^3*e^(3*c) + a*b^5*d^2*f^3*e^(3*c))*x^3 + 3*(a^5*b*d^2*e*f^2*e^(
3*c) + 2*a^3*b^3*d^2*e*f^2*e^(3*c) + a*b^5*d^2*e*f^2*e^(3*c))*x^2 + 3*(a^5*
b*d^2*e^2*f*e^(3*c) + 2*a^3*b^3*d^2*e^2*f*e^(3*c) + a*b^5*d^2*e^2*f*e^(3*c)
)*x)*e^(3*d*x) + 2*(2*a^6*d^2*e^3*e^(2*c) + 3*a^4*b^2*d^2*e^3*e^(2*c) - b^6
*d^2*e^3*e^(2*c) + (2*a^6*d^2*f^3*e^(2*c) + 3*a^4*b^2*d^2*f^3*e^(2*c) - b^6
*d^2*f^3*e^(2*c))*x^3 + 3*(2*a^6*d^2*e*f^2*e^(2*c) + 3*a^4*b^2*d^2*e*f^2*e^
(2*c) - b^6*d^2*e*f^2*e^(2*c))*x^2 + 3*(2*a^6*d^2*e^2*f*e^(2*c) + 3*a^4*b^2
*d^2*e^2*f*e^(2*c) - b^6*d^2*e^2*f*e^(2*c))*x)*e^(2*d*x) - 4*(a^5*b*d^2*e^3
*e^c + 2*a^3*b^3*d^2*e^3*e^c + a*b^5*d^2*e^3*e^c + (a^5*b*d^2*f^3*e^c + 2*a
^3*b^3*d^2*f^3*e^c + a*b^5*d^2*f^3*e^c)*x^3 + 3*(a^5*b*d^2*e*f^2*e^c + 2*a^
3*b^3*d^2*e*f^2*e^c + a*b^5*d^2*e*f^2*e^c)*x^2 + 3*(a^5*b*d^2*e^2*f*e^c + 2
*a^3*b^3*d^2*e^2*f*e^c + a*b^5*d^2*e^2*f*e^c)*x)*e^(d*x)) + integrate((6*a*
b*d*f^2*x + 6*a*b*d*e*f - (2*(d^2*e^2 + 3*d*e*f + 3*f^2)*a^2*e^c - (d^2*e^2
 - 6*f^2)*b^2*e^c + (2*a^2*d^2*f^2*e^c - b^2*d^2*f^2*e^c)*x^2 - 2*(b^2*d^2*
e*f*e^c - (2*d^2*e*f + 3*d*f^2)*a^2*e^c)*x)*e^(d*x))/(a^4*b*d^2*e^4 + 2*a^2
*b^3*d^2*e^4 + b^5*d^2*e^4 + (a^4*b*d^2*f^4 + 2*a^2*b^3*d^2*f^4 + b^5*d^2*f
^4)*x^4 + 4*(a^4*b*d^2*e*f^3 + 2*a^2*b^3*d^2*e*f^3 + b^5*d^2*e*f^3)*x^3 + 6
*(a^4*b*d^2*e^2*f^2 + 2*a^2*b^3*d^2*e^2*f^2 + b^5*d^2*e^2*f^2)*x^2 + 4*(a^4
*b*d^2*e^3*f + 2*a^2*b^3*d^2*e^3*f + b^5*d^2*e^3*f)*x - (a^4*b*d^2*e^4*e^(2
*c) + 2*a^2*b^3*d^2*e^4*e^(2*c) + b^5*d^2*e^4*e^(2*c) + (a^4*b*d^2*f^4*e^(2
*c) + 2*a^2*b^3*d^2*f^4*e^(2*c) + b^5*d^2*f^4*e^(2*c))*x^4 + 4*(a^4*b*d^2*e
*f^3*e^(2*c) + 2*a^2*b^3*d^2*e*f^3*e^(2*c) + b^5*d^2*e*f^3*e^(2*c))*x^3 + 6
*(a^4*b*d^2*e^2*f^2*e^(2*c) + 2*a^2*b^3*d^2*e^2*f^2*e^(2*c) + b^5*d^2*e^2*f
^2*e^(2*c))*x^2 + 4*(a^4*b*d^2*e^3*f*e^(2*c) + 2*a^2*b^3*d^2*e^3*f*e^(2*c)
+ b^5*d^2*e^3*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^5*d^2*e^4*e^c + 2*a^3*b^2*d^2*
e^4*e^c + a*b^4*d^2*e^4*e^c + (a^5*d^2*f^4*e^c + 2*a^3*b^2*d^2*f^4*e^c + a*
b^4*d^2*f^4*e^c)*x^4 + 4*(a^5*d^2*e*f^3*e^c + 2*a^3*b^2*d^2*e*f^3*e^c + a*b
^4*d^2*e*f^3*e^c)*x^3 + 6*(a^5*d^2*e^2*f^2*e^c + 2*a^3*b^2*d^2*e^2*f^2*e^c
+ a*b^4*d^2*e^2*f^2*e^c)*x^2 + 4*(a^5*d^2*e^3*f*e^c + 2*a^3*b^2*d^2*e^3*f*e
^c + a*b^4*d^2*e^3*f*e^c)*x)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(e+fx\right)^2 \left(a+b\sinh\left(c+dx\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((e + f*x)^2*(a + b*sinh(c + d*x))^3),x)
```

```
[Out] int(1/((e + f*x)^2*(a + b*sinh(c + d*x))^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x+e)**2/(a+b*sinh(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.181 $\int (c+dx)^m (a+b\sinh(e+fx))^n \, dx$

Optimal. Leaf size=23

$$\text{Int}\left((c+dx)^m (a+b\sinh(e+fx))^n, x\right)$$

```
[Out] Unintegrable((d*x+c)^m*(a+b*sinh(f*x+e))^n,x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (c+dx)^m (a+b\sinh(e+fx))^n \, dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m*(a + b*Sinh[e + f*x])^n,x]
```

```
[Out] Defer[Int][(c + d*x)^m*(a + b*Sinh[e + f*x])^n, x]
```

Rubi steps

$$\int (c+dx)^m (a+b\sinh(e+fx))^n \, dx = \int (c+dx)^m (a+b\sinh(e+fx))^n \, dx$$

Mathematica [A] time = 4.37, size = 0, normalized size = 0.00

$$\int (c+dx)^m (a+b\sinh(e+fx))^n \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m*(a + b*Sinh[e + f*x])^n,x]
```

```
[Out] Integrate[(c + d*x)^m*(a + b*Sinh[e + f*x])^n, x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left((dx+c)^m \left(b\sinh\left(fx+e\right)+a\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m*(b*sinh(f*x + e) + a)^n, x)
```

<u>**giac**</u> **[A]** time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(b\sinh\left(fx+e\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e))^n,x, algorithm="giac")
[Out] integrate((d*x + c)^m*(b*sinh(f*x + e) + a)^n, x)
```

<u>**maple**</u> **[A]** time = 0.09, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(a+b\sinh\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+b*sinh(f*x+e))^n,x)
[Out] int((d*x+c)^m*(a+b*sinh(f*x+e))^n,x)
```

<u>**maxima**</u> **[A]** time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(b\sinh\left(fx+e\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((d*x + c)^m*(b*sinh(f*x + e) + a)^n, x)
```

<u>**mupad**</u> **[A]** time = 0.00, size = -1, normalized size = -0.04

$$\int \left(a+b\sinh\left(e+f\,x\right)\right)^n\,(c+d\,x)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))^n*(c + d*x)^m,x)
[Out] int((a + b*sinh(e + f*x))^n*(c + d*x)^m, x)
```

<u>**sympy**</u> **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+b*sinh(f*x+e))**n,x)
[Out] Timed out
```

3.182 $\int (c+dx)^m (a+b\sinh(e+fx))^3\,dx$

Optimal. Leaf size=543

$$\frac{a^3(c+dx)^{m+1}}{d(m+1)}+\frac{3a^2be^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{f(c+dx)}{d}\right)}{2f}+\frac{3a^2be^{\frac{cf}{d}-e}(c+dx)^m\left(\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{f(c}{}\right.}{2f}$$

```
[Out] a^3*(d*x+c)^(1+m)/d/(1+m)-3/2*a*b^2*(d*x+c)^(1+m)/d/(1+m)+1/8*3^(-1-m)*b^3*
exp(3*e-3*c*f/d)*(d*x+c)^m*GAMMA(1+m,-3*f*(d*x+c)/d)/f/((-f*(d*x+c)/d)^m)+3
*2^(-3-m)*a*b^2*exp(2*e-2*c*f/d)*(d*x+c)^m*GAMMA(1+m,-2*f*(d*x+c)/d)/f/((-f
*(d*x+c)/d)^m)+3/2*a^2*b*exp(e-c*f/d)*(d*x+c)^m*GAMMA(1+m,-f*(d*x+c)/d)/f/(
(-f*(d*x+c)/d)^m)-3/8*b^3*exp(e-c*f/d)*(d*x+c)^m*GAMMA(1+m,-f*(d*x+c)/d)/f/
((-f*(d*x+c)/d)^m)+3/2*a^2*b*exp(-e+c*f/d)*(d*x+c)^m*GAMMA(1+m,f*(d*x+c)/d)
/f/((f*(d*x+c)/d)^m)-3/8*b^3*exp(-e+c*f/d)*(d*x+c)^m*GAMMA(1+m,f*(d*x+c)/d)
/f/((f*(d*x+c)/d)^m)-3*2^(-3-m)*a*b^2*exp(-2*e+2*c*f/d)*(d*x+c)^m*GAMMA(1+m
,2*f*(d*x+c)/d)/f/((f*(d*x+c)/d)^m)+1/8*3^(-1-m)*b^3*exp(-3*e+3*c*f/d)*(d*x
+c)^m*GAMMA(1+m,3*f*(d*x+c)/d)/f/((f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.81, antiderivative size = 543, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3317, 3308, 2181, 3312, 3307}

$$\frac{3a^2be^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{f(c+dx)}{d}\right)}{2f}+\frac{3a^2be^{\frac{cf}{d}-e}(c+dx)^m\left(\frac{f(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,\frac{f(c+}{d}\right.}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + b*Sinh[e + f*x])^3,x]
```

```
[Out] (a^3*(c + d*x)^(1 + m))/(d*(1 + m)) - (3*a*b^2*(c + d*x)^(1 + m))/(2*d*(1 +
 m)) + (3^(-1 - m)*b^3*E^(3*e - (3*c*f)/d)*(c + d*x)^m*Gamma[1 + m, (-3*f*(
c + d*x))/d])/(8*f*(-((f*(c + d*x))/d))^m) + (3*2^(-3 - m)*a*b^2*E^(2*e - (
2*c*f)/d)*(c + d*x)^m*Gamma[1 + m, (-2*f*(c + d*x))/d])/(f*(-((f*(c + d*x))
/d))^m) + (3*a^2*b*E^(e - (c*f)/d)*(c + d*x)^m*Gamma[1 + m, -((f*(c + d*x))
/d)])/(2*f*(-((f*(c + d*x))/d))^m) - (3*b^3*E^(e - (c*f)/d)*(c + d*x)^m*Gam
ma[1 + m, -((f*(c + d*x))/d)])/(8*f*(-((f*(c + d*x))/d))^m) + (3*a^2*b*E^(-
e + (c*f)/d)*(c + d*x)^m*Gamma[1 + m, (f*(c + d*x))/d])/(2*f*((f*(c + d*x))
/d)^m) - (3*b^3*E^(-e + (c*f)/d)*(c + d*x)^m*Gamma[1 + m, (f*(c + d*x))/d])
/(8*f*((f*(c + d*x))/d)^m) - (3*2^(-3 - m)*a*b^2*E^(-2*e + (2*c*f)/d)*(c +
d*x)^m*Gamma[1 + m, (2*f*(c + d*x))/d])/(f*((f*(c + d*x))/d)^m) + (3^(-1 -
m)*b^3*E^(-3*e + (3*c*f)/d)*(c + d*x)^m*Gamma[1 + m, (3*f*(c + d*x))/d])/(8
*f*((f*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^m(a+b\sinh(e+fx))^3\,dx = \int \left(a^3(c+dx)^m + 3a^2b(c+dx)^m\sinh(e+fx) + 3ab^2(c+dx)^m\sinh^2(e+f$$

$$= \frac{a^3(c+dx)^{1+m}}{d(1+m)} + \left(3a^2b\right)\int (c+dx)^m\sinh(e+fx)\,dx + \left(3ab^2\right)\int (c+dx)^m$$

$$= \frac{a^3(c+dx)^{1+m}}{d(1+m)} + \frac{1}{2}\left(3a^2b\right)\int e^{-i(ie+ifx)}(c+dx)^m\,dx - \frac{1}{2}\left(3a^2b\right)\int e^{i(ie+ifx)}(c$$

$$= \frac{a^3(c+dx)^{1+m}}{d(1+m)} - \frac{3ab^2(c+dx)^{1+m}}{2d(1+m)} + \frac{3a^2be^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(1\right.}{2f}$$

$$= \frac{a^3(c+dx)^{1+m}}{d(1+m)} - \frac{3ab^2(c+dx)^{1+m}}{2d(1+m)} + \frac{3a^2be^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(1\right.}{2f}$$

$$= \frac{a^3(c+dx)^{1+m}}{d(1+m)} - \frac{3ab^2(c+dx)^{1+m}}{2d(1+m)} + \frac{3^{-1-m}b^3e^{3e-\frac{3cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}}{8f}$$

Mathematica [A] time = 1.64, size = 448, normalized size = 0.83

$$\frac{2^{-m-3}3^{-m-1}e^{-3\left(\frac{cf}{d}+e\right)}(c+dx)^m\left(-\frac{f^2(c+dx)^2}{d^2}\right)^{-m}\left(-bd2^m3^{m+2}(m+1)\left(b^2-4a^2\right)e^{\frac{2cf}{d}+4e}\left(\frac{f(c+dx)}{d}\right)^m\Gamma\left(m+1,-\frac{f(c+dx)}{d}\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + b*Sinh[e + f*x])^3,x]
```

```
[Out] (2^(-3 - m)*3^(-1 - m)*(c + d*x)^m*(2^m*b^3*d*E^(6*e)*(1 + m)*((f*(c + d*x)
)/d)^m*Gamma[1 + m, (-3*f*(c + d*x))/d] + 3^(2 + m)*a*b^2*d*E^(5*e + (c*f)/
d)*(1 + m)*(f*(c/d + x))^m*Gamma[1 + m, (-2*f*(c + d*x))/d] - 2^m*3^(2 + m)
*b*(-4*a^2 + b^2)*d*E^(4*e + (2*c*f)/d)*(1 + m)*((f*(c + d*x))/d)^m*Gamma[1
 + m, -((f*(c + d*x))/d)] - 2^m*3^(2 + m)*b*(-4*a^2 + b^2)*d*E^(2*e + (4*c*
f)/d)*(1 + m)*(-((f*(c + d*x))/d))^m*Gamma[1 + m, (f*(c + d*x))/d] - 3^(2 +
 m)*a*b^2*d*E^(e + (5*c*f)/d)*(1 + m)*(-((f*(c + d*x))/d))^m*Gamma[1 + m, (
2*f*(c + d*x))/d] + 2^m*E^((3*c*f)/d)*(4*3^(1 + m)*a*(2*a^2 - 3*b^2)*E^(3*e
)*f*(c + d*x)*(-((f^2*(c + d*x)^2)/d^2))^m + b^3*d*E^((3*c*f)/d)*(1 + m)*(-
((f*(c + d*x))/d))^m*Gamma[1 + m, (3*f*(c + d*x))/d])))/(d*E^(3*(e + (c*f)/
d))*f*(1 + m)*(-((f^2*(c + d*x)^2)/d^2))^m)
```

fricas [A] time = 0.91, size = 829, normalized size = 1.53

$$\frac{\left(b^3dm + b^3d\right)\cosh\left(\frac{dm\log\left(\frac{3f}{d}\right)+3\,de-3\,cf}{d}\right)\Gamma\left(m+1, \frac{3\left(dfx+cf\right)}{d}\right) - 9\left(ab^2dm + ab^2d\right)\cosh\left(\frac{dm\log\left(\frac{2f}{d}\right)+2\,de-2\,cf}{d}\right)\Gamma\left(m\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/24*((b^3*d*m + b^3*d)*cosh((d*m*log(3*f/d) + 3*d*e - 3*c*f)/d)*gamma(m +
1, 3*(d*f*x + c*f)/d) - 9*(a*b^2*d*m + a*b^2*d)*cosh((d*m*log(2*f/d) + 2*d*
e - 2*c*f)/d)*gamma(m + 1, 2*(d*f*x + c*f)/d) + 9*((4*a^2*b - b^3)*d*m + (4
*a^2*b - b^3)*d)*cosh((d*m*log(f/d) + d*e - c*f)/d)*gamma(m + 1, (d*f*x + c
*f)/d) + 9*((4*a^2*b - b^3)*d*m + (4*a^2*b - b^3)*d)*cosh((d*m*log(-f/d) -
d*e + c*f)/d)*gamma(m + 1, -(d*f*x + c*f)/d) + 9*(a*b^2*d*m + a*b^2*d)*cosh
((d*m*log(-2*f/d) - 2*d*e + 2*c*f)/d)*gamma(m + 1, -2*(d*f*x + c*f)/d) + (b
^3*d*m + b^3*d)*cosh((d*m*log(-3*f/d) - 3*d*e + 3*c*f)/d)*gamma(m + 1, -3*(
d*f*x + c*f)/d) - (b^3*d*m + b^3*d)*gamma(m + 1, 3*(d*f*x + c*f)/d)*sinh((d
*m*log(3*f/d) + 3*d*e - 3*c*f)/d) + 9*(a*b^2*d*m + a*b^2*d)*gamma(m + 1, 2*
(d*f*x + c*f)/d)*sinh((d*m*log(2*f/d) + 2*d*e - 2*c*f)/d) - 9*((4*a^2*b - b
^3)*d*m + (4*a^2*b - b^3)*d)*gamma(m + 1, (d*f*x + c*f)/d)*sinh((d*m*log(f/
d) + d*e - c*f)/d) - 9*((4*a^2*b - b^3)*d*m + (4*a^2*b - b^3)*d)*gamma(m +
1, -(d*f*x + c*f)/d)*sinh((d*m*log(-f/d) - d*e + c*f)/d) - 9*(a*b^2*d*m + a
*b^2*d)*gamma(m + 1, -2*(d*f*x + c*f)/d)*sinh((d*m*log(-2*f/d) - 2*d*e + 2*
c*f)/d) - (b^3*d*m + b^3*d)*gamma(m + 1, -3*(d*f*x + c*f)/d)*sinh((d*m*log(
-3*f/d) - 3*d*e + 3*c*f)/d) + 12*((2*a^3 - 3*a*b^2)*d*f*x + (2*a^3 - 3*a*b^
2)*c*f)*cosh(m*log(d*x + c)) + 12*((2*a^3 - 3*a*b^2)*d*f*x + (2*a^3 - 3*a*b
^2)*c*f)*sinh(m*log(d*x + c)))/(d*f*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sinh\left(fx+e\right)+a\right)^3 (dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e))^3,x, algorithm="giac")
```

```
[Out] integrate((b*sinh(f*x + e) + a)^3*(d*x + c)^m, x)
```

maple [F] time = 0.24, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(a+b\sinh\left(fx+e\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+b*sinh(f*x+e))^3,x)
```

```
[Out] int((d*x+c)^m*(a+b*sinh(f*x+e))^3,x)
```

maxima [A] time = 0.47, size = 377, normalized size = 0.69

$$\frac{3}{2}\left(\frac{(dx+c)^{m+1}e^{\left(-e+\frac{cf}{d}\right)}E_{-m}\left(\frac{(dx+c)f}{d}\right)}{d}-\frac{(dx+c)^{m+1}e^{\left(e-\frac{cf}{d}\right)}E_{-m}\left(-\frac{(dx+c)f}{d}\right)}{d}\right)a^2b-\frac{3}{4}\left(\frac{(dx+c)^{m+1}e^{\left(-2e+\frac{2cf}{d}\right)}E_{-m}\left(\frac{2(dx+}{d}\right.}{d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] 3/2*((d*x + c)^(m + 1)*e^(-e + c*f/d)*exp_integral_e(-m, (d*x + c)*f/d)/d -
 (d*x + c)^(m + 1)*e^(e - c*f/d)*exp_integral_e(-m, -(d*x + c)*f/d)/d)*a^2*
b - 3/4*((d*x + c)^(m + 1)*e^(-2*e + 2*c*f/d)*exp_integral_e(-m, 2*(d*x + c
)*f/d)/d + (d*x + c)^(m + 1)*e^(2*e - 2*c*f/d)*exp_integral_e(-m, -2*(d*x +
 c)*f/d)/d + 2*(d*x + c)^(m + 1)/(d*(m + 1)))*a*b^2 + 1/8*((d*x + c)^(m + 1
)*e^(-3*e + 3*c*f/d)*exp_integral_e(-m, 3*(d*x + c)*f/d)/d - 3*(d*x + c)^(m
 + 1)*e^(-e + c*f/d)*exp_integral_e(-m, (d*x + c)*f/d)/d + 3*(d*x + c)^(m +
 1)*e^(e - c*f/d)*exp_integral_e(-m, -(d*x + c)*f/d)/d - (d*x + c)^(m + 1)*
e^(3*e - 3*c*f/d)*exp_integral_e(-m, -3*(d*x + c)*f/d)/d)*b^3 + (d*x + c)^(
m + 1)*a^3/(d*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+b\sinh\left(e+f\,x\right)\right)^3\,{\left(c+d\,x\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))^3*(c + d*x)^m,x)
```

```
[Out] int((a + b*sinh(e + f*x))^3*(c + d*x)^m, x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+b*sinh(f*x+e))**3,x)
```

```
[Out] Exception raised: TypeError
```

3.183 $\int (c+dx)^m (a+b\sinh(e+fx))^2\,dx$

Optimal. Leaf size=281

$$\frac{a^2(c+dx)^{m+1}}{d(m+1)}+\frac{abe^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{f(c+dx)}{d}\right)}{f}+\frac{abe^{\frac{cf}{d}-e}(c+dx)^m\left(\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{f(c+dx}{d}\right.}{f}$$

```
[Out] a^2*(d*x+c)^(1+m)/d/(1+m)-1/2*b^2*(d*x+c)^(1+m)/d/(1+m)+2^(-3-m)*b^2*exp(2*
e-2*c*f/d)*(d*x+c)^m*GAMMA(1+m,-2*f*(d*x+c)/d)/f/((-f*(d*x+c)/d)^m)+a*b*exp
(e-c*f/d)*(d*x+c)^m*GAMMA(1+m,-f*(d*x+c)/d)/f/((-f*(d*x+c)/d)^m)+a*b*exp(-e
+c*f/d)*(d*x+c)^m*GAMMA(1+m,f*(d*x+c)/d)/f/((f*(d*x+c)/d)^m)-2^(-3-m)*b^2*e
xp(-2*e+2*c*f/d)*(d*x+c)^m*GAMMA(1+m,2*f*(d*x+c)/d)/f/((f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.37, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3317, 3308, 2181, 3312, 3307}

$$\frac{abe^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{f(c+dx)}{d}\right)}{f}+\frac{abe^{\frac{cf}{d}-e}(c+dx)^m\left(\frac{f(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,\frac{f(c+dx)}{d}\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] (a^2*(c + d*x)^(1 + m))/(d*(1 + m)) - (b^2*(c + d*x)^(1 + m))/(2*d*(1 + m))
 + (2^(-3 - m)*b^2*E^(2*e - (2*c*f)/d)*(c + d*x)^m*Gamma[1 + m, (-2*f*(c +
d*x))/d])/(f*(-((f*(c + d*x))/d))^m) + (a*b*E^(e - (c*f)/d)*(c + d*x)^m*Gam
ma[1 + m, -((f*(c + d*x))/d)])/(f*(-((f*(c + d*x))/d))^m) + (a*b*E^(-e + (c
*f)/d)*(c + d*x)^m*Gamma[1 + m, (f*(c + d*x))/d])/(f*((f*(c + d*x))/d)^m) -
 (2^(-3 - m)*b^2*E^(-2*e + (2*c*f)/d)*(c + d*x)^m*Gamma[1 + m, (2*f*(c + d*
x))/d])/(f*((f*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
```

```
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^m(a+b\sinh(e+fx))^2\,dx = \int \left(a^2(c+dx)^m + 2ab(c+dx)^m\sinh(e+fx) + b^2(c+dx)^m\sinh^2(e+fx)\right)$$

$$= \frac{a^2(c+dx)^{1+m}}{d(1+m)} + (2ab)\int (c+dx)^m\sinh(e+fx)\,dx + b^2\int (c+dx)^m\sinh^2$$

$$= \frac{a^2(c+dx)^{1+m}}{d(1+m)} + (ab)\int e^{-i(ie+ifx)}(c+dx)^m\,dx - (ab)\int e^{i(ie+ifx)}(c+dx)^m\,d$$

$$= \frac{a^2(c+dx)^{1+m}}{d(1+m)} - \frac{b^2(c+dx)^{1+m}}{2d(1+m)} + \frac{abe^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,\right.}{f}$$

$$= \frac{a^2(c+dx)^{1+m}}{d(1+m)} - \frac{b^2(c+dx)^{1+m}}{2d(1+m)} + \frac{abe^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,\right.}{f}$$

$$= \frac{a^2(c+dx)^{1+m}}{d(1+m)} - \frac{b^2(c+dx)^{1+m}}{2d(1+m)} + \frac{2^{-3-m}b^2e^{2e-\frac{2cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma(}{f}$$

Mathematica [A] time = 0.72, size = 254, normalized size = 0.90

$$\frac{(c+dx)^m \left(8a^2 f(c+dx) + 8abd(m+1)e^{e-\frac{cf}{d}} \left(-\frac{f(c+dx)}{d}\right)^{-m} \Gamma\left(m+1, -\frac{f(c+dx)}{d}\right) + 8abd(m+1)e^{\frac{cf}{d}-e} \left(\frac{f(c+dx)}{d}\right)^{-m} \Gamma\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] ((c + d*x)^m*(8*a^2*f*(c + d*x) - 4*b^2*f*(c + d*x) + (b^2*d*E^(2*e - (2*c*
f)/d)*(1 + m)*Gamma[1 + m, (-2*f*(c + d*x))/d])/(2^m*(-((f*(c + d*x))/d))^m
) + (8*a*b*d*E^(e - (c*f)/d)*(1 + m)*Gamma[1 + m, -((f*(c + d*x))/d)])/(-((
f*(c + d*x))/d))^m + (8*a*b*d*E^(-e + (c*f)/d)*(1 + m)*Gamma[1 + m, (f*(c +
 d*x))/d])/((f*(c + d*x))/d)^m - (b^2*d*E^(-2*e + (2*c*f)/d)*(1 + m)*Gamma[
1 + m, (2*f*(c + d*x))/d])/(2^m*((f*(c + d*x))/d)^m)))/(8*d*f*(1 + m))
```

fricas [A] time = 0.80, size = 517, normalized size = 1.84

$$-\frac{\left(b^2dm + b^2d\right)\cosh\left(\frac{dm\log\left(\frac{2f}{d}\right)+2de-2cf}{d}\right)\Gamma\left(m+1, \frac{2\left(dfx+cf\right)}{d}\right) - 8\left(abdm+abd\right)\cosh\left(\frac{dm\log\left(\frac{f}{d}\right)+de-cf}{d}\right)\Gamma\left(m+1,\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] -1/8*((b^2*d*m + b^2*d)*cosh((d*m*log(2*f/d) + 2*d*e - 2*c*f)/d)*gamma(m +
1, 2*(d*f*x + c*f)/d) - 8*(a*b*d*m + a*b*d)*cosh((d*m*log(f/d) + d*e - c*f)
/d)*gamma(m + 1, (d*f*x + c*f)/d) - 8*(a*b*d*m + a*b*d)*cosh((d*m*log(-f/d)
 - d*e + c*f)/d)*gamma(m + 1, -(d*f*x + c*f)/d) - (b^2*d*m + b^2*d)*cosh((d
*m*log(-2*f/d) - 2*d*e + 2*c*f)/d)*gamma(m + 1, -2*(d*f*x + c*f)/d) - (b^2*
d*m + b^2*d)*gamma(m + 1, 2*(d*f*x + c*f)/d)*sinh((d*m*log(2*f/d) + 2*d*e -
 2*c*f)/d) + 8*(a*b*d*m + a*b*d)*gamma(m + 1, (d*f*x + c*f)/d)*sinh((d*m*lo
g(f/d) + d*e - c*f)/d) + 8*(a*b*d*m + a*b*d)*gamma(m + 1, -(d*f*x + c*f)/d)
*sinh((d*m*log(-f/d) - d*e + c*f)/d) + (b^2*d*m + b^2*d)*gamma(m + 1, -2*(d
*f*x + c*f)/d)*sinh((d*m*log(-2*f/d) - 2*d*e + 2*c*f)/d) - 4*((2*a^2 - b^2)
*d*f*x + (2*a^2 - b^2)*c*f)*cosh(m*log(d*x + c)) - 4*((2*a^2 - b^2)*d*f*x +
 (2*a^2 - b^2)*c*f)*sinh(m*log(d*x + c)))/(d*f*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sinh\left(fx+e\right)+a\right)^2 (dx+c)^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((b*sinh(f*x + e) + a)^2*(d*x + c)^m, x)
```

maple [F] time = 0.15, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(a+b\sinh\left(fx+e\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+b*sinh(f*x+e))^2,x)
```

```
[Out] int((d*x+c)^m*(a+b*sinh(f*x+e))^2,x)
```

maxima [A] time = 0.41, size = 208, normalized size = 0.74

$$\left(\frac{(dx+c)^{m+1}e^{\left(-e+\frac{cf}{d}\right)}E_{-m}\left(\frac{(dx+c)f}{d}\right)}{d}-\frac{(dx+c)^{m+1}e^{\left(e-\frac{cf}{d}\right)}E_{-m}\left(-\frac{(dx+c)f}{d}\right)}{d}\right)ab-\frac{1}{4}\left(\frac{(dx+c)^{m+1}e^{\left(-2\,e+\frac{2\,cf}{d}\right)}E_{-m}\left(\frac{2\,(dx+c)f}{d}\right.}{d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] ((d*x + c)^(m + 1)*e^(-e + c*f/d)*exp_integral_e(-m, (d*x + c)*f/d)/d - (d*
x + c)^(m + 1)*e^(e - c*f/d)*exp_integral_e(-m, -(d*x + c)*f/d)/d)*a*b - 1/
4*((d*x + c)^(m + 1)*e^(-2*e + 2*c*f/d)*exp_integral_e(-m, 2*(d*x + c)*f/d)
/d + (d*x + c)^(m + 1)*e^(2*e - 2*c*f/d)*exp_integral_e(-m, -2*(d*x + c)*f/
d)/d + 2*(d*x + c)^(m + 1)/(d*(m + 1)))*b^2 + (d*x + c)^(m + 1)*a^2/(d*(m +
 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+b\,\mathrm{sinh}\left(e+f\,x\right)\right)}^2\,{\left(c+d\,x\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))^2*(c + d*x)^m,x)
```

```
[Out] int((a + b*sinh(e + f*x))^2*(c + d*x)^m, x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+b*sinh(f*x+e))**2,x)
```

```
[Out] Exception raised: TypeError
```

3.184 $\int (c+dx)^m(a+b\sinh(e+fx))\,dx$

Optimal. Leaf size=131

$$\frac{a(c+dx)^{m+1}}{d(m+1)}+\frac{be^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{f(c+dx)}{d}\right)}{2f}+\frac{be^{\frac{cf}{d}-e}(c+dx)^m\left(\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{f(c+dx)}{d}\right)}{2f}$$

```
[Out] a*(d*x+c)^(1+m)/d/(1+m)+1/2*b*exp(e-c*f/d)*(d*x+c)^m*GAMMA(1+m,-f*(d*x+c)/d
)/f/((-f*(d*x+c)/d)^m)+1/2*b*exp(-e+c*f/d)*(d*x+c)^m*GAMMA(1+m,f*(d*x+c)/d)
/f/((f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.15, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3317, 3308, 2181}

$$\frac{be^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{f(c+dx)}{d}\right)}{2f}+\frac{be^{\frac{cf}{d}-e}(c+dx)^m\left(\frac{f(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,\frac{f(c+dx)}{d}\right)}{2f}+\frac{a}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + b*Sinh[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^(1 + m))/(d*(1 + m)) + (b*E^(e - (c*f)/d)*(c + d*x)^m*Gamma[1
+ m, -((f*(c + d*x))/d)])/(2*f*(-((f*(c + d*x))/d))^m) + (b*E^(-e + (c*f)/d
)*(c + d*x)^m*Gamma[1 + m, (f*(c + d*x))/d])/(2*f*((f*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}\int (c+dx)^m(a+b\sinh(e+fx))\,dx &= \int \left(a(c+dx)^m+b(c+dx)^m\sinh(e+fx)\right)\,dx\\ &= \frac{a(c+dx)^{1+m}}{d(1+m)}+b\int (c+dx)^m\sinh(e+fx)\,dx\\ &= \frac{a(c+dx)^{1+m}}{d(1+m)}+\frac{1}{2}b\int e^{-i(ie+ifx)}(c+dx)^m\,dx-\frac{1}{2}b\int e^{i(ie+ifx)}(c+dx)^m\,dx\\ &= \frac{a(c+dx)^{1+m}}{d(1+m)}+\frac{be^{e-\frac{cf}{d}}(c+dx)^m\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{f(c+dx)}{d}\right)}{2f}+\frac{be^{-e+\frac{c}{d}}}{}\end{aligned}$$

Mathematica [A] time = 0.17, size = 118, normalized size = 0.90

$$\frac{1}{2}(c+dx)^m\left(\frac{2a(c+dx)}{d(m+1)}+\frac{be^{\frac{cf}{d}-e}\left(f\left(\frac{c}{d}+x\right)\right)^{-m}\Gamma\left(m+1,\frac{f(c+dx)}{d}\right)}{f}+\frac{be^{e-\frac{cf}{d}}\left(-\frac{f(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{f(c+dx)}{d}\right)}{f}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + b*Sinh[e + f*x]),x]
```

```
[Out] ((c + d*x)^m*((2*a*(c + d*x))/(d*(1 + m)) + (b*E^(e - (c*f)/d)*Gamma[1 + m,
 -((f*(c + d*x))/d)])/(f*(-((f*(c + d*x))/d))^m) + (b*E^(-e + (c*f)/d)*Gamm
a[1 + m, (f*(c + d*x))/d])/(f*(f*(c/d + x))^m)))/2
```

fricas [A] time = 0.49, size = 249, normalized size = 1.90

$$\frac{(bdm+bd)\cosh\left(\frac{dm\log\left(\frac{f}{d}\right)+de-cf}{d}\right)\Gamma\left(m+1,\frac{dfx+cf}{d}\right)+(bdm+bd)\cosh\left(\frac{dm\log\left(-\frac{f}{d}\right)-de+cf}{d}\right)\Gamma\left(m+1,-\frac{dfx+cf}{d}\right)-(b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/2*((b*d*m + b*d)*cosh((d*m*log(f/d) + d*e - c*f)/d)*gamma(m + 1, (d*f*x +
 c*f)/d) + (b*d*m + b*d)*cosh((d*m*log(-f/d) - d*e + c*f)/d)*gamma(m + 1, -
```

```
(d*f*x + c*f)/d) - (b*d*m + b*d)*gamma(m + 1, (d*f*x + c*f)/d)*sinh((d*m*lo
g(f/d) + d*e - c*f)/d) - (b*d*m + b*d)*gamma(m + 1, -(d*f*x + c*f)/d)*sinh(
(d*m*log(-f/d) - d*e + c*f)/d) + 2*(a*d*f*x + a*c*f)*cosh(m*log(d*x + c)) +
 2*(a*d*f*x + a*c*f)*sinh(m*log(d*x + c)))/(d*f*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \sinh\left(fx+e\right)+a\right)(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((b*sinh(f*x + e) + a)*(d*x + c)^m, x)
```

maple [F] time = 0.09, size = 0, normalized size = 0.00

$$\int (dx+c)^m\left(a+b\sinh\left(fx+e\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+b*sinh(f*x+e)),x)
```

```
[Out] int((d*x+c)^m*(a+b*sinh(f*x+e)),x)
```

maxima [A] time = 0.38, size = 101, normalized size = 0.77

$$\frac{1}{2}\left(\frac{(dx+c)^{m+1}e^{\left(-e+\frac{cf}{d}\right)}E_{-m}\left(\frac{(dx+c)f}{d}\right)}{d}-\frac{(dx+c)^{m+1}e^{\left(e-\frac{cf}{d}\right)}E_{-m}\left(-\frac{(dx+c)f}{d}\right)}{d}\right)b+\frac{(dx+c)^{m+1}a}{d(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sinh(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/2*((d*x + c)^(m + 1)*e^(-e + c*f/d)*exp_integral_e(-m, (d*x + c)*f/d)/d -
 (d*x + c)^(m + 1)*e^(e - c*f/d)*exp_integral_e(-m, -(d*x + c)*f/d)/d)*b +
(d*x + c)^(m + 1)*a/(d*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\sinh\left(e+f\,x\right)\right)\,{\left(c+d\,x\right)}^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sinh(e + f*x))*(c + d*x)^m,x)
```

```
[Out] int((a + b*sinh(e + f*x))*(c + d*x)^m, x)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+b*sinh(f*x+e)),x)
```

```
[Out] Exception raised: TypeError
```

3.185 $\int \frac{(c+dx)^m}{a+b\sinh(e+fx)}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{(c+dx)^m}{a+b\sinh(e+fx)},x\right)$$

`[Out] Unintegrable((d*x+c)^m/(a+b*sinh(f*x+e)),x)`

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(c+dx)^m}{a+b\sinh(e+fx)}\,dx$$

Verification is Not applicable to the result.

`[In] Int[(c + d*x)^m/(a + b*Sinh[e + f*x]),x]`

`[Out] Defer[Int][(c + d*x)^m/(a + b*Sinh[e + f*x]), x]`

Rubi steps

$$\int \frac{(c+dx)^m}{a+b\sinh(e+fx)}\,dx = \int \frac{(c+dx)^m}{a+b\sinh(e+fx)}\,dx$$

Mathematica [A] time = 1.12, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{a+b\sinh(e+fx)}\,dx$$

Verification is Not applicable to the result.

`[In] Integrate[(c + d*x)^m/(a + b*Sinh[e + f*x]),x]`

`[Out] Integrate[(c + d*x)^m/(a + b*Sinh[e + f*x]), x]`

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(dx+c)^m}{b\sinh\left(fx+e\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sinh(f*x+e)),x, algorithm="fricas")
[Out] integral((d*x + c)^m/(b*sinh(f*x + e) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{b\sinh\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sinh(f*x+e)),x, algorithm="giac")
[Out] integrate((d*x + c)^m/(b*sinh(f*x + e) + a), x)
```

maple [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{a+b\sinh\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m/(a+b*sinh(f*x+e)),x)
[Out] int((d*x+c)^m/(a+b*sinh(f*x+e)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{b\sinh\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sinh(f*x+e)),x, algorithm="maxima")
[Out] integrate((d*x + c)^m/(b*sinh(f*x + e) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(c+d\,x)^m}{a+b\sinh\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/(a + b*sinh(e + f*x)),x)
[Out] int((c + d*x)^m/(a + b*sinh(e + f*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{a+b\sinh\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m/(a+b*sinh(f*x+e)),x)
```

```
[Out] Integral((c + d*x)**m/(a + b*sinh(e + f*x)), x)
```

3.186 $\int \frac{(c+dx)^m}{(a+b\sinh(e+fx))^2}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{(c+dx)^m}{(a+b\sinh(e+fx))^2},x\right)$$

```
[Out] Unintegrable((d*x+c)^m/(a+b*sinh(f*x+e))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(c+dx)^m}{(a+b\sinh(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m/(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] Defer[Int][(c + d*x)^m/(a + b*Sinh[e + f*x])^2, x]
```

Rubi steps

$$\int \frac{(c+dx)^m}{(a+b\sinh(e+fx))^2}\,dx=\int \frac{(c+dx)^m}{(a+b\sinh(e+fx))^2}\,dx$$

Mathematica [A] time = 5.38, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{(a+b\sinh(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m/(a + b*Sinh[e + f*x])^2,x]
```

```
[Out] Integrate[(c + d*x)^m/(a + b*Sinh[e + f*x])^2, x]
```

fricas [A] time = 0.39, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(dx+c)^m}{b^2\sinh\left(fx+e\right)^2+2\,ab\sinh\left(fx+e\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sinh(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m/(b^2*sinh(f*x + e)^2 + 2*a*b*sinh(f*x + e) + a^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(b\sinh\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sinh(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m/(b*sinh(f*x + e) + a)^2, x)
```

maple [A] time = 0.11, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(a+b\sinh\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m/(a+b*sinh(f*x+e))^2,x)
```

```
[Out] int((d*x+c)^m/(a+b*sinh(f*x+e))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(b\sinh\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sinh(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^m/(b*sinh(f*x + e) + a)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(c+d\,x)^m}{\left(a+b\sinh\left(e+f\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/(a + b*sinh(e + f*x))^2,x)
```

```
[Out] int((c + d*x)^m/(a + b*sinh(e + f*x))^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{\left(a+b\sinh\left(e+fx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m/(a+b*sinh(f*x+e))**2,x)
```

```
[Out] Integral((c + d*x)**m/(a + b*sinh(e + f*x))**2, x)
```

3.187 $\int \frac{(e+fx)^3 \sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=163

$$\frac{12if^3\text{Li}_3\left(-ie^{c+dx}\right)}{ad^4}-\frac{12if^2(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}-\frac{6if(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad^2}+\frac{i(e+fx)^3\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{ad}+\frac{i(e$$

```
[Out] I*(f*x+e)^3/a/d-1/4*I*(f*x+e)^4/a/f-6*I*f*(f*x+e)^2*ln(1+I*exp(d*x+c))/a/d^
2-12*I*f^2*(f*x+e)*polylog(2,-I*exp(d*x+c))/a/d^3+12*I*f^3*polylog(3,-I*exp
(d*x+c))/a/d^4+I*(f*x+e)^3*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a/d
```

Rubi [A] time = 0.36, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {5557, 32, 3318, 4184, 3716, 2190, 2531, 2282, 6589}

$$-\frac{12if^2(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}+\frac{12if^3\text{PolyLog}\left(3,-ie^{c+dx}\right)}{ad^4}-\frac{6if(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad^2}+\frac{i(e+fx)^3\tanh(}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sinh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (I*(e + f*x)^3)/(a*d) - ((I/4)*(e + f*x)^4)/(a*f) - ((6*I)*f*(e + f*x)^2*Lo
g[1 + I*E^(c + d*x)])/(a*d^2) - ((12*I)*f^2*(e + f*x)*PolyLog[2, (-I)*E^(c
+ d*x)])/(a*d^3) + ((12*I)*f^3*PolyLog[3, (-I)*E^(c + d*x)])/(a*d^4) + (I*(
e + f*x)^3*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
```

```
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx = i\int \frac{(e+fx)^3}{a+ia\sinh(c+dx)}\,dx - \frac{i\int (e+fx)^3\,dx}{a}$$

$$= -\frac{i(e+fx)^4}{4af} + \frac{i\int (e+fx)^3\csc^2\left(\frac{1}{2}\left(ic+\frac{\pi}{2}\right)+\frac{idx}{2}\right)dx}{2a}$$

$$= -\frac{i(e+fx)^4}{4af} + \frac{i(e+fx)^3\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(3if)\int (e+fx)^2\coth\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right.}{ad}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{i(e+fx)^4}{4af} + \frac{i(e+fx)^3\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{(6f)\int \frac{e^{2\left(\frac{c}{2}+\frac{dx}{2}\right)}(e+fx)^2}{1+ie^{2\left(\frac{c}{2}+\frac{dx}{2}\right)}}\,dx}{ad}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{i(e+fx)^4}{4af} - \frac{6if(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad^2} + \frac{i(e+fx)^3\tanh\left(\frac{c}{2}+\frac{i\pi}{4}\right.}{ad}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{i(e+fx)^4}{4af} - \frac{6if(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad^2} - \frac{12if^2(e+fx)\mathrm{Li}_2\left(-ie^{c+d}\right.}{ad^3}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{i(e+fx)^4}{4af} - \frac{6if(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad^2} - \frac{12if^2(e+fx)\mathrm{Li}_2\left(-ie^{c+d}\right.}{ad^3}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{i(e+fx)^4}{4af} - \frac{6if(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad^2} - \frac{12if^2(e+fx)\mathrm{Li}_2\left(-ie^{c+d}\right.}{ad^3}$$

Mathematica [A] time = 3.21, size = 232, normalized size = 1.42

$$\frac{-\frac{8\left(3(1+ie^c)d^2f(e+fx)^2\log\left(1-ie^{-c-dx}\right)+6i(-e^c+i)f^2\left(d(e+fx)\mathrm{Li}_2\left(ie^{-c-dx}\right)+f\mathrm{Li}_3\left(ie^{-c-dx}\right)\right)+d^3(e+fx)^3\right)}{(e^c-i)d^4} + \frac{8i\sinh\left(\frac{dx}{2}\right)(e+fx)^3}{d\left(\cosh\left(\frac{c}{2}\right)+i\sinh\left(\frac{c}{2}\right)\right)\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sin\right.}}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sinh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I)*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3) - (8*(d^3*(e + f*x)^3 +
 3*d^2*(1 + I*E^c)*f*(e + f*x)^2*Log[1 - I*E^(-c - d*x)] + (6*I)*(I - E^c)*
f^2*(d*(e + f*x)*PolyLog[2, I*E^(-c - d*x)] + f*PolyLog[3, I*E^(-c - d*x)])
))/(d^4*(-I + E^c)) + ((8*I)*(e + f*x)^3*Sinh[(d*x)/2])/(d*(Cosh[c/2] + I*S
inh[c/2])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])))/(4*a)
```

fricas [C] time = 0.91, size = 458, normalized size = 2.81

$$-\frac{d^4 f^3 x^4 + 4\,d^4 e f^2 x^3 + 6\,d^4 e^2 f x^2 + 4\,d^4 e^3 x + 8\,d^3 e^3 - 24\,c d^2 e^2 f + 24\,c^2 d e f^2 - 8\,c^3 f^3 + \left(48\,d f^3 x + 48\,d e f^2 - \left(\cdots\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(d^4*f^3*x^4 + 4*d^4*e*f^2*x^3 + 6*d^4*e^2*f*x^2 + 4*d^4*e^3*x + 8*d^3
*e^3 - 24*c*d^2*e^2*f + 24*c^2*d*e*f^2 - 8*c^3*f^3 + (48*d*f^3*x + 48*d*e*f
^2 - (-48*I*d*f^3*x - 48*I*d*e*f^2)*e^(d*x + c))*dilog(-I*e^(d*x + c)) - (-
I*d^4*f^3*x^4 + 24*I*c*d^2*e^2*f - 24*I*c^2*d*e*f^2 + 8*I*c^3*f^3 + (-4*I*d
^4*e*f^2 + 8*I*d^3*f^3)*x^3 + (-6*I*d^4*e^2*f + 24*I*d^3*e*f^2)*x^2 + (-4*I
*d^4*e^3 + 24*I*d^3*e^2*f)*x)*e^(d*x + c) + (24*d^2*e^2*f - 48*c*d*e*f^2 +
24*c^2*f^3 - (-24*I*d^2*e^2*f + 48*I*c*d*e*f^2 - 24*I*c^2*f^3)*e^(d*x + c))
*log(e^(d*x + c) - I) + (24*d^2*f^3*x^2 + 48*d^2*e*f^2*x + 48*c*d*e*f^2 - 2
4*c^2*f^3 - (-24*I*d^2*f^3*x^2 - 48*I*d^2*e*f^2*x - 48*I*c*d*e*f^2 + 24*I*c
^2*f^3)*e^(d*x + c))*log(I*e^(d*x + c) + 1) + 48*(-I*f^3*e^(d*x + c) - f^3)
*polylog(3, -I*e^(d*x + c)))/(a*d^4*e^(d*x + c) - I*a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx + e\right)^3 \sinh\left(dx + c\right)}{i\,a \sinh\left(dx + c\right) + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sinh(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.17, size = 501, normalized size = 3.07

$$\frac{12 i f^3 \operatorname{polylog}\left(3, -i e^{dx+c}\right)}{a\,d^4} - \frac{6 i f^3 c^2 x}{a\,d^3} - \frac{12 i e\,f^2 c \ln\left(e^{dx+c}\right)}{a\,d^3} - \frac{3 i e^2 f\,x^2}{2a} - \frac{2\left(x^3 f^3 + 3 e\,f^2 x^2 + 3 e^2 f x + e^3\right)}{da\left(e^{dx+c} - i\right)} + \frac{6 i e\,f^2 c^2}{a\,d^3} - \cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -12*I/a/d^3*e*f^2*polylog(2,-I*exp(d*x+c))-6*I/a/d^3*f^3*c^2*x-12*I/a/d^3*e
*f^2*c*ln(exp(d*x+c))-3/2*I/a*e^2*f*x^2-2*(f^3*x^3+3*e*f^2*x^2+3*e^2*f*x+e^
3)/d/a/(exp(d*x+c)-I)+6*I/a/d^3*e*f^2*c^2-I/a*e*f^2*x^3-I/a*e^3*x+6*I/a/d*e
*f^2*x^2-1/4*I/a*x^4*f^3-12*I/a/d^2*e*f^2*ln(1+I*exp(d*x+c))*x+12*I/a/d^2*e
*f^2*c*x+2*I/a/d*f^3*x^3-6*I/a/d^4*f^3*c^2*ln(exp(d*x+c)-I)-12*I/a/d^3*f^3*
polylog(2,-I*exp(d*x+c))*x+6*I/a/d^2*ln(exp(d*x+c))*e^2*f-6*I/a/d^2*f^3*ln(
1+I*exp(d*x+c))*x^2+12*I/a/d^3*e*f^2*c*ln(exp(d*x+c)-I)-4*I/a/d^4*f^3*c^3+6
*I/a/d^4*f^3*ln(1+I*exp(d*x+c))*c^2+12*I*f^3*polylog(3,-I*exp(d*x+c))/a/d^4
-6*I/a/d^2*ln(exp(d*x+c)-I)*e^2*f+6*I/a/d^4*f^3*c^2*ln(exp(d*x+c))-12*I/a/d
^3*e*f^2*ln(1+I*exp(d*x+c))*c
```

maxima [B] time = 0.65, size = 317, normalized size = 1.94

$$\frac{3}{2}\,e^2 f\left(\frac{-i\,dx^2+\left(dx^2e^c-4\,xe^c\right)e^{(dx)}}{i\,ade^{(dx+c)}+ad}-\frac{4i\,\log\left(\left(e^{(dx+c)}-i\right)e^{(-c)}\right)}{ad^2}\right)+\frac{1}{2}\,e^3\left(-\frac{2i\,(dx+c)}{ad}-\frac{4}{\left(ae^{(-dx-c)}+i\,a\right)d}\right)-\frac{df^3x^4+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 3/2*e^2*f*((-I*d*x^2 + (d*x^2*e^c - 4*x*e^c)*e^(d*x))/(I*a*d*e^(d*x + c) +
a*d) - 4*I*log((e^(d*x + c) - I)*e^(-c))/(a*d^2)) + 1/2*e^3*(-2*I*(d*x + c)
/(a*d) - 4/((a*e^(-d*x - c) + I*a)*d)) - 1/4*(d*f^3*x^4 + 24*e*f^2*x^2 + 4*
(d*e*f^2 + 2*f^3)*x^3 + (I*d*f^3*x^4*e^c + 4*I*d*e*f^2*x^3*e^c)*e^(d*x))/(a
*d*e^(d*x + c) - I*a*d) - 12*I*(d*x*log(I*e^(d*x + c) + 1) + dilog(-I*e^(d*
x + c)))*e*f^2/(a*d^3) - 6*I*(d^2*x^2*log(I*e^(d*x + c) + 1) + 2*d*x*dilog(
-I*e^(d*x + c)) - 2*polylog(3, -I*e^(d*x + c)))*f^3/(a*d^4) + (2*I*d^3*f^3*
x^3 + 6*I*d^3*e*f^2*x^2)/(a*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sinh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{a+a\sinh\left(c+d\,x\right)\,1{}\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*(e + f*x)^3)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] int((sinh(c + d*x)*(e + f*x)^3)/(a + a*sinh(c + d*x)*1i), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2e^3e^c+6e^2fxe^c+6ef^2x^2e^c+2f^3x^3e^c}{-iade^c-ade^{-dx}}-\frac{i\left(\int\left(-\frac{ide^3}{e^ce^{dx}-i}\right)dx+\int\left(-\frac{idf^3x^3}{e^ce^{dx}-i}\right)dx+\int\frac{de^3e^ce^{dx}}{e^ce^{dx}-i}\,dx+\int\frac{6e^2fe^ce^{dx}}{e^ce^{dx}-i}\,dx+\int\frac{6f^3}{e^c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] (2*e**3*exp(c) + 6*e**2*f*x*exp(c) + 6*e*f**2*x**2*exp(c) + 2*f**3*x**3*exp
(c))/(-I*a*d*exp(c) - a*d*exp(-d*x)) - I*(Integral(-I*d*e**3/(exp(c)*exp(d*
x) - I), x) + Integral(-I*d*f**3*x**3/(exp(c)*exp(d*x) - I), x) + Integral(
d*e**3*exp(c)*exp(d*x)/(exp(c)*exp(d*x) - I), x) + Integral(6*e**2*f*exp(c)
*exp(d*x)/(exp(c)*exp(d*x) - I), x) + Integral(6*f**3*x**2*exp(c)*exp(d*x)/
(exp(c)*exp(d*x) - I), x) + Integral(-3*I*d*e*f**2*x**2/(exp(c)*exp(d*x) -
I), x) + Integral(-3*I*d*e**2*f*x/(exp(c)*exp(d*x) - I), x) + Integral(d*f*
*3*x**3*exp(c)*exp(d*x)/(exp(c)*exp(d*x) - I), x) + Integral(12*e*f**2*x*ex
p(c)*exp(d*x)/(exp(c)*exp(d*x) - I), x) + Integral(3*d*e*f**2*x**2*exp(c)*e
xp(d*x)/(exp(c)*exp(d*x) - I), x) + Integral(3*d*e**2*f*x*exp(c)*exp(d*x)/(
exp(c)*exp(d*x) - I), x))/(a*d)
```

3.188 $\int \frac{(e+fx)^2 \sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=130

$$-\frac{4if^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}-\frac{4if(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2}+\frac{i(e+fx)^2\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{ad}+\frac{i(e+fx)^2}{ad}-\frac{i(e+fx)^3}{3af}$$

```
[Out] I*(f*x+e)^2/a/d-1/3*I*(f*x+e)^3/a/f-4*I*f*(f*x+e)*ln(1+I*exp(d*x+c))/a/d^2-
4*I*f^2*polylog(2,-I*exp(d*x+c))/a/d^3+I*(f*x+e)^2*tanh(1/2*c+1/4*I*Pi+1/2*
d*x)/a/d
```

Rubi [A] time = 0.27, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {5557, 32, 3318, 4184, 3716, 2190, 2279, 2391}

$$-\frac{4if^2\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}-\frac{4if(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2}+\frac{i(e+fx)^2\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{ad}+\frac{i(e+fx)^2}{ad}-\frac{i(e+fx)^3}{3af}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sinh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (I*(e + f*x)^2)/(a*d) - ((I/3)*(e + f*x)^3)/(a*f) - ((4*I)*f*(e + f*x)*Log[
1 + I*E^(c + d*x)])/(a*d^2) - ((4*I)*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*d
^3) + (I*(e + f*x)^2*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx = i\int \frac{(e+fx)^2}{a+ia\sinh(c+dx)}\,dx - \frac{i\int (e+fx)^2\,dx}{a}$$

$$= -\frac{i(e+fx)^3}{3af} + \frac{i\int (e+fx)^2\csc^2\left(\frac{1}{2}\left(ic+\frac{\pi}{2}\right)+\frac{idx}{2}\right)dx}{2a}$$

$$= -\frac{i(e+fx)^3}{3af} + \frac{i(e+fx)^2\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(2if)\int (e+fx)\coth\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)}{ad}$$

$$= \frac{i(e+fx)^2}{ad} - \frac{i(e+fx)^3}{3af} + \frac{i(e+fx)^2\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{(4f)\int \frac{e^{2\left(\frac{c}{2}+\frac{dx}{2}\right)}(e+fx)}{1+ie^{2\left(\frac{c}{2}+\frac{dx}{2}\right)}}dx}{ad}$$

$$= \frac{i(e+fx)^2}{ad} - \frac{i(e+fx)^3}{3af} - \frac{4if(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2} + \frac{i(e+fx)^2\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\right.}{ad}$$

$$= \frac{i(e+fx)^2}{ad} - \frac{i(e+fx)^3}{3af} - \frac{4if(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2} + \frac{i(e+fx)^2\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\right.}{ad}$$

$$= \frac{i(e+fx)^2}{ad} - \frac{i(e+fx)^3}{3af} - \frac{4if(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2} - \frac{4if^2\operatorname{Li}_2\left(-ie^{c+dx}\right)}{ad^3} + \frac{i(e+}{}$$

Mathematica [A] time = 2.40, size = 188, normalized size = 1.45

$$\frac{\frac{3\left(4(1+ie^c)f^2\operatorname{Li}_2\left(ie^{-c-dx}\right)-2d(e+fx)\left(d(e+fx)+2(1+ie^c)f\log\left(1-ie^{-c-dx}\right)\right)\right)}{(e^c-i)d^3} + \frac{6i\sinh\left(\frac{dx}{2}\right)(e+fx)^2}{d\left(\cosh\left(\frac{c}{2}\right)+i\sinh\left(\frac{c}{2}\right)\right)\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)} - ix\left(3e^2+\right.}{3a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sinh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I)*x*(3*e^2 + 3*e*f*x + f^2*x^2) + (3*(-2*d*(e + f*x)*(d*(e + f*x) + 2*(
1 + I*E^c)*f*Log[1 - I*E^(-c - d*x)]) + 4*(1 + I*E^c)*f^2*PolyLog[2, I*E^(-
c - d*x)]))/(d^3*(-I + E^c)) + ((6*I)*(e + f*x)^2*Sinh[(d*x)/2])/(d*(Cosh[c
/2] + I*Sinh[c/2])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])))/(3*a)
```

fricas [B] time = 0.53, size = 262, normalized size = 2.02

$$-\frac{d^3f^2x^3 + 3d^3efx^2 + 3d^3e^2x + 6d^2e^2 - 12cdef + 6c^2f^2 + 12\left(if^2e^{(dx+c)} + f^2\right)\operatorname{Li}_2\left(-ie^{(dx+c)}\right) - \left(-id^3f^2x^3 + 12\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/3*(d^3*f^2*x^3 + 3*d^3*e*f*x^2 + 3*d^3*e^2*x + 6*d^2*e^2 - 12*c*d*e*f +
6*c^2*f^2 + 12*(I*f^2*e^(d*x + c) + f^2)*dilog(-I*e^(d*x + c)) - (-I*d^3*f^
2*x^3 + 12*I*c*d*e*f - 6*I*c^2*f^2 + (-3*I*d^3*e*f + 6*I*d^2*f^2)*x^2 + (-3
*I*d^3*e^2 + 12*I*d^2*e*f)*x)*e^(d*x + c) + (12*d*e*f - 12*c*f^2 - (-12*I*d
*e*f + 12*I*c*f^2)*e^(d*x + c))*log(e^(d*x + c) - I) + (12*d*f^2*x + 12*c*f
^2 - (-12*I*d*f^2*x - 12*I*c*f^2)*e^(d*x + c))*log(I*e^(d*x + c) + 1))/(a*d
^3*e^(d*x + c) - I*a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \sinh\left(dx+c\right)}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sinh(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.13, size = 269, normalized size = 2.07

$$-\frac{ix^3f^2}{3a}-\frac{ief\,x^2}{a}-\frac{ie^2x}{a}-\frac{2\left(x^2f^2+2efx+e^2\right)}{da\left(\mathrm{e}^{dx+c}-i\right)}-\frac{4i\ln\left(\mathrm{e}^{dx+c}-i\right)ef}{a\,d^2}+\frac{4i\ln\left(\mathrm{e}^{dx+c}\right)ef}{a\,d^2}+\frac{2if^2x^2}{ad}+\frac{4if^2cx}{a\,d^2}+\frac{2if^2c^2}{a\,d^3}-\frac{4i}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/3*I/a*x^3*f^2-I/a*e*f*x^2-I/a*e^2*x-2*(f^2*x^2+2*e*f*x+e^2)/d/a/(exp(d*x
+c)-I)-4*I/a/d^2*ln(exp(d*x+c)-I)*e*f+4*I/a/d^2*ln(exp(d*x+c))*e*f+2*I/a/d*
f^2*x^2+4*I/a/d^2*f^2*c*x+2*I/a/d^3*f^2*c^2-4*I/a/d^2*f^2*ln(1+I*exp(d*x+c)
)*x-4*I/a/d^3*f^2*ln(1+I*exp(d*x+c))*c-4*I*f^2*polylog(2,-I*exp(d*x+c))/a/d
^3+4*I/a/d^3*f^2*c*ln(exp(d*x+c)-I)-4*I/a/d^3*f^2*c*ln(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{6}f^2\left(\frac{2i\,dx^3e^{(dx+c)}+2\,dx^3+12\,x^2}{ade^{(dx+c)}-i\,ad}-24\int\frac{x}{ade^{(dx+c)}-i\,ad}\,dx\right)+ef\left(\frac{-i\,dx^2+\left(dx^2e^c-4\,xe^c\right)e^{(dx)}}{i\,ade^{(dx+c)}+ad}-\frac{4i\,\log\left(\left(e^{(dx}\right.\right.}{a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/6*f^2*((2*I*d*x^3*e^(d*x + c) + 2*d*x^3 + 12*x^2)/(a*d*e^(d*x + c) - I*a
*d) - 24*integrate(x/(a*d*e^(d*x + c) - I*a*d), x)) + e*f*((-I*d*x^2 + (d*x
^2*e^c - 4*x*e^c)*e^(d*x))/(I*a*d*e^(d*x + c) + a*d) - 4*I*log((e^(d*x + c)
 - I)*e^(-c))/(a*d^2)) + 1/2*e^2*(-2*I*(d*x + c)/(a*d) - 4/((a*e^(-d*x - c)
 + I*a)*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sinh(c+d\,x)\,\left(e+f\,x\right)^2}{a+a\sinh(c+d\,x)\,1\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*(e + f*x)^2)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] int((sinh(c + d*x)*(e + f*x)^2)/(a + a*sinh(c + d*x)*1i), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2e^2e^c+4efxe^c+2f^2x^2e^c}{-iade^c-ade^{-dx}}-\frac{i\left(\int\left(-\frac{ide^2}{e^ce^{dx}-i}\right)dx+\int\left(-\frac{idf^2x^2}{e^ce^{dx}-i}\right)dx+\int\frac{de^2e^ce^{dx}}{e^ce^{dx}-i}\,dx+\int\frac{4efe^ce^{dx}}{e^ce^{dx}-i}\,dx+\int\frac{4f^2xe^ce^{dx}}{e^ce^{dx}-i}\,dx+\int\left(\right.\right.}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] (2*e**2*exp(c) + 4*e*f*x*exp(c) + 2*f**2*x**2*exp(c))/(-I*a*d*exp(c) - a*d*
exp(-d*x)) - I*(Integral(-I*d*e**2/(exp(c)*exp(d*x) - I), x) + Integral(-I*
d*f**2*x**2/(exp(c)*exp(d*x) - I), x) + Integral(d*e**2*exp(c)*exp(d*x)/(ex
p(c)*exp(d*x) - I), x) + Integral(4*e*f*exp(c)*exp(d*x)/(exp(c)*exp(d*x) -
I), x) + Integral(4*f**2*x*exp(c)*exp(d*x)/(exp(c)*exp(d*x) - I), x) + Inte
gral(-2*I*d*e*f*x/(exp(c)*exp(d*x) - I), x) + Integral(d*f**2*x**2*exp(c)*e
xp(d*x)/(exp(c)*exp(d*x) - I), x) + Integral(2*d*e*f*x*exp(c)*exp(d*x)/(exp
(c)*exp(d*x) - I), x))/(a*d)
```

3.189 $\int \frac{(e+fx)\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=90

$$-\frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}+\frac{i(e+fx)\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{ad}-\frac{iex}{a}-\frac{ifx^2}{2a}$$

```
[Out] -I*e*x/a-1/2*I*f*x^2/a-2*I*f*ln(cosh(1/2*c+1/4*I*Pi+1/2*d*x))/a/d^2+I*(f*x+
e)*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a/d
```

Rubi [A] time = 0.11, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {5557, 3318, 4184, 3475}

$$-\frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}+\frac{i(e+fx)\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{ad}-\frac{iex}{a}-\frac{ifx^2}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sinh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I)*e*x)/a - ((I/2)*f*x^2)/a - ((2*I)*f*Log[Cosh[c/2 + (I/4)*Pi + (d*x)/2
]])/(a*d^2) + (I*(e + f*x)*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(e+fx)\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx &= i\int \frac{e+fx}{a+ia\sinh(c+dx)}\,dx-\frac{i\int (e+fx)\,dx}{a}\\ &= -\frac{iex}{a}-\frac{ifx^2}{2a}+\frac{i\int (e+fx)\csc^2\left(\frac{1}{2}\left(ic+\frac{\pi}{2}\right)+\frac{idx}{2}\right)dx}{2a}\\ &= -\frac{iex}{a}-\frac{ifx^2}{2a}+\frac{i(e+fx)\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{ad}-\frac{(if)\int \coth\left(\frac{c}{2}-\frac{i\pi}{4}+\frac{dx}{2}\right)dx}{ad}\\ &= -\frac{iex}{a}-\frac{ifx^2}{2a}-\frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\right)}{ad^2}+\frac{i(e+fx)\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{ad}\end{aligned}$$

Mathematica [B] time = 0.63, size = 239, normalized size = 2.66

$$\frac{-i\cosh\left(\frac{dx}{2}\right)\left(2f\log(\cosh(c+dx))+4if\tan^{-1}\left(\sinh\left(\frac{dx}{2}\right)\operatorname{sech}\left(c+\frac{dx}{2}\right)\right)+d^2x(2e+fx)\right)+2d^2ex\sinh\left(c+\frac{dx}{2}\right)}{2ad^2\left(\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sinh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (-2*d*f*x*Cosh[c + (d*x)/2] - I*Cosh[(d*x)/2]*(d^2*x*(2*e + f*x) + (4*I)*f*
ArcTan[Sech[c + (d*x)/2]*Sinh[(d*x)/2]] + 2*f*Log[Cosh[c + d*x]]) + (4*I)*d
*e*Sinh[(d*x)/2] + (2*I)*d*f*x*Sinh[(d*x)/2] + 2*d^2*e*x*Sinh[c + (d*x)/2]
+ d^2*f*x^2*Sinh[c + (d*x)/2] + (4*I)*f*ArcTan[Sech[c + (d*x)/2]*Sinh[(d*x)
/2]]*Sinh[c + (d*x)/2] + 2*f*Log[Cosh[c + d*x]]*Sinh[c + (d*x)/2])/(2*a*d^2
*(Cosh[c/2] + I*Sinh[c/2])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2]))
```

fricas [A] time = 0.93, size = 95, normalized size = 1.06

$$-\frac{d^2fx^2+2\,d^2ex+4\,de-\left(-i\,d^2fx^2+\left(-2i\,d^2e+4i\,df\right)x\right)e^{(dx+c)}+4\left(i\,fe^{(dx+c)}+f\right)\log\left(e^{(dx+c)}-i\right)}{2\left(ad^2e^{(dx+c)}-i\,ad^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(d^2*f*x^2 + 2*d^2*e*x + 4*d*e - (-I*d^2*f*x^2 + (-2*I*d^2*e + 4*I*d*f
)*x)*e^(d*x + c) + 4*(I*f*e^(d*x + c) + f)*log(e^(d*x + c) - I))/(a*d^2*e^(
d*x + c) - I*a*d^2)
```

giac [B] time = 0.61, size = 133, normalized size = 1.48

$$-\frac{i\,d^{2}fx^{2}e^{(dx+2\,c)}+d^{2}fx^{2}e^{c}+2i\,d^{2}xe^{(dx+2\,c+1)}-4i\,dfxe^{(dx+2\,c)}+2\,d^{2}xe^{(c+1)}+4i\,fe^{(dx+2\,c)}\log\left(e^{(dx+c)}-i\right)+4\,fe^{c}}{2\left(ad^{2}e^{(dx+2\,c)}-i\,ad^{2}e^{c}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(I*d^2*f*x^2*e^(d*x + 2*c) + d^2*f*x^2*e^c + 2*I*d^2*x*e^(d*x + 2*c +
1) - 4*I*d*f*x*e^(d*x + 2*c) + 2*d^2*x*e^(c + 1) + 4*I*f*e^(d*x + 2*c)*log(
e^(d*x + c) - I) + 4*f*e^c*log(e^(d*x + c) - I) + 4*d*e^(c + 1))/(a*d^2*e^(
d*x + 2*c) - I*a*d^2*e^c)
```

maple [A] time = 0.15, size = 86, normalized size = 0.96

$$-\frac{ifx^{2}}{2a}-\frac{iex}{a}+\frac{2ifx}{ad}+\frac{2ifc}{a\,d^{2}}-\frac{2\left(fx+e\right)}{da\left(\mathrm{e}^{dx+c}-i\right)}-\frac{2if\ln\left(\mathrm{e}^{dx+c}-i\right)}{a\,d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/2*I*f*x^2/a-I*e*x/a+2*I*f/a/d*x+2*I*f/a/d^2*c-2*(f*x+e)/d/a/(exp(d*x+c)-
I)-2*I*f/a/d^2*ln(exp(d*x+c)-I)
```

maxima [A] time = 0.61, size = 108, normalized size = 1.20

$$\frac{1}{2}\,f\left(\frac{-i\,dx^{2}+\left(dx^{2}e^{c}-4\,xe^{c}\right)e^{(dx)}}{i\,ade^{(dx+c)}+ad}-\frac{4i\,\log\left(\left(e^{(dx+c)}-i\right)e^{(-c)}\right)}{ad^{2}}\right)+\frac{1}{2}\,e\left(-\frac{2i\,(dx+c)}{ad}-\frac{4}{\left(ae^{(-dx-c)}+i\,a\right)d}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*f*((-I*d*x^2 + (d*x^2*e^c - 4*x*e^c)*e^(d*x))/(I*a*d*e^(d*x + c) + a*d)
 - 4*I*log((e^(d*x + c) - I)*e^(-c))/(a*d^2)) + 1/2*e*(-2*I*(d*x + c)/(a*d)
 - 4/((a*e^(-d*x - c) + I*a)*d))
```

mupad [B] time = 0.55, size = 74, normalized size = 0.82

$$-\frac{f\,x^2\,1\mathrm{i}}{2\,a}-\frac{2\,\left(e+f\,x\right)}{a\,d\,\left(\mathrm{e}^{c+d\,x}-\mathrm{i}\right)}+\frac{x\,\left(2\,f-d\,e\right)\,1\mathrm{i}}{a\,d}-\frac{f\,\ln\left(\mathrm{e}^{d\,x}\,\mathrm{e}^c-\mathrm{i}\right)\,2\mathrm{i}}{a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*(e + f*x))/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] (x*(2*f - d*e)*1i)/(a*d) - (2*(e + f*x))/(a*d*(exp(c + d*x) - 1i)) - (f*x^2
*1i)/(2*a) - (f*log(exp(d*x)*exp(c) - 1i)*2i)/(a*d^2)
```

sympy [A] time = 0.37, size = 83, normalized size = 0.92

$$\frac{2ee^c+2fxe^c}{-iade^c-ade^{-dx}}-\frac{ifx^2}{2a}+\frac{x\left(-ide-2if\right)}{ad}-\frac{2if\log\left(ie^c+e^{-dx}\right)}{ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] (2*e*exp(c) + 2*f*x*exp(c))/(-I*a*d*exp(c) - a*d*exp(-d*x)) - I*f*x**2/(2*a
) + x*(-I*d*e - 2*I*f)/(a*d) - 2*I*f*log(I*exp(c) + exp(-d*x))/(a*d**2)
```

3.190 $\int \frac{\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=35

$$-\frac{\cosh(c+dx)}{d(a+ia\sinh(c+dx))}-\frac{ix}{a}$$

```
[Out] -I*x/a-cosh(d*x+c)/d/(a+I*a*sinh(d*x+c))
```

Rubi [A] time = 0.04, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2735, 2648}

$$-\frac{\cosh(c+dx)}{d(a+ia\sinh(c+dx))}-\frac{ix}{a}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[c + d*x]/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I)*x)/a - Cosh[c + d*x]/(d*(a + I*a*Sinh[c + d*x]))
```

Rule 2648

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> -Simp[Cos[c +
 d*x]/(d*(b + a*Sin[c + d*x])), x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b
^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx &= -\frac{ix}{a}+i\int \frac{1}{a+ia\sinh(c+dx)}\,dx\\ &= -\frac{ix}{a}-\frac{\cosh(c+dx)}{d(a+ia\sinh(c+dx))}\end{aligned}$$

Mathematica [A] time = 0.21, size = 61, normalized size = 1.74

$$\frac{i\cosh(c+dx)\left(1-\frac{\sinh^{-1}(\sinh(c+dx))(\sinh(c+dx)-i)}{\sqrt{\cosh^2(c+dx)}}\right)}{ad(\sinh(c+dx)-i)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[c + d*x]/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (I*Cosh[c + d*x]*(1 - (ArcSinh[Sinh[c + d*x]]*(-I + Sinh[c + d*x]))/Sqrt[Co
sh[c + d*x]^2]))/(a*d*(-I + Sinh[c + d*x]))
```

fricas [A] time = 0.45, size = 33, normalized size = 0.94

$$\frac{-i\,dxe^{(dx+c)}-dx-2}{ade^{(dx+c)}-i\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (-I*d*x*e^(d*x + c) - d*x - 2)/(a*d*e^(d*x + c) - I*a*d)
```

giac [A] time = 0.56, size = 33, normalized size = 0.94

$$\frac{-\frac{2i\,(dx+c)}{a}-\frac{4i}{a\left(i\,e^{(dx+c)}+1\right)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(-2*I*(d*x + c)/a - 4*I/(a*(I*e^(d*x + c) + 1)))/d
```

maple [A] time = 0.05, size = 67, normalized size = 1.91

$$\frac{i\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{da}-\frac{i\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{da}+\frac{2i}{da\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] I/d/a*ln(tanh(1/2*d*x+1/2*c)-1)-I/d/a*ln(tanh(1/2*d*x+1/2*c)+1)+2*I/d/a/(-I
+tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.31, size = 36, normalized size = 1.03

$$-\frac{i\,(dx+c)}{ad}-\frac{2}{\left(ae^{(-dx-c)}+i\,a\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -I*(d*x + c)/(a*d) - 2/((a*e^(-d*x - c) + I*a)*d)
```

mupad [B] time = 0.24, size = 27, normalized size = 0.77

$$-\frac{x\,1\mathrm{i}}{a}-\frac{2}{a\,d\,\left(\mathrm{e}^{c+d\,x}-\mathrm{i}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] - (x*1i)/a - 2/(a*d*(exp(c + d*x) - 1i))
```

sympy [A] time = 0.17, size = 27, normalized size = 0.77

$$\frac{2e^{c}}{-iade^{c}-ade^{-dx}}-\frac{ix}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 2*exp(c)/(-I*a*d*exp(c) - a*d*exp(-d*x)) - I*x/a
```

3.191 $\int \frac{\sinh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=32

$$\mathrm{Int}\left(\frac{\sinh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))},x\right)$$

[Out] Unintegrable(sinh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

[In] Int[Sinh[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]

[Out] Defer[Int][Sinh[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]

Rubi steps

$$\int \frac{\sinh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx = \int \frac{\sinh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Mathematica [A] time = 48.57, size = 0, normalized size = 0.00

$$\int \frac{\sinh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[Sinh[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]

[Out] Integrate[Sinh[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\frac{\left(-i\,adfx-i\,ade+\left(adfx+ade\right)e^{(dx+c)}\right)\mathrm{integral}\left(-\frac{dfx+de-\left(-i\,dfx-i\,de\right)e^{(dx+c)}+2\,f}{-i\,adf^2x^2-2i\,adefx-i\,ade^2+\left(adf^2x^2+2\,adefx+ade^2\right)e^{(dx+c)}},x\right)-2}{-i\,adfx-i\,ade+\left(adfx+ade\right)e^{(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((-I*a*d*f*x - I*a*d*e + (a*d*f*x + a*d*e)*e^(d*x + c))*integral(-(d*f*x +
d*e - (-I*d*f*x - I*d*e)*e^(d*x + c) + 2*f)/(-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x
 - I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*e^(d*x + c)), x) - 2)/
(-I*a*d*f*x - I*a*d*e + (a*d*f*x + a*d*e)*e^(d*x + c))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh(dx+c)}{(fx+e)(i\,a\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sinh(d*x + c)/((f*x + e)*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{\sinh(dx+c)}{(fx+e)(a+ia\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2f\int \frac{1}{-i\,adf^2x^2-2i\,adefx-i\,ade^2+\left(adf^2x^2e^c+2\,adefxe^c+ade^2e^c\right)e^{(dx)}}\,dx-\frac{2}{-i\,adfx-i\,ade+\left(adfxe^c+ad\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*f*integrate(1/(-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2 + (a*d*f^2*x^2
*e^c + 2*a*d*e*f*x*e^c + a*d*e^2*e^c)*e^(d*x)), x) - 2/(-I*a*d*f*x - I*a*d*
e + (a*d*f*x*e^c + a*d*e*e^c)*e^(d*x)) - I*log(f*x + e)/(a*f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sinh(c+d\,x)}{(e+f\,x)\,(a+a\sinh(c+d\,x)\,1\mathrm{i})}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)/((e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(sinh(c + d*x)/((e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2ie^{c}}{-adee^{c}-adfxe^{c}+\left(iade+iadfx\right)e^{-dx}}-\frac{i\left(\int\left(-\frac{ide}{e^{2}e^{c}e^{dx}-ie^{2}+2efxe^{c}e^{dx}-2iefx+f^{2}x^{2}e^{c}e^{dx}-if^{2}x^{2}}\right)dx+\int\left(-\frac{2}{e^{2}e^{c}e^{dx}-ie^{2}+2efxe^{c}e^{d}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -2*I*exp(c)/(-a*d*e*exp(c) - a*d*f*x*exp(c) + (I*a*d*e + I*a*d*f*x)*exp(-d*
x)) - I*(Integral(-I*d*e/(e**2*exp(c)*exp(d*x) - I*e**2 + 2*e*f*x*exp(c)*ex
p(d*x) - 2*I*e*f*x + f**2*x**2*exp(c)*exp(d*x) - I*f**2*x**2), x) + Integra
l(-2*f*exp(c)*exp(d*x)/(e**2*exp(c)*exp(d*x) - I*e**2 + 2*e*f*x*exp(c)*exp(
d*x) - 2*I*e*f*x + f**2*x**2*exp(c)*exp(d*x) - I*f**2*x**2), x) + Integral(
-I*d*f*x/(e**2*exp(c)*exp(d*x) - I*e**2 + 2*e*f*x*exp(c)*exp(d*x) - 2*I*e*f
*x + f**2*x**2*exp(c)*exp(d*x) - I*f**2*x**2), x) + Integral(d*e*exp(c)*exp
(d*x)/(e**2*exp(c)*exp(d*x) - I*e**2 + 2*e*f*x*exp(c)*exp(d*x) - 2*I*e*f*x
+ f**2*x**2*exp(c)*exp(d*x) - I*f**2*x**2), x) + Integral(d*f*x*exp(c)*exp(
d*x)/(e**2*exp(c)*exp(d*x) - I*e**2 + 2*e*f*x*exp(c)*exp(d*x) - 2*I*e*f*x +
 f**2*x**2*exp(c)*exp(d*x) - I*f**2*x**2), x))/(a*d)
```

3.192 $\int \frac{\sinh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{\sinh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sinh[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] Defer[Int][Sinh[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sinh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx = \int \frac{\sinh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Mathematica [A] time = 41.75, size = 0, normalized size = 0.00

$$\int \frac{\sinh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sinh[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] Integrate[Sinh[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\frac{\left(-i\,adf^2x^2 - 2i\,adefx - i\,ade^2 + \left(adf^2x^2 + 2\,adefx + ade^2\right)e^{(dx+c)}\right)\text{integral}\left(-\frac{dfx+de-\left(-i\,dfx-\right.}{-i\,adf^3x^3-3i\,adef^2x^2-3i\,ade^2fx-i\,ade^3+\left(a\right.}\right.}{-i\,adf^2x^2 - 2i\,adefx - i\,ade^2 + \left(adf^2x^2 + 2\,adefx + ade^2\right)e^{(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x +
 a*d*e^2)*e^(d*x + c))*integral(-(d*f*x + d*e - (-I*d*f*x - I*d*e)*e^(d*x +
 c) + 4*f)/(-I*a*d*f^3*x^3 - 3*I*a*d*e*f^2*x^2 - 3*I*a*d*e^2*f*x - I*a*d*e^
3 + (a*d*f^3*x^3 + 3*a*d*e*f^2*x^2 + 3*a*d*e^2*f*x + a*d*e^3)*e^(d*x + c)),
 x) - 2)/(-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d
*e*f*x + a*d*e^2)*e^(d*x + c))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh(dx+c)}{(fx+e)^2 (i a \sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sinh(d*x + c)/((f*x + e)^2*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{\sinh(dx+c)}{(fx+e)^2 (a+ia\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-4f\int \frac{1}{-iadf^3x^3 - 3iadef^2x^2 - 3iade^2fx - iade^3 + \left(adf^3x^3e^c + 3adef^2x^2e^c + 3ade^2fxe^c + ade^3e^c\right)e^{(dx)}}\,dx + \frac{}{2(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -4*f*integrate(1/(-I*a*d*f^3*x^3 - 3*I*a*d*e*f^2*x^2 - 3*I*a*d*e^2*f*x - I*
a*d*e^3 + (a*d*f^3*x^3*e^c + 3*a*d*e*f^2*x^2*e^c + 3*a*d*e^2*f*x*e^c + a*d*
e^3*e^c)*e^(d*x)), x) + 1/2*(2*d*f*x + 2*d*e + (2*I*d*f*x*e^c + 2*I*d*e*e^c
```

```
)*e^(d*x) - 4*f)/(-I*a*d*f^3*x^2 - 2*I*a*d*e*f^2*x - I*a*d*e^2*f + (a*d*f^3
*x^2*e^c + 2*a*d*e*f^2*x*e^c + a*d*e^2*f*e^c)*e^(d*x))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sinh (c+d\,x)}{{\left(e+f\,x\right)}^2\,\left(a+a\,\sinh (c+d\,x)\,1{}\mathrm{i}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(sinh(c + d*x)/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2ie^{c}}{-ade^{2}e^{c}-2adefxe^{c}-adf^{2}x^{2}e^{c}+\left(iade^{2}+2iadefx+iadf^{2}x^{2}\right)e^{-dx}}-\frac{i\left(\int\left(-\frac{ide}{e^{3}e^{c}e^{dx}-ie^{3}+3e^{2}fxe^{c}e^{dx}-3ie^{2}fx+3ef^{2}x^{2}e^{c}e^{dx}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -2*I*exp(c)/(-a*d*e**2*exp(c) - 2*a*d*e*f*x*exp(c) - a*d*f**2*x**2*exp(c) +
 (I*a*d*e**2 + 2*I*a*d*e*f*x + I*a*d*f**2*x**2)*exp(-d*x)) - I*(Integral(-I
*d*e/(e**3*exp(c)*exp(d*x) - I*e**3 + 3*e**2*f*x*exp(c)*exp(d*x) - 3*I*e**2
*f*x + 3*e*f**2*x**2*exp(c)*exp(d*x) - 3*I*e*f**2*x**2 + f**3*x**3*exp(c)*e
xp(d*x) - I*f**3*x**3), x) + Integral(-4*f*exp(c)*exp(d*x)/(e**3*exp(c)*exp
(d*x) - I*e**3 + 3*e**2*f*x*exp(c)*exp(d*x) - 3*I*e**2*f*x + 3*e*f**2*x**2*
exp(c)*exp(d*x) - 3*I*e*f**2*x**2 + f**3*x**3*exp(c)*exp(d*x) - I*f**3*x**3
), x) + Integral(-I*d*f*x/(e**3*exp(c)*exp(d*x) - I*e**3 + 3*e**2*f*x*exp(c
)*exp(d*x) - 3*I*e**2*f*x + 3*e*f**2*x**2*exp(c)*exp(d*x) - 3*I*e*f**2*x**2
 + f**3*x**3*exp(c)*exp(d*x) - I*f**3*x**3), x) + Integral(d*e*exp(c)*exp(d
*x)/(e**3*exp(c)*exp(d*x) - I*e**3 + 3*e**2*f*x*exp(c)*exp(d*x) - 3*I*e**2*
f*x + 3*e*f**2*x**2*exp(c)*exp(d*x) - 3*I*e*f**2*x**2 + f**3*x**3*exp(c)*ex
p(d*x) - I*f**3*x**3), x) + Integral(d*f*x*exp(c)*exp(d*x)/(e**3*exp(c)*exp
(d*x) - I*e**3 + 3*e**2*f*x*exp(c)*exp(d*x) - 3*I*e**2*f*x + 3*e*f**2*x**2*
exp(c)*exp(d*x) - 3*I*e*f**2*x**2 + f**3*x**3*exp(c)*exp(d*x) - I*f**3*x**3
), x))/(a*d)
```

3.193 $\int \frac{(e+fx)^3 \sinh^2(c+dx)}{a+ia \sinh(c+dx)}\,dx$

Optimal. Leaf size=241

$$-\frac{12f^3\text{Li}_3\left(-ie^{c+dx}\right)}{ad^4}+\frac{6if^3\sinh(c+dx)}{ad^4}+\frac{12f^2(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}-\frac{6if^2(e+fx)\cosh(c+dx)}{ad^3}+\frac{6f(e+fx)^2\log}{ad^2}$$

```
[Out] -(f*x+e)^3/a/d+1/4*(f*x+e)^4/a/f-6*I*f^2*(f*x+e)*cosh(d*x+c)/a/d^3-I*(f*x+e
)^3*cosh(d*x+c)/a/d+6*f*(f*x+e)^2*ln(1+I*exp(d*x+c))/a/d^2+12*f^2*(f*x+e)*p
olylog(2,-I*exp(d*x+c))/a/d^3-12*f^3*polylog(3,-I*exp(d*x+c))/a/d^4+6*I*f^3
*sinh(d*x+c)/a/d^4+3*I*f*(f*x+e)^2*sinh(d*x+c)/a/d^2-(f*x+e)^3*tanh(1/2*c+1
/4*I*Pi+1/2*d*x)/a/d
```

Rubi [A] time = 0.53, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.355, Rules used = {5557, 3296, 2637, 32, 3318, 4184, 3716, 2190, 2531, 2282, 6589}

$$\frac{12f^2(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}-\frac{12f^3\text{PolyLog}\left(3,-ie^{c+dx}\right)}{ad^4}-\frac{6if^2(e+fx)\cosh(c+dx)}{ad^3}+\frac{6f(e+fx)^2\log\left(1+\right.}{ad^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sinh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] -((e + f*x)^3/(a*d)) + (e + f*x)^4/(4*a*f) - ((6*I)*f^2*(e + f*x)*Cosh[c +
d*x])/(a*d^3) - (I*(e + f*x)^3*Cosh[c + d*x])/(a*d) + (6*f*(e + f*x)^2*Log[
1 + I*E^(c + d*x)])/(a*d^2) + (12*f^2*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)
])/(a*d^3) - (12*f^3*PolyLog[3, (-I)*E^(c + d*x)])/(a*d^4) + ((6*I)*f^3*Sin
h[c + d*x])/(a*d^4) + ((3*I)*f*(e + f*x)^2*Sinh[c + d*x])/(a*d^2) - ((e + f
*x)^3*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\sinh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = i\int \frac{(e+fx)^3\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx - \frac{i\int (e+fx)^3\sinh(c+dx)\,dx}{a}$$

$$= -\frac{i(e+fx)^3\cosh(c+dx)}{ad} + \frac{\int (e+fx)^3\,dx}{a} + \frac{(3if)\int (e+fx)^2\cosh(c+dx)\,dx}{ad}$$

$$= \frac{(e+fx)^4}{4af} - \frac{i(e+fx)^3\cosh(c+dx)}{ad} + \frac{3if(e+fx)^2\sinh(c+dx)}{ad^2} - \frac{\int (e+fx)^3}{}$$

$$= \frac{(e+fx)^4}{4af} - \frac{6if^2(e+fx)\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^3\cosh(c+dx)}{ad} + \frac{3if(e+fx)}{}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} - \frac{6if^2(e+fx)\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^3\cosh(c+dx)}{ad}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} - \frac{6if^2(e+fx)\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^3\cosh(c+dx)}{ad}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} - \frac{6if^2(e+fx)\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^3\cosh(c+dx)}{ad}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} - \frac{6if^2(e+fx)\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^3\cosh(c+dx)}{ad}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} - \frac{6if^2(e+fx)\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^3\cosh(c+dx)}{ad}$$

Mathematica [B] time = 6.53, size = 857, normalized size = 3.56

$$\frac{if^3x^4\sinh\left(c+\frac{dx}{2}\right)d^4+4ief^2x^3\sinh\left(c+\frac{dx}{2}\right)d^4+6ie^2fx^2\sinh\left(c+\frac{dx}{2}\right)d^4+4ie^3x\sinh\left(c+\frac{dx}{2}\right)d^4-10e^3\sinh\left(\frac{dx}{2}\right)d^3-10f^3x^3\sinh\left(\frac{dx}{2}\right)d^3-30ef^2x^2\sinh\left(\frac{dx}{2}\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sinh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (((-8*I)*(d^3*(e + f*x)^3 + 3*d^2*(1 + I*E^c)*f*(e + f*x)^2*Log[1 - I*E^(-c
 - d*x)] + (6*I)*(I - E^c)*f^2*(d*(e + f*x)*PolyLog[2, I*E^(-c - d*x)] + f*
```

```
PolyLog[3, I*E^(-c - d*x)]])))/(-I + E^c) + ((12*f^3 + 6*d^2*f*(e + f*x)^2 +
 d^4*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3))*Cosh[(d*x)/2] - (2*I)*d
*(e + f*x)*(6*f^2 + d^2*(e + f*x)^2)*Cosh[c + (d*x)/2] - (2*I)*d*(e + f*x)*
(6*f^2 + d^2*(e + f*x)^2)*Cosh[c + (3*d*x)/2] - 6*d^2*e^2*f*Cosh[2*c + (3*d
*x)/2] - 12*f^3*Cosh[2*c + (3*d*x)/2] - 12*d^2*e*f^2*x*Cosh[2*c + (3*d*x)/2
] - 6*d^2*f^3*x^2*Cosh[2*c + (3*d*x)/2] - 10*d^3*e^3*Sinh[(d*x)/2] - 12*d*e
*f^2*Sinh[(d*x)/2] - 30*d^3*e^2*f*x*Sinh[(d*x)/2] - 12*d*f^3*x*Sinh[(d*x)/2
] - 30*d^3*e*f^2*x^2*Sinh[(d*x)/2] - 10*d^3*f^3*x^3*Sinh[(d*x)/2] + (6*I)*d
^2*e^2*f*Sinh[c + (d*x)/2] + (12*I)*f^3*Sinh[c + (d*x)/2] + (4*I)*d^4*e^3*x
*Sinh[c + (d*x)/2] + (12*I)*d^2*e*f^2*x*Sinh[c + (d*x)/2] + (6*I)*d^4*e^2*f
*x^2*Sinh[c + (d*x)/2] + (6*I)*d^2*f^3*x^2*Sinh[c + (d*x)/2] + (4*I)*d^4*e*
f^2*x^3*Sinh[c + (d*x)/2] + I*d^4*f^3*x^4*Sinh[c + (d*x)/2] + (6*I)*d^2*e^2
*f*Sinh[c + (3*d*x)/2] + (12*I)*f^3*Sinh[c + (3*d*x)/2] + (12*I)*d^2*e*f^2*
x*Sinh[c + (3*d*x)/2] + (6*I)*d^2*f^3*x^2*Sinh[c + (3*d*x)/2] + 2*d^3*e^3*S
inh[2*c + (3*d*x)/2] + 12*d*e*f^2*Sinh[2*c + (3*d*x)/2] + 6*d^3*e^2*f*x*Sin
h[2*c + (3*d*x)/2] + 12*d*f^3*x*Sinh[2*c + (3*d*x)/2] + 6*d^3*e*f^2*x^2*Sin
h[2*c + (3*d*x)/2] + 2*d^3*f^3*x^3*Sinh[2*c + (3*d*x)/2])/((Cosh[c/2] + I*S
inh[c/2])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])))/(4*a*d^4)
```

fricas [C] time = 0.52, size = 816, normalized size = 3.39

$$-\frac{2\,d^3f^3x^3+2\,d^3e^3+6\,d^2e^2f+12\,def^2+12\,f^3+6\left(d^3ef^2+d^2f^3\right)x^2+6\left(d^3e^2f+2\,d^2ef^2+2\,df^3\right)x-\left(48\left(df^3x\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -(2*d^3*f^3*x^3 + 2*d^3*e^3 + 6*d^2*e^2*f + 12*d*e*f^2 + 12*f^3 + 6*(d^3*e*
f^2 + d^2*f^3)*x^2 + 6*(d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*x - (48*(d*f^3*x
 + d*e*f^2)*e^(2*d*x + 2*c) + (-48*I*d*f^3*x - 48*I*d*e*f^2)*e^(d*x + c))*d
ilog(-I*e^(d*x + c)) - (-2*I*d^3*f^3*x^3 - 2*I*d^3*e^3 + 6*I*d^2*e^2*f - 12
*I*d*e*f^2 + 12*I*f^3 + (-6*I*d^3*e*f^2 + 6*I*d^2*f^3)*x^2 + (-6*I*d^3*e^2*
f + 12*I*d^2*e*f^2 - 12*I*d*f^3)*x)*e^(3*d*x + 3*c) - (d^4*f^3*x^4 - 2*d^3*
e^3 - 6*(4*c - 1)*d^2*e^2*f + 12*(2*c^2 - 1)*d*e*f^2 - 4*(2*c^3 - 3)*f^3 +
2*(2*d^4*e*f^2 - 5*d^3*f^3)*x^3 + 6*(d^4*e^2*f - 5*d^3*e*f^2 + d^2*f^3)*x^2
 + 2*(2*d^4*e^3 - 15*d^3*e^2*f + 6*d^2*e*f^2 - 6*d*f^3)*x)*e^(2*d*x + 2*c)
- (-I*d^4*f^3*x^4 - 10*I*d^3*e^3 + (24*I*c - 6*I)*d^2*e^2*f + (-24*I*c^2 -
12*I)*d*e*f^2 + (8*I*c^3 - 12*I)*f^3 + (-4*I*d^4*e*f^2 - 2*I*d^3*f^3)*x^3 +
 (-6*I*d^4*e^2*f - 6*I*d^3*e*f^2 - 6*I*d^2*f^3)*x^2 + (-4*I*d^4*e^3 - 6*I*d
^3*e^2*f - 12*I*d^2*e*f^2 - 12*I*d*f^3)*x)*e^(d*x + c) - (24*(d^2*e^2*f - 2
*c*d*e*f^2 + c^2*f^3)*e^(2*d*x + 2*c) + (-24*I*d^2*e^2*f + 48*I*c*d*e*f^2 -
 24*I*c^2*f^3)*e^(d*x + c))*log(e^(d*x + c) - I) - (24*(d^2*f^3*x^2 + 2*d^2
*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*e^(2*d*x + 2*c) + (-24*I*d^2*f^3*x^2 - 48
*I*d^2*e*f^2*x - 48*I*c*d*e*f^2 + 24*I*c^2*f^3)*e^(d*x + c))*log(I*e^(d*x +
```

```
c) + 1) + (48*f^3*e^(2*d*x + 2*c) - 48*I*f^3*e^(d*x + c))*polylog(3, -I*e^
(d*x + c)))/(4*a*d^4*e^(2*d*x + 2*c) - 4*I*a*d^4*e^(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \sinh(dx+c)^2}{i a \sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sinh(d*x + c)^2/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.29, size = 688, normalized size = 2.85

$$\frac{12f^2e\ln\left(1+ie^{dx+c}\right)x}{a\,d^2}+\frac{12f^2e\ln\left(1+ie^{dx+c}\right)c}{a\,d^3}-\frac{12f^2ec\ln\left(e^{dx+c}-i\right)}{a\,d^3}+\frac{12f^2ec\ln\left(e^{dx+c}\right)}{a\,d^3}-\frac{12f^2ecx}{a\,d^2}-\frac{2f^3x^3}{ad}+\frac{4f^3}{a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 12/a/d^3*f^2*e*c*ln(exp(d*x+c))+12/a/d^2*f^2*e*ln(1+I*exp(d*x+c))*x+12/a/d^
3*f^2*e*ln(1+I*exp(d*x+c))*c-12/a/d^2*f^2*e*c*x-12/a/d^3*f^2*e*c*ln(exp(d*x
+c)-I)-12*f^3*polylog(3,-I*exp(d*x+c))/a/d^4-1/2*I*(d^3*f^3*x^3+3*d^3*e*f^2
*x^2+3*d^3*e^2*f*x-3*d^2*f^3*x^2+d^3*e^3-6*d^2*e*f^2*x-3*d^2*e^2*f+6*d*f^3*
x+6*d*e*f^2-6*f^3)/a/d^4*exp(d*x+c)-2*I*(f^3*x^3+3*e*f^2*x^2+3*e^2*f*x+e^3)
/d/a/(exp(d*x+c)-I)-2/a/d*f^3*x^3+4/a/d^4*f^3*c^3-1/2*I*(d^3*f^3*x^3+3*d^3*
e*f^2*x^2+3*d^3*e^2*f*x+3*d^2*f^3*x^2+d^3*e^3+6*d^2*e*f^2*x+3*d^2*e^2*f+6*d
*f^3*x+6*d*e*f^2+6*f^3)/a/d^4*exp(-d*x-c)+1/a*e*f^2*x^3+3/2/a*e^2*f*x^2+12/
a/d^3*f^3*polylog(2,-I*exp(d*x+c))*x+6/a/d^4*f^3*c^2*ln(exp(d*x+c)-I)-6/a/d
^2*f*ln(exp(d*x+c))*e^2+6/a/d^3*f^3*c^2*x+6/a/d^2*f*ln(exp(d*x+c)-I)*e^2-6/
a/d^3*f^2*e*c^2-6/a/d*f^2*e*x^2+12/a/d^3*f^2*e*polylog(2,-I*exp(d*x+c))-6/a
/d^4*f^3*c^2*ln(exp(d*x+c))+6/a/d^2*f^3*ln(1+I*exp(d*x+c))*x^2-6/a/d^4*f^3*
ln(1+I*exp(d*x+c))*c^2+1/4/a*x^4*f^3+1/a*e^3*x
```

maxima [B] time = 0.71, size = 670, normalized size = 2.78

$$-\frac{3}{4}e^2f\left(\frac{4\,xe^{(dx+c)}}{ade^{(dx+c)}-i\,ad}-\frac{-2i\,d^2x^2e^c-2i\,dxe^c-\left(2i\,dxe^{(3\,c)}-2i\,e^{(3\,c)}\right)e^{(2\,dx)}+2\left(d^2x^2e^{(2\,c)}-3\,dxe^{(2\,c)}+e^{(2\,c)}\right)e^{(dx)}}{ad^2e^{(dx+2\,c)}-i\,ad^2e^c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -3/4*e^2*f*(4*x*e^(d*x + c)/(a*d*e^(d*x + c) - I*a*d) - (-2*I*d^2*x^2*e^c -
 2*I*d*x*e^c - (2*I*d*x*e^(3*c) - 2*I*e^(3*c))*e^(2*d*x) + 2*(d^2*x^2*e^(2*
c) - 3*d*x*e^(2*c) + e^(2*c))*e^(d*x) - 2*(d*x + 1)*e^(-d*x) - 2*I*e^c)/(a*
d^2*e^(d*x + 2*c) - I*a*d^2*e^c) - 8*log((e^(d*x + c) - I)*e^(-c))/(a*d^2))
 + 1/2*e^3*(2*(d*x + c)/(a*d) + (-5*I*e^(-d*x - c) + 1)/((I*a*e^(-d*x - c)
+ a*e^(-2*d*x - 2*c))*d) - I*e^(-d*x - c)/(a*d)) + 1/4*(-I*d^4*f^3*x^4 - 12
*I*d*e*f^2 - (4*I*d^4*e*f^2 + 10*I*d^3*f^3)*x^3 - 12*I*f^3 - (30*I*d^3*e*f^
2 + 6*I*d^2*f^3)*x^2 - (12*I*d^2*e*f^2 + 12*I*d*f^3)*x - (2*I*d^3*f^3*x^3*e
^(2*c) + (6*I*d^3*e*f^2 - 6*I*d^2*f^3)*x^2*e^(2*c) + (-12*I*d^2*e*f^2 + 12*
I*d*f^3)*x*e^(2*c) + (12*I*d*e*f^2 - 12*I*f^3)*e^(2*c))*e^(2*d*x) + (d^4*f^
3*x^4*e^c + 2*(2*d^4*e*f^2 - d^3*f^3)*x^3*e^c - 6*(d^3*e*f^2 - d^2*f^3)*x^2
*e^c + 12*(d^2*e*f^2 - d*f^3)*x*e^c - 12*(d*e*f^2 - f^3)*e^c)*e^(d*x))/(a*d
^4*e^(d*x + c) - I*a*d^4) + 12*(d*x*log(I*e^(d*x + c) + 1) + dilog(-I*e^(d*
x + c)))*e*f^2/(a*d^3) + 6*(d^2*x^2*log(I*e^(d*x + c) + 1) + 2*d*x*dilog(-I
*e^(d*x + c)) - 2*polylog(3, -I*e^(d*x + c)))*f^3/(a*d^4) - 2*(d^3*f^3*x^3
+ 3*d^3*e*f^2*x^2)/(a*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh(c+d\,x)^2\,\left(e+f\,x\right)^3}{a+a\sinh(c+d\,x)\,1\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*(e + f*x)^3)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] int((sinh(c + d*x)^2*(e + f*x)^3)/(a + a*sinh(c + d*x)*1i), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2ie^3e^c+6ie^2fxe^c+6ief^2x^2e^c+2if^3x^3e^c}{-iade^c-ade^{-dx}}-\frac{i\left(\int\frac{ide^3}{e^ce^{2dx}-ie^{dx}}\,dx+\int\frac{idf^3x^3}{e^ce^{2dx}-ie^{dx}}\,dx+\int\frac{de^3e^ce^{dx}}{e^ce^{2dx}-ie^{dx}}\,dx+\int\frac{de^3e^{3c}e^{3dx}}{e^ce^{2dx}-ie^{dx}}\,dx+\int$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sinh(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] (2*I*e**3*exp(c) + 6*I*e**2*f*x*exp(c) + 6*I*e*f**2*x**2*exp(c) + 2*I*f**3*
x**3*exp(c))/(-I*a*d*exp(c) - a*d*exp(-d*x)) - I*(Integral(I*d*e**3/(exp(c)
*exp(2*d*x) - I*exp(d*x)), x) + Integral(I*d*f**3*x**3/(exp(c)*exp(2*d*x) -
 I*exp(d*x)), x) + Integral(d*e**3*exp(c)*exp(d*x)/(exp(c)*exp(2*d*x) - I*e
xp(d*x)), x) + Integral(d*e**3*exp(3*c)*exp(3*d*x)/(exp(c)*exp(2*d*x) - I*e
xp(d*x)), x) + Integral(3*I*d*e*f**2*x**2/(exp(c)*exp(2*d*x) - I*exp(d*x)),
 x) + Integral(3*I*d*e**2*f*x/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integr
al(I*d*e**3*exp(2*c)*exp(2*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Inte
```

```
gral(12*I*e**2*f*exp(2*c)*exp(2*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) +
 Integral(12*I*f**3*x**2*exp(2*c)*exp(2*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x
)), x) + Integral(d*f**3*x**3*exp(c)*exp(d*x)/(exp(c)*exp(2*d*x) - I*exp(d*
x)), x) + Integral(d*f**3*x**3*exp(3*c)*exp(3*d*x)/(exp(c)*exp(2*d*x) - I*e
xp(d*x)), x) + Integral(I*d*f**3*x**3*exp(2*c)*exp(2*d*x)/(exp(c)*exp(2*d*x
) - I*exp(d*x)), x) + Integral(24*I*e*f**2*x*exp(2*c)*exp(2*d*x)/(exp(c)*ex
p(2*d*x) - I*exp(d*x)), x) + Integral(3*d*e*f**2*x**2*exp(c)*exp(d*x)/(exp(
c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(3*d*e*f**2*x**2*exp(3*c)*exp(3*d
*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(3*d*e**2*f*x*exp(c)*exp
(d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(3*d*e**2*f*x*exp(3*c)
*exp(3*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(3*I*d*e*f**2*x*
*2*exp(2*c)*exp(2*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(3*I*
d*e**2*f*x*exp(2*c)*exp(2*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x))*exp(-c
)/(2*a*d)
```

3.194 $\int \frac{(e+fx)^2 \sinh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=184

$$\frac{4f^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}-\frac{2if^2\cosh(c+dx)}{ad^3}+\frac{4f(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2}+\frac{2if(e+fx)\sinh(c+dx)}{ad^2}-\frac{i(e+fx)^2\cosh(c+}{ad}$$

```
[Out] -(f*x+e)^2/a/d+1/3*(f*x+e)^3/a/f-2*I*f^2*cosh(d*x+c)/a/d^3-I*(f*x+e)^2*cosh
(d*x+c)/a/d+4*f*(f*x+e)*ln(1+I*exp(d*x+c))/a/d^2+4*f^2*polylog(2,-I*exp(d*x
+c))/a/d^3+2*I*f*(f*x+e)*sinh(d*x+c)/a/d^2-(f*x+e)^2*tanh(1/2*c+1/4*I*Pi+1/
2*d*x)/a/d
```

Rubi [A] time = 0.39, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.323, Rules used = {5557, 3296, 2638, 32, 3318, 4184, 3716, 2190, 2279, 2391}

$$\frac{4f^2\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}+\frac{4f(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2}+\frac{2if(e+fx)\sinh(c+dx)}{ad^2}-\frac{2if^2\cosh(c+dx)}{ad^3}-\frac{i(e+fx)^2\cosh}{a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sinh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] -((e + f*x)^2/(a*d)) + (e + f*x)^3/(3*a*f) - ((2*I)*f^2*Cosh[c + d*x])/(a*d
^3) - (I*(e + f*x)^2*Cosh[c + d*x])/(a*d) + (4*f*(e + f*x)*Log[1 + I*E^(c +
 d*x)])/(a*d^2) + (4*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^3) + ((2*I)*f*(
e + f*x)*Sinh[c + d*x])/(a*d^2) - ((e + f*x)^2*Tanh[c/2 + (I/4)*Pi + (d*x)/
2])/(a*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2\sinh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = i\int \frac{(e+fx)^2\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx - \frac{i\int (e+fx)^2\sinh(c+dx)\,dx}{a}$$

$$= -\frac{i(e+fx)^2\cosh(c+dx)}{ad} + \frac{\int (e+fx)^2\,dx}{a} + \frac{(2if)\int (e+fx)\cosh(c+dx)\,dx}{ad} - \dots$$

$$= \frac{(e+fx)^3}{3af} - \frac{i(e+fx)^2\cosh(c+dx)}{ad} + \frac{2if(e+fx)\sinh(c+dx)}{ad^2} - \frac{\int (e+fx)^2\,\mathrm{cs}\dots}{\dots}$$

$$= \frac{(e+fx)^3}{3af} - \frac{2if^2\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^2\cosh(c+dx)}{ad} + \frac{2if(e+fx)\sinh(c+\dots}{ad^2}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{(e+fx)^3}{3af} - \frac{2if^2\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^2\cosh(c+dx)}{ad} + \frac{2if(e+\dots}{\dots}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{(e+fx)^3}{3af} - \frac{2if^2\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^2\cosh(c+dx)}{ad} + \frac{4f(e+\dots}{\dots}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{(e+fx)^3}{3af} - \frac{2if^2\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^2\cosh(c+dx)}{ad} + \frac{4f(e+\dots}{\dots}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{(e+fx)^3}{3af} - \frac{2if^2\cosh(c+dx)}{ad^3} - \frac{i(e+fx)^2\cosh(c+dx)}{ad} + \frac{4f(e+\dots}{\dots}$$

Mathematica [A] time = 3.46, size = 260, normalized size = 1.41

$$\frac{\frac{6\left(\frac{d(e+fx)\left(2\left(e^c-i\right)f\log\left(1-ie^{-c-dx}\right)-id(e+fx)\right)}{e^c-i}-2f^2\mathrm{Li}_2\left(ie^{-c-dx}\right)\right)}{d^3} - \frac{3i\cosh(dx)\left(\cosh(c)\left(d^2(e+fx)^2+2f^2\right)-2df\sinh(c)(e+fx)\right)}{d^3} - \frac{3i\sinh(dx)\left(\sinh(c)\left(d^2(e+\dots\right.\right.}{\dots}}{3a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sinh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (x*(3*e^2 + 3*e*f*x + f^2*x^2) + (6*((d*(e + f*x)*((-I)*d*(e + f*x) + 2*(-I
 + E^c)*f*Log[1 - I*E^(-c - d*x)]))/(-I + E^c) - 2*f^2*PolyLog[2, I*E^(-c -
 d*x)]))/d^3 - ((3*I)*Cosh[d*x]*((2*f^2 + d^2*(e + f*x)^2)*Cosh[c] - 2*d*f*
(e + f*x)*Sinh[c]))/d^3 - ((3*I)*(-2*d*f*(e + f*x)*Cosh[c] + (2*f^2 + d^2*(
e + f*x)^2)*Sinh[c])*Sinh[d*x])/d^3 - (6*(e + f*x)^2*Sinh[(d*x)/2])/(d*(Cos
h[c/2] + I*Sinh[c/2])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])))/(3*a)
```

fricas [B] time = 0.51, size = 471, normalized size = 2.56

$$-\frac{3\,d^2f^2x^2+3\,d^2e^2+6\,def+6\,f^2+6\left(d^2ef+df^2\right)x-\left(24\,f^2e^{(2\,dx+2\,c)}-24i\,f^2e^{(dx+c)}\right)\mathrm{Li}_2\left(-i\,e^{(dx+c)}\right)-\left(-3i\,d^2f\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -(3*d^2*f^2*x^2 + 3*d^2*e^2 + 6*d*e*f + 6*f^2 + 6*(d^2*e*f + d*f^2)*x - (24
*f^2*e^(2*d*x + 2*c) - 24*I*f^2*e^(d*x + c))*dilog(-I*e^(d*x + c)) - (-3*I*
d^2*f^2*x^2 - 3*I*d^2*e^2 + 6*I*d*e*f - 6*I*f^2 + (-6*I*d^2*e*f + 6*I*d*f^2
)*x)*e^(3*d*x + 3*c) - (2*d^3*f^2*x^3 - 3*d^2*e^2 - 6*(4*c - 1)*d*e*f + 6*(
2*c^2 - 1)*f^2 + 3*(2*d^3*e*f - 5*d^2*f^2)*x^2 + 6*(d^3*e^2 - 5*d^2*e*f + d
*f^2)*x)*e^(2*d*x + 2*c) - (-2*I*d^3*f^2*x^3 - 15*I*d^2*e^2 + (24*I*c - 6*I
)*d*e*f + (-12*I*c^2 - 6*I)*f^2 + (-6*I*d^3*e*f - 3*I*d^2*f^2)*x^2 + (-6*I*
d^3*e^2 - 6*I*d^2*e*f - 6*I*d*f^2)*x)*e^(d*x + c) - (24*(d*e*f - c*f^2)*e^(
2*d*x + 2*c) + (-24*I*d*e*f + 24*I*c*f^2)*e^(d*x + c))*log(e^(d*x + c) - I)
 - (24*(d*f^2*x + c*f^2)*e^(2*d*x + 2*c) + (-24*I*d*f^2*x - 24*I*c*f^2)*e^(
d*x + c))*log(I*e^(d*x + c) + 1))/(6*a*d^3*e^(2*d*x + 2*c) - 6*I*a*d^3*e^(d
*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\sinh\left(dx+c\right)^2}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sinh(d*x + c)^2/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.22, size = 374, normalized size = 2.03

$$\frac{x^3f^2}{3a}+\frac{ef\,x^2}{a}+\frac{e^2x}{a}-\frac{i\left(d^2f^2x^2+2d^2efx+d^2e^2+2d\,f^2x+2def+2f^2\right)\mathrm{e}^{-dx-c}}{2a\,d^3}-\frac{i\left(d^2f^2x^2+2d^2efx+d^2e^2-2d\,f\right.}{2a\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 1/3/a*x^3*f^2+1/a*e*f*x^2+1/a*e^2*x-1/2*I*(d^2*f^2*x^2+2*d^2*e*f*x+d^2*e^2+
2*d*f^2*x+2*d*e*f+2*f^2)/a/d^3*exp(-d*x-c)-1/2*I*(d^2*f^2*x^2+2*d^2*e*f*x+d
^2*e^2-2*d*f^2*x-2*d*e*f+2*f^2)/a/d^3*exp(d*x+c)-2*I*(f^2*x^2+2*e*f*x+e^2)/
d/a/(exp(d*x+c)-I)+4/a/d^2*f*ln(exp(d*x+c)-I)*e-4/a/d^2*f*ln(exp(d*x+c))*e-
2*f^2*x^2/a/d-4/a/d^2*f^2*c*x-2/a/d^3*f^2*c^2+4/a/d^2*f^2*ln(1+I*exp(d*x+c)
)*x+4/a/d^3*f^2*ln(1+I*exp(d*x+c))*c+4*f^2*polylog(2,-I*exp(d*x+c))/a/d^3-4
/a/d^3*f^2*c*ln(exp(d*x+c)-I)+4/a/d^3*f^2*c*ln(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,ef\left(\frac{4\,xe^{(dx+c)}}{ade^{(dx+c)}-i\,ad}-\frac{-2i\,d^2x^2e^c-2i\,dxe^c-\left(2i\,dxe^{(3\,c)}-2i\,e^{(3\,c)}\right)e^{(2\,dx)}+2\left(d^2x^2e^{(2\,c)}-3\,dxe^{(2\,c)}+e^{(2\,c)}\right)e^{(dx)}-}{ad^2e^{(dx+2\,c)}-i\,ad^2e^c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -1/2*e*f*(4*x*e^(d*x + c)/(a*d*e^(d*x + c) - I*a*d) - (-2*I*d^2*x^2*e^c - 2
*I*d*x*e^c - (2*I*d*x*e^(3*c) - 2*I*e^(3*c))*e^(2*d*x) + 2*(d^2*x^2*e^(2*c)
 - 3*d*x*e^(2*c) + e^(2*c))*e^(d*x) - 2*(d*x + 1)*e^(-d*x) - 2*I*e^c)/(a*d^
2*e^(d*x + 2*c) - I*a*d^2*e^c) - 8*log((e^(d*x + c) - I)*e^(-c))/(a*d^2)) +
 1/12*f^2*((-4*I*d^3*x^3 - 30*I*d^2*x^2 - 12*I*d*x - (6*I*d^2*x^2*e^(2*c) -
 12*I*d*x*e^(2*c) + 12*I*e^(2*c))*e^(2*d*x) + 2*(2*d^3*x^3*e^c - 3*d^2*x^2*
e^c + 6*d*x*e^c - 6*e^c)*e^(d*x) - 12*I)/(a*d^3*e^(d*x + c) - I*a*d^3) + 48
*I*integrate(x/(a*d*e^(d*x + c) - I*a*d), x)) + 1/2*e^2*(2*(d*x + c)/(a*d)
+ (-5*I*e^(-d*x - c) + 1)/((I*a*e^(-d*x - c) + a*e^(-2*d*x - 2*c))*d) - I*e
^(-d*x - c)/(a*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sinh\left(c+d\,x\right)^2\,{\left(e+f\,x\right)}^2}{a+a\,\sinh\left(c+d\,x\right)\,1{}\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*(e + f*x)^2)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] int((sinh(c + d*x)^2*(e + f*x)^2)/(a + a*sinh(c + d*x)*1i), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2ie^2e^c+4iefxe^c+2if^2x^2e^c}{-iade^c-ade^{-dx}}-\frac{i\left(\int\frac{ide^2}{e^ce^{2dx}-ie^{dx}}\,dx+\int\frac{idf^2x^2}{e^ce^{2dx}-ie^{dx}}\,dx+\int\frac{de^2e^ce^{dx}}{e^ce^{2dx}-ie^{dx}}\,dx+\int\frac{de^2e^{3c}e^{3dx}}{e^ce^{2dx}-ie^{dx}}\,dx+\int\frac{2idefx}{e^ce^{2dx}-ie^{dx}}\,dx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sinh(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] (2*I*e**2*exp(c) + 4*I*e*f*x*exp(c) + 2*I*f**2*x**2*exp(c))/(-I*a*d*exp(c)
- a*d*exp(-d*x)) - I*(Integral(I*d*e**2/(exp(c)*exp(2*d*x) - I*exp(d*x)), x
) + Integral(I*d*f**2*x**2/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(
d*e**2*exp(c)*exp(d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(d*e*
*2*exp(3*c)*exp(3*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(2*I*
d*e*f*x/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(I*d*e**2*exp(2*c)*e
xp(2*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(8*I*e*f*exp(2*c)*
exp(2*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(8*I*f**2*x*exp(2
*c)*exp(2*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(d*f**2*x**2*
exp(c)*exp(d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(d*f**2*x**2
*exp(3*c)*exp(3*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(I*d*f*
*2*x**2*exp(2*c)*exp(2*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral
(2*d*e*f*x*exp(c)*exp(d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integral(
2*d*e*f*x*exp(3*c)*exp(3*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x) + Integr
al(2*I*d*e*f*x*exp(2*c)*exp(2*d*x)/(exp(c)*exp(2*d*x) - I*exp(d*x)), x))*ex
p(-c)/(2*a*d)
```

3.195 $\int \frac{(e+fx)\sinh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=119

$$\frac{if\sinh(c+dx)}{ad^2}+\frac{2f\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}-\frac{i(e+fx)\cosh(c+dx)}{ad}-\frac{(e+fx)\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{ad}+\frac{ex}{a}+\frac{fx^2}{2a}$$

```
[Out] e*x/a+1/2*f*x^2/a-I*(f*x+e)*cosh(d*x+c)/a/d+2*f*ln(cosh(1/2*c+1/4*I*Pi+1/2*
d*x))/a/d^2+I*f*sinh(d*x+c)/a/d^2-(f*x+e)*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a/d
```

Rubi [A] time = 0.18, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {5557, 3296, 2637, 3318, 4184, 3475}

$$\frac{if\sinh(c+dx)}{ad^2}+\frac{2f\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}-\frac{i(e+fx)\cosh(c+dx)}{ad}-\frac{(e+fx)\tanh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)}{ad}+\frac{ex}{a}+\frac{fx^2}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sinh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (e*x)/a + (f*x^2)/(2*a) - (I*(e + f*x)*Cosh[c + d*x])/(a*d) + (2*f*Log[Cosh
[c/2 + (I/4)*Pi + (d*x)/2]])/(a*d^2) + (I*f*Sinh[c + d*x])/(a*d^2) - ((e +
f*x)*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(e+fx)\sinh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx &= i\int \frac{(e+fx)\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx-\frac{i\int (e+fx)\sinh(c+dx)\,dx}{a}\\ &= -\frac{i(e+fx)\cosh(c+dx)}{ad}+\frac{\int (e+fx)\,dx}{a}+\frac{(if)\int \cosh(c+dx)\,dx}{ad}-\int \frac{e\ }{a+ia\sin}\\ &= \frac{ex}{a}+\frac{fx^2}{2a}-\frac{i(e+fx)\cosh(c+dx)}{ad}+\frac{if\sinh(c+dx)}{ad^2}-\frac{\int (e+fx)\csc^2\left(\frac{1}{2}\left(ic+\right.\right.}{2a}\\ &= \frac{ex}{a}+\frac{fx^2}{2a}-\frac{i(e+fx)\cosh(c+dx)}{ad}+\frac{if\sinh(c+dx)}{ad^2}-\frac{(e+fx)\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\right.}{ad}\\ &= \frac{ex}{a}+\frac{fx^2}{2a}-\frac{i(e+fx)\cosh(c+dx)}{ad}+\frac{2f\log\left(\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\right)}{ad^2}+\frac{if\sinh(c+}{ad^2}\end{aligned}$$

Mathematica [A] time = 1.02, size = 238, normalized size = 2.00

$$\frac{\left(\sinh\left(\frac{1}{2}(c+dx)\right)-i\cosh\left(\frac{1}{2}(c+dx)\right)\right)\left(\cosh\left(\frac{1}{2}(c+dx)\right)\left(c^2(-f)-2id(e+fx)\cosh(c+dx)+2cde+2if\sinh\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sinh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (((-I)*Cosh[(c + d*x)/2] + Sinh[(c + d*x)/2])*(Sinh[(c + d*x)/2]*(I*(2*I +
c + d*x)*(2*d*e - c*f + d*f*x) - 4*f*ArcTan[Tanh[(c + d*x)/2]] + 2*d*(e + f
*x)*Cosh[c + d*x] + (2*I)*f*Log[Cosh[c + d*x]] - 2*f*Sinh[c + d*x]) + Cosh[
(c + d*x)/2]*(2*c*d*e - (2*I)*c*f - c^2*f + 2*d^2*e*x - (2*I)*d*f*x + d^2*f
*x^2 + (4*I)*f*ArcTan[Tanh[(c + d*x)/2]] - (2*I)*d*(e + f*x)*Cosh[c + d*x]
+ 2*f*Log[Cosh[c + d*x]] + (2*I)*f*Sinh[c + d*x])))/(2*a*d^2*(-I + Sinh[c +
 d*x]))
```

fricas [A] time = 0.52, size = 174, normalized size = 1.46

$$-\frac{dfx + de - \left(-idfx - ide + if\right)e^{(3\,dx+3\,c)} - \left(d^2fx^2 - de + \left(2\,d^2e - 5\,df\right)x + f\right)e^{(2\,dx+2\,c)} - \left(-i\,d^2fx^2 - 5i\,de + \left(-2\right.\right.}{2\,ad^2e^{(2\,dx+2\,c)} - 2i\,ad^2e^{(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(d*f*x + d*e - (-I*d*f*x - I*d*e + I*f)*e^(3*d*x + 3*c) - (d^2*f*x^2 - d*e
 + (2*d^2*e - 5*d*f)*x + f)*e^(2*d*x + 2*c) - (-I*d^2*f*x^2 - 5*I*d*e + (-2
*I*d^2*e - I*d*f)*x - I*f)*e^(d*x + c) - (4*f*e^(2*d*x + 2*c) - 4*I*f*e^(d*
x + c))*log(e^(d*x + c) - I) + f)/(2*a*d^2*e^(2*d*x + 2*c) - 2*I*a*d^2*e^(d
*x + c))
```

giac [B] time = 0.33, size = 272, normalized size = 2.29

$$\frac{d^2fx^2e^{(2\,dx+3\,c)} - i\,d^2fx^2e^{(dx+2\,c)} - i\,dfxe^{(3\,dx+4\,c)} + 2\,d^2xe^{(2\,dx+3\,c+1)} - 5\,dfxe^{(2\,dx+3\,c)} - 2i\,d^2xe^{(dx+2\,c+1)} - i\,dfxe^{(dx+}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (d^2*f*x^2*e^(2*d*x + 3*c) - I*d^2*f*x^2*e^(d*x + 2*c) - I*d*f*x*e^(3*d*x +
 4*c) + 2*d^2*x*e^(2*d*x + 3*c + 1) - 5*d*f*x*e^(2*d*x + 3*c) - 2*I*d^2*x*e
^(d*x + 2*c + 1) - I*d*f*x*e^(d*x + 2*c) - d*f*x*e^c + 4*f*e^(2*d*x + 3*c)*
log(e^(d*x + c) - I) - 4*I*f*e^(d*x + 2*c)*log(e^(d*x + c) - I) - I*d*e^(3*
d*x + 4*c + 1) + I*f*e^(3*d*x + 4*c) - d*e^(2*d*x + 3*c + 1) + f*e^(2*d*x +
 3*c) - 5*I*d*e^(d*x + 2*c + 1) - I*f*e^(d*x + 2*c) - d*e^(c + 1) - f*e^c)/
(2*a*d^2*e^(2*d*x + 3*c) - 2*I*a*d^2*e^(d*x + 2*c))
```

maple [A] time = 0.19, size = 134, normalized size = 1.13

$$\frac{f\,x^2}{2a}+\frac{ex}{a}-\frac{i\left(dfx+de-f\right)\mathrm{e}^{dx+c}}{2a\,d^2}-\frac{i\left(dfx+de+f\right)\mathrm{e}^{-dx-c}}{2a\,d^2}-\frac{2fx}{ad}-\frac{2fc}{a\,d^2}-\frac{2i\left(fx+e\right)}{da\left(\mathrm{e}^{dx+c}-i\right)}+\frac{2f\ln\left(\mathrm{e}^{dx+c}-i\right)}{a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 1/2*f*x^2/a+e*x/a-1/2*I*(d*f*x+d*e-f)/a/d^2*exp(d*x+c)-1/2*I*(d*f*x+d*e+f)/
a/d^2*exp(-d*x-c)-2*f*x/a/d-2*f/a/d^2*c-2*I*(f*x+e)/d/a/(exp(d*x+c)-I)+2*f/
a/d^2*ln(exp(d*x+c)-I)
```

maxima [B] time = 0.47, size = 240, normalized size = 2.02

$$-\frac{1}{4}f\left(\frac{4\,xe^{(dx+c)}}{ade^{(dx+c)}-i\,ad}-\frac{-2i\,d^2x^2e^c-2i\,dxe^c-\left(2i\,dxe^{(3\,c)}-2i\,e^{(3\,c)}\right)e^{(2\,dx)}+2\left(d^2x^2e^{(2\,c)}-3\,dxe^{(2\,c)}+e^{(2\,c)}\right)e^{(dx)}-}{ad^2e^{(dx+2\,c)}-i\,ad^2e^c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/4*f*(4*x*e^(d*x + c)/(a*d*e^(d*x + c) - I*a*d) - (-2*I*d^2*x^2*e^c - 2*I
*d*x*e^c - (2*I*d*x*e^(3*c) - 2*I*e^(3*c))*e^(2*d*x) + 2*(d^2*x^2*e^(2*c) -
 3*d*x*e^(2*c) + e^(2*c))*e^(d*x) - 2*(d*x + 1)*e^(-d*x) - 2*I*e^c)/(a*d^2*
e^(d*x + 2*c) - I*a*d^2*e^c) - 8*log((e^(d*x + c) - I)*e^(-c))/(a*d^2)) + 1
/2*e*(2*(d*x + c)/(a*d) + (-5*I*e^(-d*x - c) + 1)/((I*a*e^(-d*x - c) + a*e^
(-2*d*x - 2*c))*d) - I*e^(-d*x - c)/(a*d))
```

mupad [B] time = 0.58, size = 143, normalized size = 1.20

$$\frac{f\,x^2}{2\,a}+\mathrm{e}^{c+d\,x}\,\left(\frac{\left(f-d\,e\right)\,1\mathrm{i}}{2\,a\,d^2}-\frac{f\,x\,1\mathrm{i}}{2\,a\,d}\right)-\mathrm{e}^{-c-d\,x}\,\left(\frac{\left(f+d\,e\right)\,1\mathrm{i}}{2\,a\,d^2}+\frac{f\,x\,1\mathrm{i}}{2\,a\,d}\right)-\frac{\left(e+f\,x\right)\,2\mathrm{i}}{a\,d\,\left(\mathrm{e}^{c+d\,x}-\mathrm{i}\right)}-\frac{x\,\left(2\,f-d\,e\right)}{a\,d}+\frac{2\,f\,\ln\left(\mathrm{e}^{d\,x}\,\mathrm{e}\right.}{a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*(e + f*x))/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] exp(c + d*x)*(((f - d*e)*1i)/(2*a*d^2) - (f*x*1i)/(2*a*d)) - exp(- c - d*x)
*(((f + d*e)*1i)/(2*a*d^2) + (f*x*1i)/(2*a*d)) + (f*x^2)/(2*a) - ((e + f*x)
*2i)/(a*d*(exp(c + d*x) - 1i)) - (x*(2*f - d*e))/(a*d) + (2*f*log(exp(d*x)*
exp(c) - 1i))/(a*d^2)
```

sympy [A] time = 0.62, size = 235, normalized size = 1.97

$$\frac{2iee^c+2ifxe^c}{-iade^c-ade^{-dx}}+\begin{cases}\frac{\left(\left(-2iad^3e-2iad^3fx-2iad^2f\right)e^{-dx}+\left(-2iad^3ee^{2c}-2iad^3fxe^{2c}+2iad^2fe^{2c}\right)e^{dx}\right)e^{-c}}{4a^2d^4} & \text{for}\ 4a^2d^4e^c\neq 0\\ \frac{x^2\left(-ife^{2c}+if\right)e^{-c}}{4a}+\frac{x\left(-iee^{2c}+ie\right)e^{-c}}{2a} & \text{otherwise}\end{cases}+\frac{fx^2}{2a}+\frac{x\left(de+\right.}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] (2*I*e*exp(c) + 2*I*f*x*exp(c))/(-I*a*d*exp(c) - a*d*exp(-d*x)) + Piecewise
((((-2*I*a*d**3*e - 2*I*a*d**3*f*x - 2*I*a*d**2*f)*exp(-d*x) + (-2*I*a*d**3
*e*exp(2*c) - 2*I*a*d**3*f*x*exp(2*c) + 2*I*a*d**2*f*exp(2*c))*exp(d*x))*ex
p(-c)/(4*a**2*d**4), Ne(4*a**2*d**4*exp(c), 0)), (x**2*(-I*f*exp(2*c) + I*f
)*exp(-c)/(4*a) + x*(-I*e*exp(2*c) + I*e)*exp(-c)/(2*a), True)) + f*x**2/(2
*a) + x*(d*e + 2*f)/(a*d) + 2*f*log(I*exp(c) + exp(-d*x))/(a*d**2)
```

3.196 $\int \frac{\sinh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=52

$$-\frac{i\cosh(c+dx)}{ad}-\frac{i\cosh(c+dx)}{ad(1+i\sinh(c+dx))}+\frac{x}{a}$$

```
[Out] x/a-I*cosh(d*x+c)/a/d-I*cosh(d*x+c)/a/d/(1+I*sinh(d*x+c))
```

Rubi [A] time = 0.09, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2746, 12, 2735, 2648}

$$-\frac{i\cosh(c+dx)}{ad}-\frac{i\cosh(c+dx)}{ad(1+i\sinh(c+dx))}+\frac{x}{a}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[c + d*x]^2/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] x/a - (I*Cosh[c + d*x])/(a*d) - (I*Cosh[c + d*x])/(a*d*(1 + I*Sinh[c + d*x]
))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2648

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> -Simp[Cos[c +
 d*x]/(d*(b + a*Sin[c + d*x])), x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b
^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2746

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2/((c_.) + (d_.)*sin[(e_.) + (f
_.)*(x_)]), x_Symbol] :> -Simp[(b^2*Cos[e + f*x])/(d*f), x] + Dist[1/d, Int
[Simp[a^2*d - b*(b*c - 2*a*d)*Sin[e + f*x], x]/(c + d*Sin[e + f*x]), x], x]
```

```
/; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sinh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx &= -\frac{i\cosh(c+dx)}{ad}+\frac{i\int \frac{a\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx}{a}\\
&= -\frac{i\cosh(c+dx)}{ad}+i\int \frac{\sinh(c+dx)}{a+ia\sinh(c+dx)}\,dx\\
&= \frac{x}{a}-\frac{i\cosh(c+dx)}{ad}-\int \frac{1}{a+ia\sinh(c+dx)}\,dx\\
&= \frac{x}{a}-\frac{i\cosh(c+dx)}{ad}-\frac{i\cosh(c+dx)}{d(a+ia\sinh(c+dx))}
\end{aligned}$$

Mathematica [A] time = 0.22, size = 59, normalized size = 1.13

$$\frac{\cosh(c+dx)\left(\frac{\sinh^{-1}(\sinh(c+dx))}{\sqrt{\cosh^2(c+dx)}}+\frac{-2-i\sinh(c+dx)}{\sinh(c+dx)-i}\right)}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[c + d*x]^2/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (Cosh[c + d*x]*(ArcSinh[Sinh[c + d*x]]/Sqrt[Cosh[c + d*x]^2] + (-2 - I*Sinh
[c + d*x])/(-I + Sinh[c + d*x])))/(a*d)
```

fricas [A] time = 0.55, size = 69, normalized size = 1.33

$$\frac{(2\,dx-1)e^{(2\,dx+2\,c)}+(-2i\,dx-5i)e^{(dx+c)}-i\,e^{(3\,dx+3\,c)}-1}{2\,ade^{(2\,dx+2\,c)}-2i\,ade^{(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((2*d*x - 1)*e^(2*d*x + 2*c) + (-2*I*d*x - 5*I)*e^(d*x + c) - I*e^(3*d*x +
3*c) - 1)/(2*a*d*e^(2*d*x + 2*c) - 2*I*a*d*e^(d*x + c))
```

giac [A] time = 0.57, size = 63, normalized size = 1.21

$$\frac{\frac{2\,(dx+c)}{a}-\frac{i\,e^{(dx+c)}}{a}-\frac{\left(5\,e^{(dx+c)}-i\right)e^{(-dx-c)}}{a\left(-i\,e^{(dx+c)}-1\right)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(2*(d*x + c)/a - I*e^(d*x + c)/a - (5*e^(d*x + c) - I)*e^(-d*x - c)/(a*
(-I*e^(d*x + c) - 1)))/d
```

maple [B] time = 0.07, size = 107, normalized size = 2.06

$$\frac{i}{da\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{da}-\frac{i}{da\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{da}-\frac{2}{da\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] I/d/a/(tanh(1/2*d*x+1/2*c)-1)-1/d/a*ln(tanh(1/2*d*x+1/2*c)-1)-I/d/a/(tanh(1
/2*d*x+1/2*c)+1)+1/d/a*ln(tanh(1/2*d*x+1/2*c)+1)-2/d/a/(-I+tanh(1/2*d*x+1/2
*c))
```

maxima [A] time = 0.46, size = 74, normalized size = 1.42

$$\frac{dx+c}{ad}+\frac{-5i\,e^{(-dx-c)}+1}{2\left(i\,ae^{(-dx-c)}+ae^{(-2\,dx-2\,c)}\right)d}-\frac{i\,e^{(-dx-c)}}{2\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] (d*x + c)/(a*d) + 1/2*(-5*I*e^(-d*x - c) + 1)/((I*a*e^(-d*x - c) + a*e^(-2*
d*x - 2*c))*d) - 1/2*I*e^(-d*x - c)/(a*d)
```

mupad [B] time = 0.30, size = 59, normalized size = 1.13

$$\frac{x}{a}-\frac{2\mathrm{i}}{a\,d\,\left(\mathrm{e}^{c+d\,x}-\mathrm{i}\right)}-\frac{\mathrm{e}^{c+d\,x}\,1\mathrm{i}}{2\,a\,d}-\frac{\mathrm{e}^{-c-d\,x}\,1\mathrm{i}}{2\,a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)^2/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] x/a - 2i/(a*d*(exp(c + d*x) - 1i)) - (exp(c + d*x)*1i)/(2*a*d) - (exp(- c -
 d*x)*1i)/(2*a*d)
```

sympy [A] time = 0.30, size = 105, normalized size = 2.02

$$\begin{cases} \frac{(-2iade^{2c}e^{dx}-2iade^{-dx})e^{-c}}{4a^2d^2} & \text{for } 4a^2d^2e^c \neq 0 \\ x\left(\frac{(-ie^{2c}+2e^c+i)e^{-c}}{2a}-\frac{1}{a}\right) & \text{otherwise} \end{cases} + \frac{2ie^c}{-iade^c - ade^{-dx}} + \frac{x}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Piecewise((((-2*I*a*d*exp(2*c)*exp(d*x) - 2*I*a*d*exp(-d*x))*exp(-c)/(4*a**2
*d**2), Ne(4*a**2*d**2*exp(c), 0)), (x*((-I*exp(2*c) + 2*exp(c) + I)*exp(-c
)/(2*a) - 1/a), True)) + 2*I*exp(c)/(-I*a*d*exp(c) - a*d*exp(-d*x)) + x/a
```

3.197 $\int \frac{\sinh^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\operatorname{Int}\left(\frac{\sinh^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sinh[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Sinh[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sinh^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx = \int \frac{\sinh^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Sinh[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.53, size = 0, normalized size = 0.00

$$\frac{\left(-i\,adfx - i\,ade + \left(adfx + ade\right)e^{(dx+c)}\right)\operatorname{integral}\left(\frac{dfx+de+\left(-i\,dfx-i\,de\right)e^{(3\,dx+3\,c)}+\left(dfx+de\right)e^{(2\,dx+2\,c)}+\left(-i\,dfx-i\,de-4i\,f\right)e^{(dx+c)}}{2\left(adf^2x^2+2\,adefx+ade^2\right)e^{(2\,dx+2\,c)}+\left(-2i\,adf^2x^2-4i\,adefx-2i\,ade^2\right)e^{(dx+c)}},x\right)}{-i\,adfx - i\,ade + \left(adfx + ade\right)e^{(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((-I*a*d*f*x - I*a*d*e + (a*d*f*x + a*d*e)*e^(d*x + c))*integral((d*f*x + d
*e + (-I*d*f*x - I*d*e)*e^(3*d*x + 3*c) + (d*f*x + d*e)*e^(2*d*x + 2*c) + (
-I*d*f*x - I*d*e - 4*I*f)*e^(d*x + c))/(2*(a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*
e^2)*e^(2*d*x + 2*c) + (-2*I*a*d*f^2*x^2 - 4*I*a*d*e*f*x - 2*I*a*d*e^2)*e^(
d*x + c)), x) - 2*I)/(-I*a*d*f*x - I*a*d*e + (a*d*f*x + a*d*e)*e^(d*x + c))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh (dx+c)^2}{(fx+e)(i\,a\sinh (dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sinh(d*x + c)^2/((f*x + e)*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\sinh^2 (dx+c)}{(fx+e)\,(a+ia\sinh (dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2if\int \frac{1}{-i\,adf^2x^2-2i\,adefx-i\,ade^2+\left(adf^2x^2e^c+2\,adefxe^c+ade^2e^c\right)e^{(dx)}}\,dx-\frac{i\,e^{\left(-c+\frac{de}{f}\right)}E_1\left(\frac{(fx+e)d}{f}\right)}{2\,af}+\frac{i\,e^{\left(c-\frac{de}{f}\right)}E}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*I*f*integrate(1/(-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2 + (a*d*f^2*x
^2*e^c + 2*a*d*e*f*x*e^c + a*d*e^2*e^c)*e^(d*x)), x) - 1/2*I*e^(-c + d*e/f)
*exp_integral_e(1, (f*x + e)*d/f)/(a*f) + 1/2*I*e^(c - d*e/f)*exp_integral_
```

```
e(1, -(f*x + e)*d/f)/(a*f) - 2*I/(-I*a*d*f*x - I*a*d*e + (a*d*f*x*e^c + a*d
*e*e^c)*e^(d*x)) + log(f*x + e)/(a*f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sinh\left(c+d\,x\right)^2}{\left(e+f\,x\right)\,\left(a+a\,\sinh\left(c+d\,x\right)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)^2/((e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
[Out] int(sinh(c + d*x)^2/((e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
[Out] Timed out
```

3.198 $\int \frac{\sinh^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\mathrm{Int}\left(\frac{\sinh^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sinh[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Sinh[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sinh^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx = \int \frac{\sinh^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Sinh[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$\frac{\left(-i\,adf^2x^2 - 2i\,adefx - i\,ade^2 + \left(adf^2x^2 + 2\,adefx + ade^2\right)e^{(dx+c)}\right)\mathrm{integral}\left(\frac{dfx+de+\left(-i\,dfx-i\,de\right)e^{(3\,dx+3\,c)}+\left(df\right.}{2\left(adf^3x^3+3\,adef^2x^2+3\,ade^2fx+ade^3\right)e^{(2\,dx+2\,c)}}\right.}{-i\,adf^2x^2 - 2i\,adefx - i\,ade^2 + \left(adf^2x^2 + 2\,adefx + ade^2\right)e^{(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] ((-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x +
 a*d*e^2)*e^(d*x + c))*integral((d*f*x + d*e + (-I*d*f*x - I*d*e)*e^(3*d*x
+ 3*c) + (d*f*x + d*e)*e^(2*d*x + 2*c) + (-I*d*f*x - I*d*e - 8*I*f)*e^(d*x
+ c))/(2*(a*d*f^3*x^3 + 3*a*d*e*f^2*x^2 + 3*a*d*e^2*f*x + a*d*e^3)*e^(2*d*x
 + 2*c) + (-2*I*a*d*f^3*x^3 - 6*I*a*d*e*f^2*x^2 - 6*I*a*d*e^2*f*x - 2*I*a*d
*e^3)*e^(d*x + c)), x) - 2*I)/(-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2 +
 (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*e^(d*x + c))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh(dx+c)^2}{(fx+e)^2(ia\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sinh(d*x + c)^2/((f*x + e)^2*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{\sinh^2(dx+c)}{(fx+e)^2(a+ia\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-4if\int \frac{1}{-iadf^3x^3 - 3iadef^2x^2 - 3iade^2fx - iade^3 + \left(adf^3x^3e^c + 3\,adef^2x^2e^c + 3\,ade^2fxe^c + ade^3e^c\right)e^{(dx)}}\,dx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -4*I*f*integrate(1/(-I*a*d*f^3*x^3 - 3*I*a*d*e*f^2*x^2 - 3*I*a*d*e^2*f*x -
I*a*d*e^3 + (a*d*f^3*x^3*e^c + 3*a*d*e*f^2*x^2*e^c + 3*a*d*e^2*f*x*e^c + a*
d*e^3*e^c)*e^(d*x)), x) + 1/4*(4*I*d*f*x + 4*I*d*e - 4*(d*f*x*e^c + d*e*e^c
)*e^(d*x) - 8*I*f)/(-I*a*d*f^3*x^2 - 2*I*a*d*e*f^2*x - I*a*d*e^2*f + (a*d*f
^3*x^2*e^c + 2*a*d*e*f^2*x*e^c + a*d*e^2*f*e^c)*e^(d*x)) - 1/2*I*e^(-c + d*
e/f)*exp_integral_e(2, (f*x + e)*d/f)/((f*x + e)*a*f) + 1/2*I*e^(c - d*e/f)
*exp_integral_e(2, -(f*x + e)*d/f)/((f*x + e)*a*f)
```

mupad [A]   time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sinh\left(c+d\,x\right)^2}{{\left(e+f\,x\right)}^2\,\left(a+a\,\sinh\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)^2/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(sinh(c + d*x)^2/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**2/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.199 $\int \frac{(e+fx)^3 \sinh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=393

$$-\frac{12if^3\text{Li}_3\left(-ie^{c+dx}\right)}{ad^4}+\frac{3if^3\sinh^2(c+dx)}{8ad^4}-\frac{6f^3\sinh(c+dx)}{ad^4}+\frac{12if^2(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}+\frac{6f^2(e+fx)\cosh(c+$$

```
[Out] -I*(f*x+e)^3/a/d+3/8*I*(f*x+e)^4/a/f+12*I*f^2*(f*x+e)*polylog(2,-I*exp(d*x+
c))/a/d^3-I*(f*x+e)^3*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a/d+6*f^2*(f*x+e)*cosh(d
*x+c)/a/d^3+(f*x+e)^3*cosh(d*x+c)/a/d+3/8*I*f^3*x^2/a/d^2-12*I*f^3*polylog(
3,-I*exp(d*x+c))/a/d^4+3/4*I*f*(f*x+e)^2*sinh(d*x+c)^2/a/d^2-6*f^3*sinh(d*x
+c)/a/d^4-3*f*(f*x+e)^2*sinh(d*x+c)/a/d^2-3/4*I*f^2*(f*x+e)*cosh(d*x+c)*sin
h(d*x+c)/a/d^3+3/4*I*e*f^2*x/a/d^2+6*I*f*(f*x+e)^2*ln(1+I*exp(d*x+c))/a/d^2
+3/8*I*f^3*sinh(d*x+c)^2/a/d^4-1/2*I*(f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)/a/d
```

Rubi [A] time = 0.70, antiderivative size = 393, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.419, Rules used = {5557, 3311, 32, 3310, 3296, 2637, 3318, 4184, 3716, 2190, 2531, 2282, 6589}

$$\frac{12if^2(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}-\frac{12if^3\text{PolyLog}\left(3,-ie^{c+dx}\right)}{ad^4}+\frac{6f^2(e+fx)\cosh(c+dx)}{ad^3}-\frac{3if^2(e+fx)\sinh(c}{4a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sinh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (((3*I)/4)*e*f^2*x)/(a*d^2) + (((3*I)/8)*f^3*x^2)/(a*d^2) - (I*(e + f*x)^3)
/(a*d) + (((3*I)/8)*(e + f*x)^4)/(a*f) + (6*f^2*(e + f*x)*Cosh[c + d*x])/(a
*d^3) + ((e + f*x)^3*Cosh[c + d*x])/(a*d) + ((6*I)*f*(e + f*x)^2*Log[1 + I*
E^(c + d*x)])/(a*d^2) + ((12*I)*f^2*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])
/(a*d^3) - ((12*I)*f^3*PolyLog[3, (-I)*E^(c + d*x)])/(a*d^4) - (6*f^3*Sinh[
c + d*x])/(a*d^4) - (3*f*(e + f*x)^2*Sinh[c + d*x])/(a*d^2) - (((3*I)/4)*f^
2*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(a*d^3) - ((I/2)*(e + f*x)^3*Cosh[
c + d*x]*Sinh[c + d*x])/(a*d) + (((3*I)/8)*f^3*Sinh[c + d*x]^2)/(a*d^4) + (
((3*I)/4)*f*(e + f*x)^2*Sinh[c + d*x]^2)/(a*d^2) - (I*(e + f*x)^3*Tanh[c/2
+ (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\sinh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = i\int \frac{(e+fx)^3\sinh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx - \frac{i\int (e+fx)^3\sinh^2(c+dx)\,dx}{a}$$

$$= -\frac{i(e+fx)^3\cosh(c+dx)\sinh(c+dx)}{2ad} + \frac{3if(e+fx)^2\sinh^2(c+dx)}{4ad^2} + \frac{i\int (e+f$$

$$= \frac{i(e+fx)^4}{8af} + \frac{(e+fx)^3\cosh(c+dx)}{ad} - \frac{3if^2(e+fx)\cosh(c+dx)\sinh(c+dx)}{4ad^3} -$$

$$= \frac{3ief^2x}{4ad^2} + \frac{3if^3x^2}{8ad^2} + \frac{3i(e+fx)^4}{8af} + \frac{(e+fx)^3\cosh(c+dx)}{ad} - \frac{3f(e+fx)^2\sinh(c+}{ad^2}$$

$$= \frac{3ief^2x}{4ad^2} + \frac{3if^3x^2}{8ad^2} + \frac{3i(e+fx)^4}{8af} + \frac{6f^2(e+fx)\cosh(c+dx)}{ad^3} + \frac{(e+fx)^3\cosh(c}{ad}$$

$$= \frac{3ief^2x}{4ad^2} + \frac{3if^3x^2}{8ad^2} - \frac{i(e+fx)^3}{ad} + \frac{3i(e+fx)^4}{8af} + \frac{6f^2(e+fx)\cosh(c+dx)}{ad^3} + \frac{(e+}{}$$

$$= \frac{3ief^2x}{4ad^2} + \frac{3if^3x^2}{8ad^2} - \frac{i(e+fx)^3}{ad} + \frac{3i(e+fx)^4}{8af} + \frac{6f^2(e+fx)\cosh(c+dx)}{ad^3} + \frac{(e+}{}$$

$$= \frac{3ief^2x}{4ad^2} + \frac{3if^3x^2}{8ad^2} - \frac{i(e+fx)^3}{ad} + \frac{3i(e+fx)^4}{8af} + \frac{6f^2(e+fx)\cosh(c+dx)}{ad^3} + \frac{(e+}{}$$

$$= \frac{3ief^2x}{4ad^2} + \frac{3if^3x^2}{8ad^2} - \frac{i(e+fx)^3}{ad} + \frac{3i(e+fx)^4}{8af} + \frac{6f^2(e+fx)\cosh(c+dx)}{ad^3} + \frac{(e+}{}$$

$$= \frac{3ief^2x}{4ad^2} + \frac{3if^3x^2}{8ad^2} - \frac{i(e+fx)^3}{ad} + \frac{3i(e+fx)^4}{8af} + \frac{6f^2(e+fx)\cosh(c+dx)}{ad^3} + \frac{(e+}{}$$

Mathematica [A] time = 7.32, size = 376, normalized size = 0.96

$$-\frac{192if^2\left(d(e+fx)\mathrm{Li}_2\left(ie^{-c-dx}\right)+f\mathrm{Li}_3\left(ie^{-c-dx}\right)\right)}{d^4} - \frac{96f^3\sinh(c+dx)}{d^4} + \frac{3if^3\cosh(2(c+dx))}{d^4} - \frac{6if^2(e+fx)\sinh(2(c+dx))}{d^3} + \frac{96f^2(e+fx)\cosh(c+dx)}{d^3} -$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sinh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((24*I)*e^3*x + (36*I)*e^2*f*x^2 + (24*I)*e*f^2*x^3 + (6*I)*f^3*x^4 + (32*(
e + f*x)^3)/(d*(-I + E^c)) + (96*f^2*(e + f*x)*Cosh[c + d*x])/d^3 + (16*(e
+ f*x)^3*Cosh[c + d*x])/d + ((3*I)*f^3*Cosh[2*(c + d*x)])/d^4 + ((6*I)*f*(e
 + f*x)^2*Cosh[2*(c + d*x)])/d^2 + ((96*I)*f*(e + f*x)^2*Log[1 - I*E^(-c -
d*x)])/d^2 - ((192*I)*f^2*(d*(e + f*x)*PolyLog[2, I*E^(-c - d*x)] + f*PolyL
og[3, I*E^(-c - d*x)]))/d^4 - ((32*I)*(e + f*x)^3*Sinh[(d*x)/2])/(d*(Cosh[c
/2] + I*Sinh[c/2])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])) - (96*f^3*Sin
h[c + d*x])/d^4 - (48*f*(e + f*x)^2*Sinh[c + d*x])/d^2 - ((6*I)*f^2*(e + f*
x)*Sinh[2*(c + d*x)])/d^3 - ((4*I)*(e + f*x)^3*Sinh[2*(c + d*x)])/d)/(16*a)
```

<u>fricas</u> [C] time = 0.90, size = 1029, normalized size = 2.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (4*d^3*f^3*x^3 + 4*d^3*e^3 + 6*d^2*e^2*f + 6*d*e*f^2 + 3*f^3 + 6*(2*d^3*e*f
^2 + d^2*f^3)*x^2 + 6*(2*d^3*e^2*f + 2*d^2*e*f^2 + d*f^3)*x + ((384*I*d*f^3
*x + 384*I*d*e*f^2)*e^(3*d*x + 3*c) + 384*(d*f^3*x + d*e*f^2)*e^(2*d*x + 2*
c))*dilog(-I*e^(d*x + c)) + (-4*I*d^3*f^3*x^3 - 4*I*d^3*e^3 + 6*I*d^2*e^2*f
 - 6*I*d*e*f^2 + 3*I*f^3 + (-12*I*d^3*e*f^2 + 6*I*d^2*f^3)*x^2 + (-12*I*d^3
*e^2*f + 12*I*d^2*e*f^2 - 6*I*d*f^3)*x)*e^(5*d*x + 5*c) + 3*(4*d^3*f^3*x^3
+ 4*d^3*e^3 - 14*d^2*e^2*f + 30*d*e*f^2 - 31*f^3 + 2*(6*d^3*e*f^2 - 7*d^2*f
^3)*x^2 + 2*(6*d^3*e^2*f - 14*d^2*e*f^2 + 15*d*f^3)*x)*e^(4*d*x + 4*c) + (1
2*I*d^4*f^3*x^4 - 16*I*d^3*e^3 + (-192*I*c + 48*I)*d^2*e^2*f + (192*I*c^2 -
 96*I)*d*e*f^2 + (-64*I*c^3 + 96*I)*f^3 + (48*I*d^4*e*f^2 - 80*I*d^3*f^3)*x
^3 + (72*I*d^4*e^2*f - 240*I*d^3*e*f^2 + 48*I*d^2*f^3)*x^2 + (48*I*d^4*e^3
- 240*I*d^3*e^2*f + 96*I*d^2*e*f^2 - 96*I*d*f^3)*x)*e^(3*d*x + 3*c) + 4*(3*
d^4*f^3*x^4 + 20*d^3*e^3 - 12*(4*c - 1)*d^2*e^2*f + 24*(2*c^2 + 1)*d*e*f^2
- 8*(2*c^3 - 3)*f^3 + 4*(3*d^4*e*f^2 + d^3*f^3)*x^3 + 6*(3*d^4*e^2*f + 2*d^
3*e*f^2 + 2*d^2*f^3)*x^2 + 12*(d^4*e^3 + d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)
*x)*e^(2*d*x + 2*c) + (-12*I*d^3*f^3*x^3 - 12*I*d^3*e^3 - 42*I*d^2*e^2*f -
90*I*d*e*f^2 - 93*I*f^3 + (-36*I*d^3*e*f^2 - 42*I*d^2*f^3)*x^2 + (-36*I*d^3
*e^2*f - 84*I*d^2*e*f^2 - 90*I*d*f^3)*x)*e^(d*x + c) + ((192*I*d^2*e^2*f -
384*I*c*d*e*f^2 + 192*I*c^2*f^3)*e^(3*d*x + 3*c) + 192*(d^2*e^2*f - 2*c*d*e
*f^2 + c^2*f^3)*e^(2*d*x + 2*c))*log(e^(d*x + c) - I) + ((192*I*d^2*f^3*x^2
 + 384*I*d^2*e*f^2*x + 384*I*c*d*e*f^2 - 192*I*c^2*f^3)*e^(3*d*x + 3*c) + 1
92*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*e^(2*d*x + 2*c))*l
og(I*e^(d*x + c) + 1) + (-384*I*f^3*e^(3*d*x + 3*c) - 384*f^3*e^(2*d*x + 2*
c))*polylog(3, -I*e^(d*x + c)))/(32*a*d^4*e^(3*d*x + 3*c) - 32*I*a*d^4*e^(2
*d*x + 2*c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \sinh (dx+c)^3}{i a \sinh (dx+c)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sinh(d*x + c)^3/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.27, size = 928, normalized size = 2.36

$$\frac{12ie\,f^2c\ln\left(e^{dx+c}\right)}{a\,d^3}+\frac{12ie\,f^2\ln\left(1+ie^{dx+c}\right)x}{a\,d^2}-\frac{12ie\,f^2cx}{a\,d^2}-\frac{12ie\,f^2c\ln\left(e^{dx+c}-i\right)}{a\,d^3}+\frac{12ie\,f^2\ln\left(1+ie^{dx+c}\right)c}{a\,d^3}+\frac{3ie^3x}{2a}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -12*I/a/d^3*e*f^2*c*ln(exp(d*x+c)-I)-12*I/a/d^2*e*f^2*c*x+2*(f^3*x^3+3*e*f^
2*x^2+3*e^2*f*x+e^3)/d/a/(exp(d*x+c)-I)-6*I/a/d^4*f^3*c^2*ln(exp(d*x+c))+6*
I/a/d^2*ln(exp(d*x+c)-I)*e^2*f-6*I/a/d^4*f^3*c^2*ln(1+I*exp(d*x+c))+6*I/a/d
^2*f^3*ln(1+I*exp(d*x+c))*x^2-6*I/a/d^2*ln(exp(d*x+c))*e^2*f+6*I/a/d^3*f^3*
c^2*x-6*I/a/d*e*f^2*x^2+12*I/a/d^3*e*f^2*polylog(2,-I*exp(d*x+c))-6*I/a/d^3
*e*f^2*c^2+12*I/a/d^3*f^3*polylog(2,-I*exp(d*x+c))*x+6*I/a/d^4*f^3*c^2*ln(e
xp(d*x+c)-I)-12*I*f^3*polylog(3,-I*exp(d*x+c))/a/d^4+12*I/a/d^2*e*f^2*ln(1+
I*exp(d*x+c))*x+12*I/a/d^3*e*f^2*ln(1+I*exp(d*x+c))*c+12*I/a/d^3*e*f^2*c*ln
(exp(d*x+c))-2*I/a/d*f^3*x^3+4*I/a/d^4*f^3*c^3+1/32*I*(4*d^3*f^3*x^3+12*d^3
*e*f^2*x^2+12*d^3*e^2*f*x+6*d^2*f^3*x^2+4*d^3*e^3+12*d^2*e*f^2*x+6*d^2*e^2*
f+6*d*f^3*x+6*d*e*f^2+3*f^3)/a/d^4*exp(-2*d*x-2*c)+3/2*I/a*e*f^2*x^3+9/4*I/
a*e^2*f*x^2+3/8*I/a*x^4*f^3+3/2*I/a*e^3*x-1/32*I*(4*d^3*f^3*x^3+12*d^3*e*f^
2*x^2+12*d^3*e^2*f*x-6*d^2*f^3*x^2+4*d^3*e^3-12*d^2*e*f^2*x-6*d^2*e^2*f+6*d
*f^3*x+6*d*e*f^2-3*f^3)/a/d^4*exp(2*d*x+2*c)+1/2*(d^3*f^3*x^3+3*d^3*e*f^2*x
^2+3*d^3*e^2*f*x-3*d^2*f^3*x^2+d^3*e^3-6*d^2*e*f^2*x-3*d^2*e^2*f+6*d*f^3*x+
6*d*e*f^2-6*f^3)/a/d^4*exp(d*x+c)+1/2*(d^3*f^3*x^3+3*d^3*e*f^2*x^2+3*d^3*e^
2*f*x+3*d^2*f^3*x^2+d^3*e^3+6*d^2*e*f^2*x+3*d^2*e^2*f+6*d*f^3*x+6*d*e*f^2+6
*f^3)/a/d^4*exp(-d*x-c)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh\left(c+d\,x\right)^3\,{\left(e+f\,x\right)}^3}{a+a\,\sinh\left(c+d\,x\right)\,1{}\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^3*(e + f*x)^3)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] int((sinh(c + d*x)^3*(e + f*x)^3)/(a + a*sinh(c + d*x)*1i), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sinh(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.200 $\int \frac{(e+fx)^2 \sinh^3(c+dx)}{a+ia\sinh(c+dx)}\, dx$

Optimal. Leaf size=287

$$\frac{4if^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}+\frac{2f^2\cosh(c+dx)}{ad^3}-\frac{if^2\sinh(c+dx)\cosh(c+dx)}{4ad^3}+\frac{4if(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2}+\frac{if(e+fx)\sin}{2ad}$$

```
[Out] 1/4*I*f^2*x/a/d^2-I*(f*x+e)^2/a/d+1/2*I*(f*x+e)^3/a/f+2*f^2*cosh(d*x+c)/a/d
^3+(f*x+e)^2*cosh(d*x+c)/a/d+4*I*f*(f*x+e)*ln(1+I*exp(d*x+c))/a/d^2+4*I*f^2
*polylog(2,-I*exp(d*x+c))/a/d^3-2*f*(f*x+e)*sinh(d*x+c)/a/d^2-1/4*I*f^2*cos
h(d*x+c)*sinh(d*x+c)/a/d^3-1/2*I*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/a/d+1/2*
I*f*(f*x+e)*sinh(d*x+c)^2/a/d^2-I*(f*x+e)^2*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a/
d
```

Rubi [A] time = 0.55, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.419, Rules used = {5557, 3311, 32, 2635, 8, 3296, 2638, 3318, 4184, 3716, 2190, 2279, 2391}

$$\frac{4if^2\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}+\frac{4if(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2}+\frac{if(e+fx)\sinh^2(c+dx)}{2ad^2}-\frac{2f(e+fx)\sinh(c+dx)}{ad^2}+\frac{2f^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sinh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((I/4)*f^2*x)/(a*d^2) - (I*(e + f*x)^2)/(a*d) + ((I/2)*(e + f*x)^3)/(a*f) +
 (2*f^2*Cosh[c + d*x])/(a*d^3) + ((e + f*x)^2*Cosh[c + d*x])/(a*d) + ((4*I)
*f*(e + f*x)*Log[1 + I*E^(c + d*x)])/(a*d^2) + ((4*I)*f^2*PolyLog[2, (-I)*E
^(c + d*x)])/(a*d^3) - (2*f*(e + f*x)*Sinh[c + d*x])/(a*d^2) - ((I/4)*f^2*C
osh[c + d*x]*Sinh[c + d*x])/(a*d^3) - ((I/2)*(e + f*x)^2*Cosh[c + d*x]*Sinh
[c + d*x])/(a*d) + ((I/2)*f*(e + f*x)*Sinh[c + d*x]^2)/(a*d^2) - (I*(e + f*
x)^2*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
```

```
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2 \sinh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = i\int \frac{(e+fx)^2 \sinh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx - \frac{i\int (e+fx)^2 \sinh^2(c+dx)\,dx}{a}$$

$$= -\frac{i(e+fx)^2\cosh(c+dx)\sinh(c+dx)}{2ad} + \frac{if(e+fx)\sinh^2(c+dx)}{2ad^2} + \frac{i\int(e+fx}{2a}$$

$$= \frac{i(e+fx)^3}{6af} + \frac{(e+fx)^2\cosh(c+dx)}{ad} - \frac{if^2\cosh(c+dx)\sinh(c+dx)}{4ad^3} - \frac{i(e+fx}{}$$

$$= \frac{if^2x}{4ad^2} + \frac{i(e+fx)^3}{2af} + \frac{(e+fx)^2\cosh(c+dx)}{ad} - \frac{2f(e+fx)\sinh(c+dx)}{ad^2} - \frac{if^2\,\mathrm{co}}{}$$

$$= \frac{if^2x}{4ad^2} + \frac{i(e+fx)^3}{2af} + \frac{2f^2\cosh(c+dx)}{ad^3} + \frac{(e+fx)^2\cosh(c+dx)}{ad} - \frac{2f(e+fx)\,\mathrm{s}}{a}$$

$$= \frac{if^2x}{4ad^2} - \frac{i(e+fx)^2}{ad} + \frac{i(e+fx)^3}{2af} + \frac{2f^2\cosh(c+dx)}{ad^3} + \frac{(e+fx)^2\cosh(c+dx)}{ad} -$$

$$= \frac{if^2x}{4ad^2} - \frac{i(e+fx)^2}{ad} + \frac{i(e+fx)^3}{2af} + \frac{2f^2\cosh(c+dx)}{ad^3} + \frac{(e+fx)^2\cosh(c+dx)}{ad} +$$

$$= \frac{if^2x}{4ad^2} - \frac{i(e+fx)^2}{ad} + \frac{i(e+fx)^3}{2af} + \frac{2f^2\cosh(c+dx)}{ad^3} + \frac{(e+fx)^2\cosh(c+dx)}{ad} +$$

$$= \frac{if^2x}{4ad^2} - \frac{i(e+fx)^2}{ad} + \frac{i(e+fx)^3}{2af} + \frac{2f^2\cosh(c+dx)}{ad^3} + \frac{(e+fx)^2\cosh(c+dx)}{ad} +$$

Mathematica [B] time = 4.98, size = 1661, normalized size = 5.79

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sinh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-6*I)*d^2*e^2*E^c*Cosh[(3*d*x)/2] + 6*d^2*e^2*E^(4*c)*Cosh[(3*d*x)/2] - (
14*I)*d*e*E^c*f*Cosh[(3*d*x)/2] - 14*d*e*E^(4*c)*f*Cosh[(3*d*x)/2] - (15*I)
*E^c*f^2*Cosh[(3*d*x)/2] + 15*E^(4*c)*f^2*Cosh[(3*d*x)/2] - (12*I)*d^2*e*E^
c*f*x*Cosh[(3*d*x)/2] + 12*d^2*e*E^(4*c)*f*x*Cosh[(3*d*x)/2] - (14*I)*d*E^c
*f^2*x*Cosh[(3*d*x)/2] - 14*d*E^(4*c)*f^2*x*Cosh[(3*d*x)/2] - (6*I)*d^2*E^c
```

```
*f^2*x^2*Cosh[(3*d*x)/2] + 6*d^2*E^(4*c)*f^2*x^2*Cosh[(3*d*x)/2] + 2*d^2*e^
2*Cosh[(5*d*x)/2] - (2*I)*d^2*e^2*E^(5*c)*Cosh[(5*d*x)/2] + 2*d*e*f*Cosh[(5
*d*x)/2] + (2*I)*d*e*E^(5*c)*f*Cosh[(5*d*x)/2] + f^2*Cosh[(5*d*x)/2] - I*E^
(5*c)*f^2*Cosh[(5*d*x)/2] + 4*d^2*e*f*x*Cosh[(5*d*x)/2] - (4*I)*d^2*e*E^(5*
c)*f*x*Cosh[(5*d*x)/2] + 2*d*f^2*x*Cosh[(5*d*x)/2] + (2*I)*d*E^(5*c)*f^2*x*
Cosh[(5*d*x)/2] + 2*d^2*f^2*x^2*Cosh[(5*d*x)/2] - (2*I)*d^2*E^(5*c)*f^2*x^2
*Cosh[(5*d*x)/2] + 8*E^(2*c)*Cosh[(d*x)/2]*(2*(1 - I*E^c)*f^2 + 2*d*(1 + I*
E^c)*f*(e + f*x) + d^2*(5 - I*E^c)*(e + f*x)^2 + d^3*(1 + I*E^c)*x*(3*e^2 +
 3*e*f*x + f^2*x^2) + 8*d*(1 + I*E^c)*f*(e + f*x)*Log[1 - I*E^(-c - d*x)])
- 40*d^2*e^2*E^(2*c)*Sinh[(d*x)/2] - (8*I)*d^2*e^2*E^(3*c)*Sinh[(d*x)/2] -
16*d*e*E^(2*c)*f*Sinh[(d*x)/2] + (16*I)*d*e*E^(3*c)*f*Sinh[(d*x)/2] - 16*E^
(2*c)*f^2*Sinh[(d*x)/2] - (16*I)*E^(3*c)*f^2*Sinh[(d*x)/2] - 24*d^3*e^2*E^(
2*c)*x*Sinh[(d*x)/2] + (24*I)*d^3*e^2*E^(3*c)*x*Sinh[(d*x)/2] - 80*d^2*e*E^
(2*c)*f*x*Sinh[(d*x)/2] - (16*I)*d^2*e*E^(3*c)*f*x*Sinh[(d*x)/2] - 16*d*E^(
2*c)*f^2*x*Sinh[(d*x)/2] + (16*I)*d*E^(3*c)*f^2*x*Sinh[(d*x)/2] - 24*d^3*e*
E^(2*c)*f*x^2*Sinh[(d*x)/2] + (24*I)*d^3*e*E^(3*c)*f*x^2*Sinh[(d*x)/2] - 40
*d^2*E^(2*c)*f^2*x^2*Sinh[(d*x)/2] - (8*I)*d^2*E^(3*c)*f^2*x^2*Sinh[(d*x)/2
] - 8*d^3*E^(2*c)*f^2*x^3*Sinh[(d*x)/2] + (8*I)*d^3*E^(3*c)*f^2*x^3*Sinh[(d
*x)/2] - 64*d*e*E^(2*c)*f*Log[1 - I*E^(-c - d*x)]*Sinh[(d*x)/2] + (64*I)*d*
e*E^(3*c)*f*Log[1 - I*E^(-c - d*x)]*Sinh[(d*x)/2] - 64*d*E^(2*c)*f^2*x*Log[
1 - I*E^(-c - d*x)]*Sinh[(d*x)/2] + (64*I)*d*E^(3*c)*f^2*x*Log[1 - I*E^(-c
- d*x)]*Sinh[(d*x)/2] + 64*E^(2*c)*f^2*PolyLog[2, I*E^(-c - d*x)]*((-1 - I*
E^c)*Cosh[(d*x)/2] + (1 - I*E^c)*Sinh[(d*x)/2]) + (6*I)*d^2*e^2*E^c*Sinh[(3
*d*x)/2] + 6*d^2*e^2*E^(4*c)*Sinh[(3*d*x)/2] + (14*I)*d*e*E^c*f*Sinh[(3*d*x
)/2] - 14*d*e*E^(4*c)*f*Sinh[(3*d*x)/2] + (15*I)*E^c*f^2*Sinh[(3*d*x)/2] +
15*E^(4*c)*f^2*Sinh[(3*d*x)/2] + (12*I)*d^2*e*E^c*f*x*Sinh[(3*d*x)/2] + 12*
d^2*e*E^(4*c)*f*x*Sinh[(3*d*x)/2] + (14*I)*d*E^c*f^2*x*Sinh[(3*d*x)/2] - 14
*d*E^(4*c)*f^2*x*Sinh[(3*d*x)/2] + (6*I)*d^2*E^c*f^2*x^2*Sinh[(3*d*x)/2] +
6*d^2*E^(4*c)*f^2*x^2*Sinh[(3*d*x)/2] - 2*d^2*e^2*Sinh[(5*d*x)/2] - (2*I)*d
^2*e^2*E^(5*c)*Sinh[(5*d*x)/2] - 2*d*e*f*Sinh[(5*d*x)/2] + (2*I)*d*e*E^(5*c
)*f*Sinh[(5*d*x)/2] - f^2*Sinh[(5*d*x)/2] - I*E^(5*c)*f^2*Sinh[(5*d*x)/2] -
 4*d^2*e*f*x*Sinh[(5*d*x)/2] - (4*I)*d^2*e*E^(5*c)*f*x*Sinh[(5*d*x)/2] - 2*
d*f^2*x*Sinh[(5*d*x)/2] + (2*I)*d*E^(5*c)*f^2*x*Sinh[(5*d*x)/2] - 2*d^2*f^2
*x^2*Sinh[(5*d*x)/2] - (2*I)*d^2*E^(5*c)*f^2*x^2*Sinh[(5*d*x)/2])/(16*a*d^3
*E^(2*c)*((-I + E^c)*Cosh[(d*x)/2] + (I + E^c)*Sinh[(d*x)/2]))
```

fricas [B] time = 0.53, size = 587, normalized size = 2.05

$$\frac{2\,d^2f^2x^2 + 2\,d^2e^2 + 2\,def + f^2 + 2\left(2\,d^2ef + df^2\right)x + \left(64i\,f^2e^{(3\,dx+3\,c)} + 64\,f^2e^{(2\,dx+2\,c)}\right)\mathrm{Li}_2\left(-i\,e^{(dx+c)}\right) + \left(-2i\,d^2f\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (2*d^2*f^2*x^2 + 2*d^2*e^2 + 2*d*e*f + f^2 + 2*(2*d^2*e*f + d*f^2)*x + (64*
I*f^2*e^(3*d*x + 3*c) + 64*f^2*e^(2*d*x + 2*c))*dilog(-I*e^(d*x + c)) + (-2
*I*d^2*f^2*x^2 - 2*I*d^2*e^2 + 2*I*d*e*f - I*f^2 + (-4*I*d^2*e*f + 2*I*d*f^
2)*x)*e^(5*d*x + 5*c) + (6*d^2*f^2*x^2 + 6*d^2*e^2 - 14*d*e*f + 15*f^2 + 2*
(6*d^2*e*f - 7*d*f^2)*x)*e^(4*d*x + 4*c) + (8*I*d^3*f^2*x^3 - 8*I*d^2*e^2 +
 (-64*I*c + 16*I)*d*e*f + (32*I*c^2 - 16*I)*f^2 + (24*I*d^3*e*f - 40*I*d^2*
f^2)*x^2 + (24*I*d^3*e^2 - 80*I*d^2*e*f + 16*I*d*f^2)*x)*e^(3*d*x + 3*c) +
8*(d^3*f^2*x^3 + 5*d^2*e^2 - 2*(4*c - 1)*d*e*f + 2*(2*c^2 + 1)*f^2 + (3*d^3
*e*f + d^2*f^2)*x^2 + (3*d^3*e^2 + 2*d^2*e*f + 2*d*f^2)*x)*e^(2*d*x + 2*c)
+ (-6*I*d^2*f^2*x^2 - 6*I*d^2*e^2 - 14*I*d*e*f - 15*I*f^2 + (-12*I*d^2*e*f
- 14*I*d*f^2)*x)*e^(d*x + c) + ((64*I*d*e*f - 64*I*c*f^2)*e^(3*d*x + 3*c) +
 64*(d*e*f - c*f^2)*e^(2*d*x + 2*c))*log(e^(d*x + c) - I) + ((64*I*d*f^2*x
+ 64*I*c*f^2)*e^(3*d*x + 3*c) + 64*(d*f^2*x + c*f^2)*e^(2*d*x + 2*c))*log(I
*e^(d*x + c) + 1))/(16*a*d^3*e^(3*d*x + 3*c) - 16*I*a*d^3*e^(2*d*x + 2*c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \sinh\left(dx+c\right)^3}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sinh(d*x + c)^3/(I*a*sinh(d*x + c) + a), x)
```

maple [A] time = 0.22, size = 508, normalized size = 1.77

$$\frac{4if^2c\ln\left(e^{dx+c}\right)}{a\,d^3}+\frac{4if^2\ln\left(1+ie^{dx+c}\right)x}{a\,d^2}+\frac{4i\ln\left(e^{dx+c}-i\right)ef}{a\,d^2}+\frac{3ie^2x}{2a}+\frac{\left(d^2f^2x^2+2d^2efx+d^2e^2-2d\,f^2x-2def\right.}{2a\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 4*I/a/d^3*f^2*c*ln(exp(d*x+c))+4*I/a/d^2*f^2*ln(1+I*exp(d*x+c))*x+4*I/a/d^2
*ln(exp(d*x+c)-I)*e*f+3/2*I/a*e^2*x+1/2*(d^2*f^2*x^2+2*d^2*e*f*x+d^2*e^2-2*
d*f^2*x-2*d*e*f+2*f^2)/a/d^3*exp(d*x+c)+1/2*(d^2*f^2*x^2+2*d^2*e*f*x+d^2*e^
2+2*d*f^2*x+2*d*e*f+2*f^2)/a/d^3*exp(-d*x-c)+1/2*I/a*x^3*f^2+2*(f^2*x^2+2*e
*f*x+e^2)/d/a/(exp(d*x+c)-I)-4*I/a/d^2*f^2*c*x-4*I/a/d^2*ln(exp(d*x+c))*e*f
-4*I/a/d^3*f^2*c*ln(exp(d*x+c)-I)+3/2*I/a*e*f*x^2-2*I/a/d^3*f^2*c^2+1/16*I*
(2*d^2*f^2*x^2+4*d^2*e*f*x+2*d^2*e^2+2*d*f^2*x+2*d*e*f+f^2)/a/d^3*exp(-2*d*
x-2*c)-2*I/a/d*f^2*x^2+4*I*f^2*polylog(2,-I*exp(d*x+c))/a/d^3+4*I/a/d^3*f^2
*ln(1+I*exp(d*x+c))*c-1/16*I*(2*d^2*f^2*x^2+4*d^2*e*f*x+2*d^2*e^2-2*d*f^2*x
-2*d*e*f+f^2)/a/d^3*exp(2*d*x+2*c)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh(c+d\,x)^3\,\left(e+f\,x\right)^2}{a+a\sinh(c+d\,x)\,1\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^3*(e + f*x)^2)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] int((sinh(c + d*x)^3*(e + f*x)^2)/(a + a*sinh(c + d*x)*1i), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2ie^2e^c+4iefxe^c+2if^2x^2e^c}{-ade^c+iade^{-dx}} - \frac{i\left(\int\left(-\frac{ide^2}{e^ce^{3dx}-ie^{2dx}}\right)dx+\int\left(-\frac{idf^2x^2}{e^ce^{3dx}-ie^{2dx}}\right)dx+\int\left(-\frac{de^2e^ce^{dx}}{e^ce^{3dx}-ie^{2dx}}\right)dx+\int\left(-\frac{4de^2e^{3c}e^{3dx}}{e^ce^{3dx}-ie^{2dx}}\right)d\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sinh(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] (2*I*e**2*exp(c) + 4*I*e*f*x*exp(c) + 2*I*f**2*x**2*exp(c))/(-a*d*exp(c) +
I*a*d*exp(-d*x)) - I*(Integral(-I*d*e**2/(exp(c)*exp(3*d*x) - I*exp(2*d*x))
, x) + Integral(-I*d*f**2*x**2/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x) + Int
egral(-d*e**2*exp(c)*exp(d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x) + Inte
gral(-4*d*e**2*exp(3*c)*exp(3*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x) +
 Integral(d*e**2*exp(5*c)*exp(5*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x)
 + Integral(-16*e*f*exp(3*c)*exp(3*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)),
 x) + Integral(-16*f**2*x*exp(3*c)*exp(3*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*
d*x)), x) + Integral(-2*I*d*e*f*x/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x) +
Integral(4*I*d*e**2*exp(2*c)*exp(2*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)),
 x) + Integral(I*d*e**2*exp(4*c)*exp(4*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*
x)), x) + Integral(-d*f**2*x**2*exp(c)*exp(d*x)/(exp(c)*exp(3*d*x) - I*exp(
2*d*x)), x) + Integral(-4*d*f**2*x**2*exp(3*c)*exp(3*d*x)/(exp(c)*exp(3*d*x
```

```
) - I*exp(2*d*x)), x) + Integral(d*f**2*x**2*exp(5*c)*exp(5*d*x)/(exp(c)*ex
p(3*d*x) - I*exp(2*d*x)), x) + Integral(4*I*d*f**2*x**2*exp(2*c)*exp(2*d*x)
/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x) + Integral(I*d*f**2*x**2*exp(4*c)*e
xp(4*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x) + Integral(-2*d*e*f*x*exp(
c)*exp(d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x) + Integral(-8*d*e*f*x*ex
p(3*c)*exp(3*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x) + Integral(2*d*e*f
*x*exp(5*c)*exp(5*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x) + Integral(8*
I*d*e*f*x*exp(2*c)*exp(2*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x) + Inte
gral(2*I*d*e*f*x*exp(4*c)*exp(4*d*x)/(exp(c)*exp(3*d*x) - I*exp(2*d*x)), x)
)*exp(-2*c)/(4*a*d)
```

3.201 $\int \frac{(e+fx)\sinh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=175

$$\frac{if\sinh^2(c+dx)}{4ad^2}-\frac{f\sinh(c+dx)}{ad^2}+\frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}+\frac{(e+fx)\cosh(c+dx)}{ad}-\frac{i(e+fx)\tanh\left(\frac{c}{2}+\frac{dx}{2}\right.}{ad}$$

```
[Out] 3/2*I*e*x/a+3/4*I*f*x^2/a+(f*x+e)*cosh(d*x+c)/a/d+2*I*f*ln(cosh(1/2*c+1/4*I
*Pi+1/2*d*x))/a/d^2-f*sinh(d*x+c)/a/d^2-1/2*I*(f*x+e)*cosh(d*x+c)*sinh(d*x+
c)/a/d+1/4*I*f*sinh(d*x+c)^2/a/d^2-I*(f*x+e)*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a
/d
```

Rubi [A] time = 0.26, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.241$, Rules used = {5557, 3310, 3296, 2637, 3318, 4184, 3475}

$$\frac{if\sinh^2(c+dx)}{4ad^2}-\frac{f\sinh(c+dx)}{ad^2}+\frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}+\frac{(e+fx)\cosh(c+dx)}{ad}-\frac{i(e+fx)\tanh\left(\frac{c}{2}+\frac{dx}{2}\right.}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sinh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (((3*I)/2)*e*x)/a + (((3*I)/4)*f*x^2)/a + ((e + f*x)*Cosh[c + d*x])/(a*d) +
 ((2*I)*f*Log[Cosh[c/2 + (I/4)*Pi + (d*x)/2]])/(a*d^2) - (f*Sinh[c + d*x])/
(a*d^2) - ((I/2)*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(a*d) + ((I/4)*f*Si
nh[c + d*x]^2)/(a*d^2) - (I*(e + f*x)*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
```

```
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\sinh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = i\int \frac{(e+fx)\sinh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx - \frac{i\int (e+fx)\sinh^2(c+dx)\,dx}{a}$$
$$= -\frac{i(e+fx)\cosh(c+dx)\sinh(c+dx)}{2ad} + \frac{if\sinh^2(c+dx)}{4ad^2} + \frac{i\int (e+fx)\,dx}{2a} + \int(e$$
$$= \frac{iex}{2a} + \frac{ifx^2}{4a} + \frac{(e+fx)\cosh(c+dx)}{ad} - \frac{i(e+fx)\cosh(c+dx)\sinh(c+dx)}{2ad} + \frac{if\,\mathrm{si}}{}$$
$$= \frac{3iex}{2a} + \frac{3ifx^2}{4a} + \frac{(e+fx)\cosh(c+dx)}{ad} - \frac{f\sinh(c+dx)}{ad^2} - \frac{i(e+fx)\cosh(c+dx)}{2ad}$$
$$= \frac{3iex}{2a} + \frac{3ifx^2}{4a} + \frac{(e+fx)\cosh(c+dx)}{ad} - \frac{f\sinh(c+dx)}{ad^2} - \frac{i(e+fx)\cosh(c+dx)}{2ad}$$
$$= \frac{3iex}{2a} + \frac{3ifx^2}{4a} + \frac{(e+fx)\cosh(c+dx)}{ad} + \frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\right)}{ad^2} - \frac{f\sinh(c}{ad^2}$$

Mathematica [A] time = 1.79, size = 325, normalized size = 1.86

$$\frac{\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)\left(\cosh\left(\frac{1}{2}(c+dx)\right)\left(2\left(-3c^2f-d(e+fx)\sinh(2(c+dx))+6cde+4if\sin\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sinh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*(Cosh[(c + d*x)/2]*((-8*I)*d*(e
+ f*x)*Cosh[c + d*x] + f*Cosh[2*(c + d*x)] + 2*(6*c*d*e - (4*I)*c*f - 3*c^2
*f + 6*d^2*e*x - (4*I)*d*f*x + 3*d^2*f*x^2 + (8*I)*f*ArcTan[Tanh[(c + d*x)/
2]] + 4*f*Log[Cosh[c + d*x]] + (4*I)*f*Sinh[c + d*x] - d*(e + f*x)*Sinh[2*(
c + d*x)])) + Sinh[(c + d*x)/2]*(8*d*(e + f*x)*Cosh[c + d*x] + I*(f*Cosh[2*
(c + d*x)] + 2*((8*I)*d*e + 6*c*d*e - (4*I)*c*f - 3*c^2*f + 6*d^2*e*x + (4*
I)*d*f*x + 3*d^2*f*x^2 + (8*I)*f*ArcTan[Tanh[(c + d*x)/2]] + 4*f*Log[Cosh[c
 + d*x]] + (4*I)*f*Sinh[c + d*x] - d*(e + f*x)*Sinh[2*(c + d*x)])))))/(8*a*
d^2*(-I + Sinh[c + d*x]))
```

fricas [A] time = 0.50, size = 227, normalized size = 1.30

$$\frac{2dfx+2de+\left(-2idfx-2ide+if\right)e^{(5dx+5c)}+\left(6dfx+6de-7f\right)e^{(4dx+4c)}+\left(12id^2fx^2-8ide+\left(24id^2e-40\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*d*f*x + 2*d*e + (-2*I*d*f*x - 2*I*d*e + I*f)*e^(5*d*x + 5*c) + (6*d*f*x
+ 6*d*e - 7*f)*e^(4*d*x + 4*c) + (12*I*d^2*f*x^2 - 8*I*d*e + (24*I*d^2*e -
40*I*d*f)*x + 8*I*f)*e^(3*d*x + 3*c) + 4*(3*d^2*f*x^2 + 10*d*e + 2*(3*d^2*e
 + d*f)*x + 2*f)*e^(2*d*x + 2*c) + (-6*I*d*f*x - 6*I*d*e - 7*I*f)*e^(d*x +
c) + (32*I*f*e^(3*d*x + 3*c) + 32*f*e^(2*d*x + 2*c))*log(e^(d*x + c) - I) +
 f)/(16*a*d^2*e^(3*d*x + 3*c) - 16*I*a*d^2*e^(2*d*x + 2*c))
```

giac [B] time = 0.50, size = 355, normalized size = 2.03

$$\frac{12i\,d^2fx^2e^{(3\,dx+4\,c)} + 12\,d^2fx^2e^{(2\,dx+3\,c)} - 2i\,dfxe^{(5\,dx+6\,c)} + 6\,dfxe^{(4\,dx+5\,c)} + 24i\,d^2xe^{(3\,dx+4\,c+1)} - 40i\,dfxe^{(3\,dx+4\,c)}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/16*(12*I*d^2*f*x^2*e^(3*d*x + 4*c) + 12*d^2*f*x^2*e^(2*d*x + 3*c) - 2*I*d
*f*x*e^(5*d*x + 6*c) + 6*d*f*x*e^(4*d*x + 5*c) + 24*I*d^2*x*e^(3*d*x + 4*c
+ 1) - 40*I*d*f*x*e^(3*d*x + 4*c) + 24*d^2*x*e^(2*d*x + 3*c + 1) + 8*d*f*x*
e^(2*d*x + 3*c) - 6*I*d*f*x*e^(d*x + 2*c) + 2*d*f*x*e^c + 32*I*f*e^(3*d*x +
 4*c)*log(e^(d*x + c) - I) + 32*f*e^(2*d*x + 3*c)*log(e^(d*x + c) - I) - 2*
I*d*e^(5*d*x + 6*c + 1) + I*f*e^(5*d*x + 6*c) + 6*d*e^(4*d*x + 5*c + 1) - 7
*f*e^(4*d*x + 5*c) - 8*I*d*e^(3*d*x + 4*c + 1) + 8*I*f*e^(3*d*x + 4*c) + 40
*d*e^(2*d*x + 3*c + 1) + 8*f*e^(2*d*x + 3*c) - 6*I*d*e^(d*x + 2*c + 1) - 7*
I*f*e^(d*x + 2*c) + 2*d*e^(c + 1) + f*e^c)/(a*d^2*e^(3*d*x + 4*c) - I*a*d^2
*e^(2*d*x + 3*c))
```

maple [A] time = 0.18, size = 197, normalized size = 1.13

$$\frac{3if\,x^2}{4a}+\frac{3iex}{2a}-\frac{i\left(2dfx+2de-f\right)\mathrm{e}^{2dx+2c}}{16a\,d^2}+\frac{\left(dfx+de-f\right)\mathrm{e}^{dx+c}}{2a\,d^2}+\frac{\left(dfx+de+f\right)\mathrm{e}^{-dx-c}}{2a\,d^2}+\frac{i\left(2dfx+2de+f\right)\mathrm{e}^{-2}}{16a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 3/4*I*f*x^2/a+3/2*I*e*x/a-1/16*I*(2*d*f*x+2*d*e-f)/a/d^2*exp(2*d*x+2*c)+1/2
*(d*f*x+d*e-f)/a/d^2*exp(d*x+c)+1/2*(d*f*x+d*e+f)/a/d^2*exp(-d*x-c)+1/16*I*
(2*d*f*x+2*d*e+f)/a/d^2*exp(-2*d*x-2*c)-2*I*f/a/d*x-2*I*f/a/d^2*c+2*(f*x+e)
/d/a/(exp(d*x+c)-I)+2*I*f/a/d^2*ln(exp(d*x+c)-I)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)*sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")

[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.

mupad [B] time = 0.71, size = 215, normalized size = 1.23

$$e^{-c-dx}\left(\frac{f+de}{2ad^2}+\frac{fx}{2ad}\right)+e^{-2c-2dx}\left(\frac{(f+2de)\,1i}{16ad^2}+\frac{fx1i}{8ad}\right)+e^{2c+2dx}\left(\frac{(f-2de)\,1i}{16ad^2}-\frac{fx1i}{8ad}\right)-e^{c+dx}\left(\frac{f-de}{2ad^2}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((sinh(c + d*x)^3*(e + f*x))/(a + a*sinh(c + d*x)*1i),x)

[Out] exp(- c - d*x)*((f + d*e)/(2*a*d^2) + (f*x)/(2*a*d)) + exp(- 2*c - 2*d*x)*(
((f + 2*d*e)*1i)/(16*a*d^2) + (f*x*1i)/(8*a*d)) + exp(2*c + 2*d*x)*(((f - 2
*d*e)*1i)/(16*a*d^2) - (f*x*1i)/(8*a*d)) - exp(c + d*x)*((f - d*e)/(2*a*d^2
) - (f*x)/(2*a*d)) + (f*x^2*3i)/(4*a) + (2*(e + f*x))/(a*d*(exp(c + d*x) -
1i)) - (x*(4*f - 3*d*e)*1i)/(2*a*d) + (f*log(exp(d*x)*exp(c) - 1i)*2i)/(a*d
^2)

sympy [A] time = 0.93, size = 410, normalized size = 2.34

$$\frac{2iee^c+2ifxe^c}{-ade^c+iade^{-dx}}+\begin{cases}\frac{\left(\left(512a^3d^7ee^{2c}+512a^3d^7fxe^{2c}+512a^3d^6fe^{2c}\right)e^{-dx}+\left(512a^3d^7ee^{4c}+512a^3d^7fxe^{4c}-512a^3d^6fe^{4c}\right)e^{dx}+\left(128ia^3d^7ee^c+128ia^3d^7fxe\right.\right.}{1024a^4d^8} \\ \frac{x^2\left(-ife^{4c}+2fe^{3c}-2fe^c-if\right)e^{-2c}}{8a}+\frac{x\left(-iee^{4c}+2ee^{3c}-2ee^c-ie\right)e^{-2c}}{4a}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)*sinh(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)

[Out] (2*I*e*exp(c) + 2*I*f*x*exp(c))/(-a*d*exp(c) + I*a*d*exp(-d*x)) + Piecewise
((((512*a**3*d**7*e*exp(2*c) + 512*a**3*d**7*f*x*exp(2*c) + 512*a**3*d**6*f
*exp(2*c))*exp(-d*x) + (512*a**3*d**7*e*exp(4*c) + 512*a**3*d**7*f*x*exp(4*
c) - 512*a**3*d**6*f*exp(4*c))*exp(d*x) + (128*I*a**3*d**7*e*exp(c) + 128*I
*a**3*d**7*f*x*exp(c) + 64*I*a**3*d**6*f*exp(c))*exp(-2*d*x) + (-128*I*a**3
*d**7*e*exp(5*c) - 128*I*a**3*d**7*f*x*exp(5*c) + 64*I*a**3*d**6*f*exp(5*c)
)*exp(2*d*x))*exp(-3*c)/(1024*a**4*d**8), Ne(1024*a**4*d**8*exp(3*c), 0)),
(x**2*(-I*f*exp(4*c) + 2*f*exp(3*c) - 2*f*exp(c) - I*f)*exp(-2*c)/(8*a) + x
*(-I*e*exp(4*c) + 2*e*exp(3*c) - 2*e*exp(c) - I*e)*exp(-2*c)/(4*a), True))
+ 3*I*f*x**2/(4*a) + x*(3*I*d*e + 4*I*f)/(2*a*d) + 2*I*f*log(I*exp(c) + exp
(-d*x))/(a*d**2)

3.202 $\int \frac{\sinh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=83

$$\frac{2\cosh(c+dx)}{ad}-\frac{\sinh^2(c+dx)\cosh(c+dx)}{d(a+ia\sinh(c+dx))}-\frac{3i\sinh(c+dx)\cosh(c+dx)}{2ad}+\frac{3ix}{2a}$$

```
[Out] 3/2*I*x/a+2*cosh(d*x+c)/a/d-3/2*I*cosh(d*x+c)*sinh(d*x+c)/a/d-cosh(d*x+c)*s
inh(d*x+c)^2/d/(a+I*a*sinh(d*x+c))
```

Rubi [A] time = 0.08, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {2767, 2734}

$$\frac{2\cosh(c+dx)}{ad}-\frac{\sinh^2(c+dx)\cosh(c+dx)}{d(a+ia\sinh(c+dx))}-\frac{3i\sinh(c+dx)\cosh(c+dx)}{2ad}+\frac{3ix}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[c + d*x]^3/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (((3*I)/2)*x)/a + (2*Cosh[c + d*x])/(a*d) - (((3*I)/2)*Cosh[c + d*x]*Sinh[c
 + d*x])/(a*d) - (Cosh[c + d*x]*Sinh[c + d*x]^2)/(d*(a + I*a*Sinh[c + d*x])
)
```

Rule 2734

```
Int[((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[((2*a*c + b*d)*x)/2, x] + (-Simp[((b*c + a*d)*Co
s[e + f*x])/f, x] - Simp[(b*d*Cos[e + f*x]*Sin[e + f*x])/(2*f), x]) /; Free
Q[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2767

```
Int[((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)/((a_) + (b_.)*sin[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*Cos[e + f*x]*(c + d*Sin[e + f
*x])^(n - 1))/(a*f*(a + b*Sin[e + f*x])), x] - Dist[d/(a*b), Int[(c + d*Sin
[e + f*x])^(n - 2)*Simp[b*d*(n - 1) - a*c*n + (b*c*(n - 1) - a*d*n)*Sin[e +
 f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && E
qQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && GtQ[n, 1] && (IntegerQ[2*n] || EqQ
[c, 0])
```

Rubi steps

$$\int \frac{\sinh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{\cosh(c+dx)\sinh^2(c+dx)}{d(a+ia\sinh(c+dx))} + \frac{\int \sinh(c+dx)(2a-3ia\sinh(c+dx))\,dx}{a^2}$$
$$= \frac{3ix}{2a} + \frac{2\cosh(c+dx)}{ad} - \frac{3i\cosh(c+dx)\sinh(c+dx)}{2ad} - \frac{\cosh(c+dx)\sinh^2(c+dx)}{d(a+ia\sinh(c+dx))}$$

Mathematica [A] time = 0.17, size = 109, normalized size = 1.31

$$\frac{\left(3\sqrt{1+i\sinh(c+dx)}\,\sinh^{-1}(\sinh(c+dx))+\sqrt{1-i\sinh(c+dx)}\left(-i\sinh^2(c+dx)+\sinh(c+dx)-4i\right)\right)\cosh(c}{2ad\sqrt{1-i\sinh(c+dx)}\,(\sinh(c+dx)-i)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[c + d*x]^3/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (Cosh[c + d*x]*(3*ArcSinh[Sinh[c + d*x]]*Sqrt[1 + I*Sinh[c + d*x]] + Sqrt[1
 - I*Sinh[c + d*x]]*(-4*I + Sinh[c + d*x] - I*Sinh[c + d*x]^2)))/(2*a*d*Sqr
t[1 - I*Sinh[c + d*x]]*(-I + Sinh[c + d*x]))
```

fricas [A] time = 0.72, size = 95, normalized size = 1.14

$$\frac{(12i\,dx-4i)e^{(3\,dx+3\,c)}+4\,(3\,dx+5)e^{(2\,dx+2\,c)}-i\,e^{(5\,dx+5\,c)}+3\,e^{(4\,dx+4\,c)}-3i\,e^{(dx+c)}+1}{8\,ade^{(3\,dx+3\,c)}-8i\,ade^{(2\,dx+2\,c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((12*I*d*x - 4*I)*e^(3*d*x + 3*c) + 4*(3*d*x + 5)*e^(2*d*x + 2*c) - I*e^(5*
d*x + 5*c) + 3*e^(4*d*x + 4*c) - 3*I*e^(d*x + c) + 1)/(8*a*d*e^(3*d*x + 3*c
) - 8*I*a*d*e^(2*d*x + 2*c))
```

giac [A] time = 0.37, size = 87, normalized size = 1.05

$$-\frac{-\frac{12i\,(dx+c)}{a}-\frac{\left(20\,e^{(2\,dx+2\,c)}-3i\,e^{(dx+c)}+1\right)e^{(-2\,dx-2\,c)}}{a\left(e^{(dx+c)}-i\right)}+\frac{i\,ae^{(2\,dx+2\,c)}-4\,ae^{(dx+c)}}{a^2}}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/8*(-12*I*(d*x + c)/a - (20*e^(2*d*x + 2*c) - 3*I*e^(d*x + c) + 1)*e^(-2*
d*x - 2*c)/(a*(e^(d*x + c) - I)) + (I*a*e^(2*d*x + 2*c) - 4*a*e^(d*x + c))/
a^2)/d
```

maple [B] time = 0.07, size = 196, normalized size = 2.36

$$-\frac{3i\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{2da}-\frac{i}{2da\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^{2}}-\frac{1}{da\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{i}{2da\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}+\frac{}{2da\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -3/2*I/d/a*ln(tanh(1/2*d*x+1/2*c)-1)-1/2*I/d/a/(tanh(1/2*d*x+1/2*c)-1)^2-1/
d/a/(tanh(1/2*d*x+1/2*c)-1)-1/2*I/d/a/(tanh(1/2*d*x+1/2*c)-1)+1/2*I/d/a/(ta
nh(1/2*d*x+1/2*c)+1)^2+3/2*I/d/a*ln(tanh(1/2*d*x+1/2*c)+1)+1/d/a/(tanh(1/2*
d*x+1/2*c)+1)-1/2*I/d/a/(tanh(1/2*d*x+1/2*c)+1)-2*I/d/a/(-I+tanh(1/2*d*x+1/
2*c))
```

maxima [A] time = 0.40, size = 98, normalized size = 1.18

$$\frac{3i\,(dx+c)}{2\,ad}+\frac{3i\,e^{(-dx-c)}+20\,e^{(-2\,dx-2\,c)}+1}{8\left(i\,ae^{(-2\,dx-2\,c)}+ae^{(-3\,dx-3\,c)}\right)d}+\frac{i\left(-4i\,e^{(-dx-c)}+e^{(-2\,dx-2\,c)}\right)}{8\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 3/2*I*(d*x + c)/(a*d) + 1/8*(3*I*e^(-d*x - c) + 20*e^(-2*d*x - 2*c) + 1)/((
I*a*e^(-2*d*x - 2*c) + a*e^(-3*d*x - 3*c))*d) + 1/8*I*(-4*I*e^(-d*x - c) +
e^(-2*d*x - 2*c))/(a*d)
```

mupad [B] time = 0.35, size = 94, normalized size = 1.13

$$\frac{x\,3\mathrm{i}}{2\,a}+\frac{2}{a\,d\,\left(\mathrm{e}^{c+d\,x}-\mathrm{i}\right)}+\frac{\mathrm{e}^{c+d\,x}}{2\,a\,d}+\frac{\mathrm{e}^{-c-d\,x}}{2\,a\,d}+\frac{\mathrm{e}^{-2\,c-2\,d\,x}\,1\mathrm{i}}{8\,a\,d}-\frac{\mathrm{e}^{2\,c+2\,d\,x}\,1\mathrm{i}}{8\,a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)^3/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] (x*3i)/(2*a) + 2/(a*d*(exp(c + d*x) - 1i)) + exp(c + d*x)/(2*a*d) + exp(- c
 - d*x)/(2*a*d) + (exp(- 2*c - 2*d*x)*1i)/(8*a*d) - (exp(2*c + 2*d*x)*1i)/(
8*a*d)
```

sympy [A] time = 0.42, size = 182, normalized size = 2.19

$$\begin{cases} \frac{(-32ia^3d^3e^{5c}e^{2dx}+128a^3d^3e^{4c}e^{dx}+128a^3d^3e^{2c}e^{-dx}+32ia^3d^3e^ce^{-2dx})e^{-3c}}{256a^4d^4} & \text{for } 256a^4d^4e^{3c} \neq 0 \\ x\left(\frac{(-ie^{4c}+2e^{3c}+6ie^{2c}-2e^c-i)e^{-2c}}{4a} - \frac{3i}{2a}\right) & \text{otherwise} \end{cases} + \frac{2ie^c}{-ade^c + iade^{-dx}} + \frac{3ix}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Piecewise(((-32*I*a**3*d**3*exp(5*c)*exp(2*d*x) + 128*a**3*d**3*exp(4*c)*ex
p(d*x) + 128*a**3*d**3*exp(2*c)*exp(-d*x) + 32*I*a**3*d**3*exp(c)*exp(-2*d*
x))*exp(-3*c)/(256*a**4*d**4), Ne(256*a**4*d**4*exp(3*c), 0)), (x*((-I*exp(
4*c) + 2*exp(3*c) + 6*I*exp(2*c) - 2*exp(c) - I)*exp(-2*c)/(4*a) - 3*I/(2*a
)), True)) + 2*I*exp(c)/(-a*d*exp(c) + I*a*d*exp(-d*x)) + 3*I*x/(2*a)
```

3.203 $\int \frac{\sinh^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\text{Int}\left(\frac{\sinh^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} =$ 0.000, Rules used = {}

$$\int \frac{\sinh^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sinh[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Sinh[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sinh^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx = \int \frac{\sinh^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$$\$\text{Aborted}$$

Verification is Not applicable to the result.

```
[In] Integrate[Sinh[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.80, size = 0, normalized size = 0.00

$$\frac{\left(-i\,adfx-i\,ade+\left(adfx+ade\right)e^{(dx+c)}\right)\text{integral}\left(-\frac{dfx+de-\left(-i\,dfx-i\,de\right)e^{(5\,dx+5\,c)}-\left(dfx+de\right)e^{(4\,dx+4\,c)}-\left(4i\,dfx+4i\,de\right)e^{(3\,dx+3\,c)}-4\,(}{4\left(adf^2x^2+2\,adefx+ade^2\right)e^{(3\,dx+3\,c)}+\left(-4i\,adf^2x^2-8i\,adef}\right.}{-i\,adfx-i\,ade+\left(adfx+ade\right)e^{(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((-I*a*d*f*x - I*a*d*e + (a*d*f*x + a*d*e)*e^(d*x + c))*integral(-(d*f*x +
d*e - (-I*d*f*x - I*d*e)*e^(5*d*x + 5*c) - (d*f*x + d*e)*e^(4*d*x + 4*c) -
(4*I*d*f*x + 4*I*d*e)*e^(3*d*x + 3*c) - 4*(d*f*x + d*e + 2*f)*e^(2*d*x + 2*
c) - (I*d*f*x + I*d*e)*e^(d*x + c))/(4*(a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2
)*e^(3*d*x + 3*c) + (-4*I*a*d*f^2*x^2 - 8*I*a*d*e*f*x - 4*I*a*d*e^2)*e^(2*d
*x + 2*c)), x) + 2)/(-I*a*d*f*x - I*a*d*e + (a*d*f*x + a*d*e)*e^(d*x + c))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh(dx+c)^3}{(fx+e)(ia\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sinh(d*x + c)^3/((f*x + e)*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\sinh^3(dx+c)}{(fx+e)(a+ia\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sinh(c+d\,x)^3}{(e+f\,x)\,(a+a\sinh(c+d\,x)\,1\mathrm{i})}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)^3/((e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(sinh(c + d*x)^3/((e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.204 $\int \frac{\sinh^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\text{Int}\left(\frac{\sinh^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sinh[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Sinh[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sinh^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx = \int \frac{\sinh^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Sinh[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.52, size = 0, normalized size = 0.00

$$\frac{\left(-i\,adf^2x^2 - 2i\,adefx - i\,ade^2 + \left(adf^2x^2 + 2\,adefx + ade^2\right)e^{(dx+c)}\right)\text{integral}\left(-\frac{dfx+de-\left(-i\,dfx-i\,de\right)e^{(5\,dx+5\,c)}-\left(dfx+de\right)e^{(4\ldots}}{4\left(adf^3x^3+3\,adef^2x^2+3\,ade^2fx+ade\ldots\right.}\right.}{-i\,adf^2x^2 - 2i\,adefx - i\,ade^2 + \left(adf^2x^2 + 2\,adefx + ade\ldots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] ((-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x +
 a*d*e^2)*e^(d*x + c))*integral(-(d*f*x + d*e - (-I*d*f*x - I*d*e)*e^(5*d*x
 + 5*c) - (d*f*x + d*e)*e^(4*d*x + 4*c) - (4*I*d*f*x + 4*I*d*e)*e^(3*d*x +
3*c) - 4*(d*f*x + d*e + 4*f)*e^(2*d*x + 2*c) - (I*d*f*x + I*d*e)*e^(d*x + c
))/(4*(a*d*f^3*x^3 + 3*a*d*e*f^2*x^2 + 3*a*d*e^2*f*x + a*d*e^3)*e^(3*d*x +
3*c) + (-4*I*a*d*f^3*x^3 - 12*I*a*d*e*f^2*x^2 - 12*I*a*d*e^2*f*x - 4*I*a*d*
e^3)*e^(2*d*x + 2*c)), x) + 2)/(-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2
+ (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*e^(d*x + c))
```

giac [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh(dx+c)^3}{(fx+e)^2(i\,a\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sinh(d*x + c)^3/((f*x + e)^2*(I*a*sinh(d*x + c) + a)), x)
```

maple [**A**] time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{\sinh^3(dx+c)}{(fx+e)^2(a+ia\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sinh(c+d\,x)^3}{\left(e+f\,x\right)^2\,\left(a+a\sinh(c+d\,x)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)^3/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(sinh(c + d*x)^3/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**3/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.205 $\int \frac{(e+fx)^3 \operatorname{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=313

$$-\frac{12if^3\text{Li}_3\left(-ie^{c+dx}\right)}{ad^4}-\frac{6f^3\text{Li}_4\left(-e^{c+dx}\right)}{ad^4}+\frac{6f^3\text{Li}_4\left(e^{c+dx}\right)}{ad^4}+\frac{12if^2(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}+\frac{6f^2(e+fx)\text{Li}_3\left(-e^{c+dx}\right)}{ad^3}-$$

```
[Out] -I*(f*x+e)^3/a/d-2*(f*x+e)^3*arctanh(exp(d*x+c))/a/d+6*I*f*(f*x+e)^2*ln(1+I
*exp(d*x+c))/a/d^2-3*f*(f*x+e)^2*polylog(2,-exp(d*x+c))/a/d^2+12*I*f^2*(f*x
+e)*polylog(2,-I*exp(d*x+c))/a/d^3+3*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a/d^
2+6*f^2*(f*x+e)*polylog(3,-exp(d*x+c))/a/d^3-12*I*f^3*polylog(3,-I*exp(d*x+
c))/a/d^4-6*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a/d^3-6*f^3*polylog(4,-exp(d*
x+c))/a/d^4+6*f^3*polylog(4,exp(d*x+c))/a/d^4-I*(f*x+e)^3*tanh(1/2*c+1/4*I*
Pi+1/2*d*x)/a/d
```

Rubi [A] time = 0.48, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.345, Rules used = {5575, 4182, 2531, 6609, 2282, 6589, 3318, 4184, 3716, 2190}

$$\frac{12if^2(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}+\frac{6f^2(e+fx)\text{PolyLog}\left(3,-e^{c+dx}\right)}{ad^3}-\frac{6f^2(e+fx)\text{PolyLog}\left(3,e^{c+dx}\right)}{ad^3}-\frac{3f(e+f}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csch[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I)*(e + f*x)^3)/(a*d) - (2*(e + f*x)^3*ArcTanh[E^(c + d*x)])/(a*d) + ((6
*I)*f*(e + f*x)^2*Log[1 + I*E^(c + d*x)])/(a*d^2) - (3*f*(e + f*x)^2*PolyLo
g[2, -E^(c + d*x)])/(a*d^2) + ((12*I)*f^2*(e + f*x)*PolyLog[2, (-I)*E^(c +
d*x)])/(a*d^3) + (3*f*(e + f*x)^2*PolyLog[2, E^(c + d*x)])/(a*d^2) + (6*f^2
*(e + f*x)*PolyLog[3, -E^(c + d*x)])/(a*d^3) - ((12*I)*f^3*PolyLog[3, (-I)*
E^(c + d*x)])/(a*d^4) - (6*f^2*(e + f*x)*PolyLog[3, E^(c + d*x)])/(a*d^3) -
 (6*f^3*PolyLog[4, -E^(c + d*x)])/(a*d^4) + (6*f^3*PolyLog[4, E^(c + d*x)])
/(a*d^4) - (I*(e + f*x)^3*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\left(i\int \frac{(e+fx)^3}{a+ia\sinh(c+dx)}\,dx\right)+\frac{\int (e+fx)^3\text{csch}(c+dx)\,dx}{a}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{i\int (e+fx)^3\csc^2\left(\frac{1}{2}\left(ic+\frac{\pi}{2}\right)+\frac{idx}{2}\right)dx}{2a}-\frac{(3f)\int (e+$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{3f(e+fx)^2\text{Li}_2\left(-e^{c+dx}\right)}{ad^2}+\frac{3f(e+fx)^2\text{Li}_2\left(e^{c+dx}\right)}{ad^2}-$$

$$= -\frac{i(e+fx)^3}{ad}-\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{3f(e+fx)^2\text{Li}_2\left(-e^{c+dx}\right)}{ad^2}+\frac{3f(e+fx)^2}{ad}$$

$$= -\frac{i(e+fx)^3}{ad}-\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{6if(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad^2}-\frac{3f(e+}{}$$

$$= -\frac{i(e+fx)^3}{ad}-\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{6if(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad^2}-\frac{3f(e+}{}$$

$$= -\frac{i(e+fx)^3}{ad}-\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{6if(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad^2}-\frac{3f(e+}{}$$

$$= -\frac{i(e+fx)^3}{ad}-\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{6if(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad^2}-\frac{3f(e+}{}$$

Mathematica [A] time = 5.37, size = 363, normalized size = 1.16

$$\frac{2d^3(e+fx)^3}{e^c-i}-\frac{2id^3\sinh\left(\frac{dx}{2}\right)(e+fx)^3}{\left(\cosh\left(\frac{c}{2}\right)+i\sinh\left(\frac{c}{2}\right)\right)\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)}-2d^3(e+fx)^3\tanh^{-1}(\sinh(c+dx)+\cosh(c+dx))-3f$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csch[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((2*d^3*(e + f*x)^3)/(-I + E^c) - 2*d^3*(e + f*x)^3*ArcTanh[Cosh[c + d*x] +
 Sinh[c + d*x]] + (6*I)*d^2*f*(e + f*x)^2*Log[1 - I*E^(-c - d*x)] - (12*I)*
f^2*(d*(e + f*x)*PolyLog[2, I*E^(-c - d*x)] + f*PolyLog[3, I*E^(-c - d*x)])
 - 3*f*(d^2*(e + f*x)^2*PolyLog[2, -Cosh[c + d*x] - Sinh[c + d*x]] - 2*d*f*
(e + f*x)*PolyLog[3, -Cosh[c + d*x] - Sinh[c + d*x]] + 2*f^2*PolyLog[4, -Co
```

```
sh[c + d*x] - Sinh[c + d*x]]) + 3*f*(d^2*(e + f*x)^2*PolyLog[2, Cosh[c + d*
x] + Sinh[c + d*x]] - 2*d*f*(e + f*x)*PolyLog[3, Cosh[c + d*x] + Sinh[c + d
*x]] + 2*f^2*PolyLog[4, Cosh[c + d*x] + Sinh[c + d*x]]) - ((2*I)*d^3*(e + f
*x)^3*Sinh[(d*x)/2])/((Cosh[c/2] + I*Sinh[c/2])*(Cosh[(c + d*x)/2] + I*Sinh
[(c + d*x)/2])))/(a*d^4)
```

fricas [C] time = 0.86, size = 997, normalized size = 3.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*d^3*e^3 - 6*c*d^2*e^2*f + 6*c^2*d*e*f^2 - 2*c^3*f^3 + (12*d*f^3*x + 12*d
*e*f^2 + (12*I*d*f^3*x + 12*I*d*e*f^2)*e^(d*x + c))*dilog(-I*e^(d*x + c)) +
 (3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^2*f - 3*(d^2*f^3*x^2 + 2*d^
2*e*f^2*x + d^2*e^2*f)*e^(d*x + c))*dilog(-e^(d*x + c)) + (-3*I*d^2*f^3*x^2
 - 6*I*d^2*e*f^2*x - 3*I*d^2*e^2*f + 3*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2*e
^2*f)*e^(d*x + c))*dilog(e^(d*x + c)) + (-2*I*d^3*f^3*x^3 - 6*I*d^3*e*f^2*x
^2 - 6*I*d^3*e^2*f*x - 6*I*c*d^2*e^2*f + 6*I*c^2*d*e*f^2 - 2*I*c^3*f^3)*e^(
d*x + c) + (I*d^3*f^3*x^3 + 3*I*d^3*e*f^2*x^2 + 3*I*d^3*e^2*f*x + I*d^3*e^3
 - (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*e^(d*x + c))*l
og(e^(d*x + c) + 1) + (6*d^2*e^2*f - 12*c*d*e*f^2 + 6*c^2*f^3 + (6*I*d^2*e^
2*f - 12*I*c*d*e*f^2 + 6*I*c^2*f^3)*e^(d*x + c))*log(e^(d*x + c) - I) + (-I
*d^3*e^3 + 3*I*c*d^2*e^2*f - 3*I*c^2*d*e*f^2 + I*c^3*f^3 + (d^3*e^3 - 3*c*d
^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*e^(d*x + c))*log(e^(d*x + c) - 1) + (6*
d^2*f^3*x^2 + 12*d^2*e*f^2*x + 12*c*d*e*f^2 - 6*c^2*f^3 + (6*I*d^2*f^3*x^2
+ 12*I*d^2*e*f^2*x + 12*I*c*d*e*f^2 - 6*I*c^2*f^3)*e^(d*x + c))*log(I*e^(d*
x + c) + 1) + (-I*d^3*f^3*x^3 - 3*I*d^3*e*f^2*x^2 - 3*I*d^3*e^2*f*x - 3*I*c
*d^2*e^2*f + 3*I*c^2*d*e*f^2 - I*c^3*f^3 + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 +
 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*e^(d*x + c))*log(
-e^(d*x + c) + 1) - (6*f^3*e^(d*x + c) - 6*I*f^3)*polylog(4, -e^(d*x + c))
+ (6*f^3*e^(d*x + c) - 6*I*f^3)*polylog(4, e^(d*x + c)) - 12*(I*f^3*e^(d*x
+ c) + f^3)*polylog(3, -I*e^(d*x + c)) + (-6*I*d*f^3*x - 6*I*d*e*f^2 + 6*(d
*f^3*x + d*e*f^2)*e^(d*x + c))*polylog(3, -e^(d*x + c)) + (6*I*d*f^3*x + 6*
I*d*e*f^2 - 6*(d*f^3*x + d*e*f^2)*e^(d*x + c))*polylog(3, e^(d*x + c)))/(a*
d^4*e^(d*x + c) - I*a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(f x + e\right)^{3} \operatorname{csch}\left(d x + c\right)}{i a \sinh\left(d x + c\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*csch(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.36, size = 1034, normalized size = 3.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -12*I/a/d^3*e*f^2*c*ln(exp(d*x+c)-I)-12*I/a/d^2*e*f^2*c*x-6*f^3*polylog(4,-
exp(d*x+c))/a/d^4+6*f^3*polylog(4,exp(d*x+c))/a/d^4+2*(f^3*x^3+3*e*f^2*x^2+
3*e^2*f*x+e^3)/d/a/(exp(d*x+c)-I)-6*I/a/d^4*f^3*c^2*ln(exp(d*x+c))+6*I/a/d^
2*ln(exp(d*x+c)-I)*e^2*f-6*I/a/d^4*f^3*c^2*ln(1+I*exp(d*x+c))+6*I/a/d^2*f^3
*ln(1+I*exp(d*x+c))*x^2-6*I/a/d^2*ln(exp(d*x+c))*e^2*f+6*I/a/d^3*f^3*c^2*x-
6*I/a/d*e*f^2*x^2+12*I/a/d^3*e*f^2*polylog(2,-I*exp(d*x+c))-6*I/a/d^3*e*f^2
*c^2+12*I/a/d^3*f^3*polylog(2,-I*exp(d*x+c))*x+6*I/a/d^4*f^3*c^2*ln(exp(d*x
+c)-I)-12*I*f^3*polylog(3,-I*exp(d*x+c))/a/d^4+12*I/a/d^2*e*f^2*ln(1+I*exp(
d*x+c))*x+12*I/a/d^3*e*f^2*ln(1+I*exp(d*x+c))*c+12*I/a/d^3*e*f^2*c*ln(exp(d
*x+c))-2*I/a/d*f^3*x^3+4*I/a/d^4*f^3*c^3+1/a/d*e^3*ln(exp(d*x+c)-1)-1/a/d*e
^3*ln(exp(d*x+c)+1)-3/a/d^2*e^2*f*c*ln(exp(d*x+c)-1)+3/a/d^2*ln(1-exp(d*x+c
))*c*e^2*f+3/a/d^3*e*f^2*c^2*ln(exp(d*x+c)-1)-3/a/d^3*e*f^2*c^2*ln(1-exp(d*
x+c))-3/a/d*e*f^2*ln(exp(d*x+c)+1)*x^2-6/a/d^2*e*f^2*polylog(2,-exp(d*x+c))
*x+3/a/d*e*f^2*ln(1-exp(d*x+c))*x^2+6/a/d^2*e*f^2*polylog(2,exp(d*x+c))*x-3
/a/d*ln(exp(d*x+c)+1)*e^2*f*x+3/a/d*ln(1-exp(d*x+c))*e^2*f*x-1/a/d*f^3*ln(e
xp(d*x+c)+1)*x^3+6/a/d^3*e*f^2*polylog(3,-exp(d*x+c))-6/a/d^3*e*f^2*polylog
(3,exp(d*x+c))-1/a/d^4*f^3*c^3*ln(exp(d*x+c)-1)-3/a/d^2*f^3*polylog(2,-exp(
d*x+c))*x^2+6/a/d^3*f^3*polylog(3,-exp(d*x+c))*x+1/a/d*f^3*ln(1-exp(d*x+c))
*x^3+1/a/d^4*f^3*ln(1-exp(d*x+c))*c^3+3/a/d^2*f^3*polylog(2,exp(d*x+c))*x^2
-6/a/d^3*f^3*polylog(3,exp(d*x+c))*x-3/a/d^2*e^2*f*polylog(2,-exp(d*x+c))+3
/a/d^2*e^2*f*polylog(2,exp(d*x+c))
```

maxima [B] time = 0.70, size = 580, normalized size = 1.85

$$-e^3\left(\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}-\frac{2}{\left(ae^{(-dx-c)}+i\,a\right)d}\right)-\frac{6i\,e^2fx}{ad}-\frac{3\left(dx\log\left(e^{(dx+c)}+1\right)+\mathrm{Li}_2\left(-e^{(dx+c)}\right)\right)e^2}{ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e^3*(log(e^(-d*x - c) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d) - 2/((a*e^(
-d*x - c) + I*a)*d)) - 6*I*e^2*f*x/(a*d) - 3*(d*x*log(e^(d*x + c) + 1) + di
log(-e^(d*x + c)))*e^2*f/(a*d^2) + 3*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(
```

```
d*x + c)))*e^2*f/(a*d^2) + 6*I*e^2*f*log(I*e^(d*x + c) + 1)/(a*d^2) + 2*(f^
3*x^3 + 3*e*f^2*x^2 + 3*e^2*f*x)/(a*d*e^(d*x + c) - I*a*d) - 3*(d^2*x^2*log
(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))
*e*f^2/(a*d^3) + 3*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)
) - 2*polylog(3, e^(d*x + c)))*e*f^2/(a*d^3) + 12*I*(d*x*log(I*e^(d*x + c)
+ 1) + dilog(-I*e^(d*x + c)))*e*f^2/(a*d^3) - (d^3*x^3*log(e^(d*x + c) + 1)
 + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x + c)) + 6*polyl
og(4, -e^(d*x + c)))*f^3/(a*d^4) + (d^3*x^3*log(-e^(d*x + c) + 1) + 3*d^2*x
^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*polylog(4, e^(d*x
 + c)))*f^3/(a*d^4) + 6*I*(d^2*x^2*log(I*e^(d*x + c) + 1) + 2*d*x*dilog(-I*
e^(d*x + c)) - 2*polylog(3, -I*e^(d*x + c)))*f^3/(a*d^4) - (2*I*d^3*f^3*x^3
 + 6*I*d^3*e*f^2*x^2)/(a*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{\mathrm{sinh}\left(c+d\,x\right)\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sinh(c + d*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)^3/(sinh(c + d*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e^{3}\operatorname{csch}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx+\int \frac{f^{3}x^{3}\operatorname{csch}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx+\int \frac{3ef^{2}x^{2}\operatorname{csch}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx+\int \frac{3e^{2}fx\operatorname{csch}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e**3*csch(c + d*x)/(sinh(c + d*x) - I), x) + Integral(f**3*x**
3*csch(c + d*x)/(sinh(c + d*x) - I), x) + Integral(3*e*f**2*x**2*csch(c + d
*x)/(sinh(c + d*x) - I), x) + Integral(3*e**2*f*x*csch(c + d*x)/(sinh(c + d
*x) - I), x))/a
```

3.206 $\int \frac{(e+fx)^2\operatorname{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=224

$$\frac{4if^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}+\frac{2f^2\text{Li}_3\left(-e^{c+dx}\right)}{ad^3}-\frac{2f^2\text{Li}_3\left(e^{c+dx}\right)}{ad^3}-\frac{2f(e+fx)\text{Li}_2\left(-e^{c+dx}\right)}{ad^2}+\frac{2f(e+fx)\text{Li}_2\left(e^{c+dx}\right)}{ad^2}+\frac{4if(e+fx)}{}$$

```
[Out] -I*(f*x+e)^2/a/d-2*(f*x+e)^2*arctanh(exp(d*x+c))/a/d+4*I*f*(f*x+e)*ln(1+I*e
xp(d*x+c))/a/d^2-2*f*(f*x+e)*polylog(2,-exp(d*x+c))/a/d^2+4*I*f^2*polylog(2
,-I*exp(d*x+c))/a/d^3+2*f*(f*x+e)*polylog(2,exp(d*x+c))/a/d^2+2*f^2*polylog
(3,-exp(d*x+c))/a/d^3-2*f^2*polylog(3,exp(d*x+c))/a/d^3-I*(f*x+e)^2*tanh(1/
2*c+1/4*I*Pi+1/2*d*x)/a/d
```

Rubi [A] time = 0.35, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.379, Rules used = {5575, 4182, 2531, 2282, 6589, 3318, 4184, 3716, 2190, 2279, 2391}

$$-\frac{2f(e+fx)\text{PolyLog}\left(2,-e^{c+dx}\right)}{ad^2}+\frac{2f(e+fx)\text{PolyLog}\left(2,e^{c+dx}\right)}{ad^2}+\frac{4if^2\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}+\frac{2f^2\text{PolyLog}\left(3,-e\right.}{ad^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I)*(e + f*x)^2)/(a*d) - (2*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d) + ((4
*I)*f*(e + f*x)*Log[1 + I*E^(c + d*x)])/(a*d^2) - (2*f*(e + f*x)*PolyLog[2,
 -E^(c + d*x)])/(a*d^2) + ((4*I)*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^3)
+ (2*f*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a*d^2) + (2*f^2*PolyLog[3, -E^(c
 + d*x)])/(a*d^3) - (2*f^2*PolyLog[3, E^(c + d*x)])/(a*d^3) - (I*(e + f*x)^
2*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
```

```
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\left(i\int \frac{(e+fx)^2}{a+ia\sinh(c+dx)}\,dx\right)+\frac{\int (e+fx)^2\text{csch}(c+dx)\,dx}{a}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{i\int (e+fx)^2\csc^2\left(\frac{1}{2}\left(ic+\frac{\pi}{2}\right)+\frac{idx}{2}\right)dx}{2a}-\frac{(2f)\int (e$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{2f(e+fx)\text{Li}_2\left(-e^{c+dx}\right)}{ad^2}+\frac{2f(e+fx)\text{Li}_2\left(e^{c+dx}\right)}{ad^2}-$$

$$= -\frac{i(e+fx)^2}{ad}-\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{2f(e+fx)\text{Li}_2\left(-e^{c+dx}\right)}{ad^2}+\frac{2f(e+fx)\text{l}}{ad}$$

$$= -\frac{i(e+fx)^2}{ad}-\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{4if(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2}-\frac{2f(e+}{}$$

$$= -\frac{i(e+fx)^2}{ad}-\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{4if(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2}-\frac{2f(e+}{}$$

$$= -\frac{i(e+fx)^2}{ad}-\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{4if(e+fx)\log\left(1+ie^{c+dx}\right)}{ad^2}-\frac{2f(e+}{}$$

Mathematica [A] time = 4.13, size = 275, normalized size = 1.23

$$\frac{d^2(e+fx)^2\log\left(1-e^{c+dx}\right)-d^2(e+fx)^2\log\left(e^{c+dx}+1\right)-\frac{2id^2\sinh\left(\frac{dx}{2}\right)(e+fx)^2}{\left(\cosh\left(\frac{c}{2}\right)+i\sinh\left(\frac{c}{2}\right)\right)\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)}+\frac{2d(e+fx)(}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (d^2*(e + f*x)^2*Log[1 - E^(c + d*x)] - d^2*(e + f*x)^2*Log[1 + E^(c + d*x)
] + (2*d*(e + f*x)*((-I)*d*(e + f*x) + 2*(-I + E^c)*f*Log[1 - I*E^(-c - d*x
)]) - 4*(-I + E^c)*f^2*PolyLog[2, I*E^(-c - d*x)])/(-1 - I*E^c) - 2*d*f*(e
+ f*x)*PolyLog[2, -E^(c + d*x)] + 2*d*f*(e + f*x)*PolyLog[2, E^(c + d*x)] +
 2*f^2*PolyLog[3, -E^(c + d*x)] - 2*f^2*PolyLog[3, E^(c + d*x)] - ((2*I)*d^
2*(e + f*x)^2*Sinh[(d*x)/2])/((Cosh[c/2] + I*Sinh[c/2])*(Cosh[(c + d*x)/2]
+ I*Sinh[(c + d*x)/2])))/(a*d^3)
```

fricas [C] time = 0.45, size = 557, normalized size = 2.49

$$\frac{2\,d^2e^2 - 4\,cdef + 2\,c^2f^2 - 4\left(-i\,f^2e^{(dx+c)} - f^2\right)\mathrm{Li}_2\left(-i\,e^{(dx+c)}\right) + \left(2i\,df^2x + 2i\,def - 2\left(df^2x + def\right)e^{(dx+c)}\right)\mathrm{Li}_2\left(-e^{(}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*d^2*e^2 - 4*c*d*e*f + 2*c^2*f^2 - 4*(-I*f^2*e^(d*x + c) - f^2)*dilog(-I*
e^(d*x + c)) + (2*I*d*f^2*x + 2*I*d*e*f - 2*(d*f^2*x + d*e*f)*e^(d*x + c))*
dilog(-e^(d*x + c)) + (-2*I*d*f^2*x - 2*I*d*e*f + 2*(d*f^2*x + d*e*f)*e^(d*
x + c))*dilog(e^(d*x + c)) + (-2*I*d^2*f^2*x^2 - 4*I*d^2*e*f*x - 4*I*c*d*e*
f + 2*I*c^2*f^2)*e^(d*x + c) + (I*d^2*f^2*x^2 + 2*I*d^2*e*f*x + I*d^2*e^2 -
 (d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*e^(d*x + c))*log(e^(d*x + c) + 1) +
(4*d*e*f - 4*c*f^2 + (4*I*d*e*f - 4*I*c*f^2)*e^(d*x + c))*log(e^(d*x + c) -
 I) + (-I*d^2*e^2 + 2*I*c*d*e*f - I*c^2*f^2 + (d^2*e^2 - 2*c*d*e*f + c^2*f^
2)*e^(d*x + c))*log(e^(d*x + c) - 1) + (4*d*f^2*x + 4*c*f^2 + (4*I*d*f^2*x
+ 4*I*c*f^2)*e^(d*x + c))*log(I*e^(d*x + c) + 1) + (-I*d^2*f^2*x^2 - 2*I*d^
2*e*f*x - 2*I*c*d*e*f + I*c^2*f^2 + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f
- c^2*f^2)*e^(d*x + c))*log(-e^(d*x + c) + 1) + (2*f^2*e^(d*x + c) - 2*I*f^
2)*polylog(3, -e^(d*x + c)) - (2*f^2*e^(d*x + c) - 2*I*f^2)*polylog(3, e^(d
*x + c)))/(a*d^3*e^(d*x + c) - I*a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \operatorname{csch}\left(dx+c\right)}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*csch(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.21, size = 573, normalized size = 2.56

$$\frac{4i\ln\left(\mathrm{e}^{dx+c}-i\right)ef}{a\,d^2}-\frac{4i\ln\left(\mathrm{e}^{dx+c}\right)ef}{a\,d^2}-\frac{4if^2cx}{a\,d^2}+\frac{4if^2\ln\left(1+i\mathrm{e}^{dx+c}\right)x}{a\,d^2}+\frac{4if^2\ln\left(1+i\mathrm{e}^{dx+c}\right)c}{a\,d^3}-\frac{4if^2c\ln\left(\mathrm{e}^{dx+c}-i\right)}{a\,d^3}+\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 2/a/d*ln(1-exp(d*x+c))*e*f*x+2/a/d^2*ln(1-exp(d*x+c))*c*e*f-2/a/d^2*e*f*c*l
n(exp(d*x+c)-1)+4*I/a/d^2*ln(exp(d*x+c)-I)*e*f-4*I/a/d^2*ln(exp(d*x+c))*e*f
```

```
-4*I/a/d^2*f^2*c*x+4*I/a/d^2*f^2*ln(1+I*exp(d*x+c))*x+4*I/a/d^3*f^2*ln(1+I*
exp(d*x+c))*c-4*I/a/d^3*f^2*c*ln(exp(d*x+c)-I)+4*I/a/d^3*f^2*c*ln(exp(d*x+c
))-2/a/d*ln(exp(d*x+c)+1)*e*f*x+2*f^2*polylog(3,-exp(d*x+c))/a/d^3-2*f^2*po
lylog(3,exp(d*x+c))/a/d^3+4*I*f^2*polylog(2,-I*exp(d*x+c))/a/d^3+2*(f^2*x^2
+2*e*f*x+e^2)/d/a/(exp(d*x+c)-I)-1/a/d^3*f^2*c^2*ln(1-exp(d*x+c))-1/a/d*f^2
*ln(exp(d*x+c)+1)*x^2-2/a/d^2*f^2*polylog(2,-exp(d*x+c))*x+1/a/d*f^2*ln(1-e
xp(d*x+c))*x^2+2/a/d^2*f^2*polylog(2,exp(d*x+c))*x-1/a/d*e^2*ln(exp(d*x+c)+
1)+1/a/d*e^2*ln(exp(d*x+c)-1)-2*I/a/d*f^2*x^2-2*I/a/d^3*f^2*c^2+1/a/d^3*f^2
*c^2*ln(exp(d*x+c)-1)-2/a/d^2*e*f*polylog(2,-exp(d*x+c))+2/a/d^2*e*f*polylo
g(2,exp(d*x+c))
```

maxima [A] time = 0.76, size = 347, normalized size = 1.55

$$-e^{2}\left(\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}-\frac{2}{\left(ae^{(-dx-c)}+i\,a\right)d}\right)-\frac{2i\,f^{2}x^{2}}{ad}-\frac{4i\,efx}{ad}+\frac{2\left(f^{2}x^{2}+2\,efx\right)}{ade^{(dx+c)}-i\,ad}-\frac{2\left(dx\log\left(e\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e^2*(log(e^(-d*x - c) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d) - 2/((a*e^(
-d*x - c) + I*a)*d)) - 2*I*f^2*x^2/(a*d) - 4*I*e*f*x/(a*d) + 2*(f^2*x^2 + 2
*e*f*x)/(a*d*e^(d*x + c) - I*a*d) - 2*(d*x*log(e^(d*x + c) + 1) + dilog(-e^
(d*x + c)))*e*f/(a*d^2) + 2*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c))
)*e*f/(a*d^2) + 4*I*e*f*log(I*e^(d*x + c) + 1)/(a*d^2) - (d^2*x^2*log(e^(d*
x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*f^2/(
a*d^3) + (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*poly
log(3, e^(d*x + c)))*f^2/(a*d^3) + 4*I*(d*x*log(I*e^(d*x + c) + 1) + dilog(
-I*e^(d*x + c)))*f^2/(a*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^2}{\mathrm{sinh}\left(c+d\,x\right)\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sinh(c + d*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)^2/(sinh(c + d*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e^{2}\operatorname{csch}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx+\int \frac{f^{2}x^{2}\operatorname{csch}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx+\int \frac{2efx\operatorname{csch}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e**2*csch(c + d*x)/(sinh(c + d*x) - I), x) + Integral(f**2*x**
2*csch(c + d*x)/(sinh(c + d*x) - I), x) + Integral(2*e*f*x*csch(c + d*x)/(s
inh(c + d*x) - I), x))/a
```

3.207 $\int \frac{(e+fx)\mathbf{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=126

$$-\frac{f\text{Li}_2\left(-e^{c+dx}\right)}{ad^2}+\frac{f\text{Li}_2\left(e^{c+dx}\right)}{ad^2}+\frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}-\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{i(e+fx)\tanh\left(\frac{c}{2}+\frac{dx}{2}+\right.}{ad}$$

```
[Out] -2*(f*x+e)*arctanh(exp(d*x+c))/a/d+2*I*f*ln(cosh(1/2*c+1/4*I*Pi+1/2*d*x))/a
/d^2-f*polylog(2,-exp(d*x+c))/a/d^2+f*polylog(2,exp(d*x+c))/a/d^2-I*(f*x+e)
*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a/d
```

Rubi [A] time = 0.15, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {5575, 4182, 2279, 2391, 3318, 4184, 3475}

$$-\frac{f\text{PolyLog}\left(2,-e^{c+dx}\right)}{ad^2}+\frac{f\text{PolyLog}\left(2,e^{c+dx}\right)}{ad^2}+\frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}-\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{i(e+f}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)*ArcTanh[E^(c + d*x)])/(a*d) + ((2*I)*f*Log[Cosh[c/2 + (I/4)*P
i + (d*x)/2]])/(a*d^2) - (f*PolyLog[2, -E^(c + d*x)])/(a*d^2) + (f*PolyLog[
2, E^(c + d*x)])/(a*d^2) - (I*(e + f*x)*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*
d)
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
```

```
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(e+fx)\operatorname{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx &= -\left(i\int \frac{e+fx}{a+ia\sinh(c+dx)}\,dx\right)+\frac{\int (e+fx)\operatorname{csch}(c+dx)\,dx}{a}\\
&= -\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{i\int (e+fx)\csc^2\left(\frac{1}{2}\left(ic+\frac{\pi}{2}\right)+\frac{idx}{2}\right)dx}{2a}-\frac{f\int \log\left(1-e\right.}{ad}\\
&= -\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{i(e+fx)\tanh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)}{ad}-\frac{f\,\mathrm{Subst}\left(\int \frac{\log(1-x)}{x}\,dx,\right.}{ad^2}\\
&= -\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\right)}{ad^2}-\frac{f\mathrm{Li}_2\left(-e^{c+dx}\right)}{ad^2}+\frac{f\mathrm{Li}_2}{a}
\end{aligned}
$$

Mathematica [B] time = 1.22, size = 345, normalized size = 2.74

$$\frac{\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)\left(-2id(e+fx)\sinh\left(\frac{1}{2}(c+dx)\right)+de\log\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)\left(\cosh\left(\frac{1}{2}(c\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csch[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*(f*(c + d*x)*(Cosh[(c + d*x)/2]
+ I*Sinh[(c + d*x)/2]) - 2*f*ArcTan[Tanh[(c + d*x)/2]]*(Cosh[(c + d*x)/2] +
 I*Sinh[(c + d*x)/2]) + I*f*Log[Cosh[c + d*x]]*(Cosh[(c + d*x)/2] + I*Sinh[
(c + d*x)/2]) + d*e*Log[Tanh[(c + d*x)/2]]*(Cosh[(c + d*x)/2] + I*Sinh[(c +
 d*x)/2]) - c*f*Log[Tanh[(c + d*x)/2]]*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x
)/2]) + f*((c + d*x)*(Log[1 - E^(-c - d*x)] - Log[1 + E^(-c - d*x)]) + Poly
Log[2, -E^(-c - d*x)] - PolyLog[2, E^(-c - d*x)])*(Cosh[(c + d*x)/2] + I*Si
nh[(c + d*x)/2]) - (2*I)*d*(e + f*x)*Sinh[(c + d*x)/2]))/(d^2*(a + I*a*Sinh
[c + d*x]))
```

fricas [B] time = 0.48, size = 211, normalized size = 1.67

$$\frac{-2idfxe^{(dx+c)}+2de-\left(fe^{(dx+c)}-if\right)\mathrm{Li}_2\left(-e^{(dx+c)}\right)+\left(fe^{(dx+c)}-if\right)\mathrm{Li}_2\left(e^{(dx+c)}\right)+\left(idfx+ide-\left(dfx+de\right)e^{(d}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (-2*I*d*f*x*e^(d*x + c) + 2*d*e - (f*e^(d*x + c) - I*f)*dilog(-e^(d*x + c))
 + (f*e^(d*x + c) - I*f)*dilog(e^(d*x + c)) + (I*d*f*x + I*d*e - (d*f*x + d
*e)*e^(d*x + c))*log(e^(d*x + c) + 1) - 2*(-I*f*e^(d*x + c) - f)*log(e^(d*x
 + c) - I) + (-I*d*e + I*c*f + (d*e - c*f)*e^(d*x + c))*log(e^(d*x + c) - 1
) + (-I*d*f*x - I*c*f + (d*f*x + c*f)*e^(d*x + c))*log(-e^(d*x + c) + 1))/(
a*d^2*e^(d*x + c) - I*a*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\operatorname{csch}\left(dx+c\right)}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*csch(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [A] time = 0.23, size = 211, normalized size = 1.67

$$\frac{2fx+2e}{da\left(\mathrm{e}^{dx+c}-i\right)}-\frac{2if\ln\left(\mathrm{e}^{dx+c}\right)}{a\,d^2}-\frac{e\ln\left(\mathrm{e}^{dx+c}+1\right)}{ad}+\frac{e\ln\left(\mathrm{e}^{dx+c}-1\right)}{ad}-\frac{\ln\left(\mathrm{e}^{dx+c}+1\right)fx}{ad}+\frac{\ln\left(1-\mathrm{e}^{dx+c}\right)fx}{ad}+\frac{\ln\left(1-\mathrm{e}^{dx}\right.}{a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 2*(f*x+e)/d/a/(exp(d*x+c)-I)-2*I/a/d^2*f*ln(exp(d*x+c))-1/a/d*e*ln(exp(d*x+
c)+1)+1/a/d*e*ln(exp(d*x+c)-1)-1/a/d*ln(exp(d*x+c)+1)*f*x+1/a/d*ln(1-exp(d*
x+c))*f*x+1/a/d^2*ln(1-exp(d*x+c))*c*f-1/a/d^2*f*c*ln(exp(d*x+c)-1)-f*polyl
og(2,-exp(d*x+c))/a/d^2+f*polylog(2,exp(d*x+c))/a/d^2+2*I*f/a/d^2*ln(exp(d*
x+c)-I)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2f\left(\frac{xe^{(dx+c)}}{i\,ade^{(dx+c)}+ad}+\frac{i\,\log\left(\left(e^{(dx+c)}-i\right)e^{(-c)}\right)}{ad^2}+\int\frac{x}{2\left(ae^{(dx+c)}+a\right)}\,dx+\int\frac{x}{2\left(ae^{(dx+c)}-a\right)}\,dx\right)-e\left(\frac{\log\left(e^{(-dx-c)}+\right.}{ad}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 2*f*(x*e^(d*x + c)/(I*a*d*e^(d*x + c) + a*d) + I*log((e^(d*x + c) - I)*e^(-
c))/(a*d^2) + integrate(1/2*x/(a*e^(d*x + c) + a), x) + integrate(1/2*x/(a*
e^(d*x + c) - a), x)) - e*(log(e^(-d*x - c) + 1)/(a*d) - log(e^(-d*x - c) -
 1)/(a*d) - 2/((a*e^(-d*x - c) + I*a)*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{e+f\,x}{\sinh\left(c+d\,x\right)\,\left(a+a\sinh\left(c+d\,x\right)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sinh(c + d*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)/(sinh(c + d*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int\frac{e\operatorname{csch}(c+dx)}{\sinh(c+dx)-i}\,dx+\int\frac{fx\operatorname{csch}(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e*csch(c + d*x)/(sinh(c + d*x) - I), x) + Integral(f*x*csch(c
+ d*x)/(sinh(c + d*x) - I), x))/a
```

3.208 $\int \frac{\text{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=41

$$-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{\cosh(c+dx)}{d(a+ia\sinh(c+dx))}$$

```
[Out] -arctanh(cosh(d*x+c))/a/d+cosh(d*x+c)/d/(a+I*a*sinh(d*x+c))
```

Rubi [A] time = 0.06, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2747, 3770, 2648}

$$-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{\cosh(c+dx)}{d(a+ia\sinh(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[Csch[c + d*x]/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] -(ArcTanh[Cosh[c + d*x]]/(a*d)) + Cosh[c + d*x]/(d*(a + I*a*Sinh[c + d*x]))
```

Rule 2648

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> -Simp[Cos[c +
 d*x]/(d*(b + a*Sin[c + d*x])), x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b
^2, 0]
```

Rule 2747

```
Int[1/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (
f_.)*(x_)])), x_Symbol] :> Dist[b/(b*c - a*d), Int[1/(a + b*Sin[e + f*x]),
x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*Sin[e + f*x]), x], x] /; FreeQ[{a
, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\operatorname{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\left(i\int \frac{1}{a+ia\sinh(c+dx)}\,dx\right) + \frac{\int \operatorname{csch}(c+dx)\,dx}{a}$$
$$= -\frac{\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{\cosh(c+dx)}{d(a+ia\sinh(c+dx))}$$

Mathematica [A] time = 0.06, size = 52, normalized size = 1.27

$$-\frac{\operatorname{sech}(c+dx)\left(i\sinh(c+dx)+\sqrt{\cosh^2(c+dx)}\,\tanh^{-1}\left(\sqrt{\cosh^2(c+dx)}\right)-1\right)}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csch[c + d*x]/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] -((Sech[c + d*x]*(-1 + ArcTanh[Sqrt[Cosh[c + d*x]^2]]*Sqrt[Cosh[c + d*x]^2]
 + I*Sinh[c + d*x]))/(a*d))
```

fricas [A] time = 1.60, size = 57, normalized size = 1.39

$$-\frac{\left(e^{(dx+c)}-i\right)\log\left(e^{(dx+c)}+1\right)-\left(e^{(dx+c)}-i\right)\log\left(e^{(dx+c)}-1\right)-2}{ade^{(dx+c)}-i\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -((e^(d*x + c) - I)*log(e^(d*x + c) + 1) - (e^(d*x + c) - I)*log(e^(d*x + c
) - 1) - 2)/(a*d*e^(d*x + c) - I*a*d)
```

giac [A] time = 0.27, size = 48, normalized size = 1.17

$$-\frac{\frac{\log\left(e^{(dx+c)}+1\right)}{a}-\frac{\log\left(e^{(dx+c)}-1\right)}{a}-\frac{2}{a\left(e^{(dx+c)}-i\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -(log(e^(d*x + c) + 1)/a - log(e^(d*x + c) - 1)/a - 2/(a*(e^(d*x + c) - I))
)/d
```

maple [A] time = 0.08, size = 42, normalized size = 1.02

$$-\frac{2i}{da\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -2*I/d/a/(-I+tanh(1/2*d*x+1/2*c))+1/d/a*ln(tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.50, size = 62, normalized size = 1.51

$$-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}+\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}+\frac{2}{\left(ae^{(-dx-c)}+i\,a\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -log(e^(-d*x - c) + 1)/(a*d) + log(e^(-d*x - c) - 1)/(a*d) + 2/((a*e^(-d*x
 - c) + I*a)*d)
```

mupad [B] time = 0.88, size = 56, normalized size = 1.37

$$-\frac{2\,\mathrm{atan}\left(\frac{\mathrm{e}^{d\,x}\,\mathrm{e}^{c}\,\sqrt{-a^2\,d^2}}{a\,d}\right)}{\sqrt{-a^2\,d^2}}+\frac{2}{a\,d\,\left(\mathrm{e}^{c+d\,x}-\mathrm{i}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] 2/(a*d*(exp(c + d*x) - 1i)) - (2*atan((exp(d*x)*exp(c)*(-a^2*d^2)^(1/2))/(a
*d)))/(-a^2*d^2)^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int\frac{\operatorname{csch}(c+dx)}{\sinh(c+dx)-i}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(csch(c + d*x)/(sinh(c + d*x) - I), x)/a
```

3.209 $\int \frac{\operatorname{csch}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=32

$$\operatorname{Int}\left(\frac{\operatorname{csch}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csch[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Csch[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx = \int \frac{\operatorname{csch}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Mathematica [A] time = 46.52, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csch[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Integrate[Csch[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

fricas [A] time = 0.73, size = 0, normalized size = 0.00

$$\frac{\left(-i\,adfx - i\,ade + \left(adfx + ade\right)e^{(dx+c)}\right)\operatorname{integral}\left(\frac{2\left(dfx+de+f\right)e^{(2\,dx+2\,c)}+\left(-2i\,dfx-2i\,de\right)e^{(}}{i\,adf^2x^2+2i\,adefx+i\,ade^2+\left(adf^2x^2+2\,adefx+ade^2\right)e^{(3\,dx+3\,c)}+\left(-i\,adf^2x^2-2i\,adefx\right.}\right.}{-i\,adfx - i\,ade + \left(adfx + ade\right)e^{(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((-I*a*d*f*x - I*a*d*e + (a*d*f*x + a*d*e)*e^(d*x + c))*integral((2*(d*f*x
+ d*e + f)*e^(2*d*x + 2*c) + (-2*I*d*f*x - 2*I*d*e)*e^(d*x + c) - 2*f)/(I*a
*d*f^2*x^2 + 2*I*a*d*e*f*x + I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e
^2)*e^(3*d*x + 3*c) + (-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2)*e^(2*d*x
 + 2*c) - (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*e^(d*x + c)), x) + 2)/(-I*a
*d*f*x - I*a*d*e + (a*d*f*x + a*d*e)*e^(d*x + c))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx + c)}{(fx + e)(i\,a \sinh(dx + c) + a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(csch(d*x + c)/((f*x + e)*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.97, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx + c)}{(fx + e)\,(a + ia \sinh(dx + c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$2\,f \int \frac{1}{-i\,adf^2x^2 - 2i\,adefx - i\,ade^2 + \left(adf^2x^2e^c + 2\,adefxe^c + ade^2e^c\right)e^{(dx)}}\,dx + \frac{2}{-i\,adfx - i\,ade + \left(adfxe^c + adee^{c}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 2*f*integrate(1/(-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2 + (a*d*f^2*x^2*
e^c + 2*a*d*e*f*x*e^c + a*d*e^2*e^c)*e^(d*x)), x) + 2/(-I*a*d*f*x - I*a*d*e
 + (a*d*f*x*e^c + a*d*e*e^c)*e^(d*x)) + 2*integrate(1/2/(a*f*x + a*e + (a*f
*x*e^c + a*e*e^c)*e^(d*x)), x) + 2*integrate(-1/2/(a*f*x + a*e - (a*f*x*e^c
 + a*e*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sinh\left(c+d\,x\right)\,\left(e+f\,x\right)\,\left(a+a\sinh\left(c+d\,x\right)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)*(e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(1/(sinh(c + d*x)*(e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int \frac{\operatorname{csch}\left(c+dx\right)}{e\sinh\left(c+dx\right)-ie+fx\sinh\left(c+dx\right)-ifx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(csch(c + d*x)/(e*sinh(c + d*x) - I*e + f*x*sinh(c + d*x) - I*f*
x), x)/a
```

3.210 $\int \frac{\text{csch}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{\text{csch}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{csch}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csch[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] Defer[Int][Csch[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\text{csch}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx = \int \frac{\text{csch}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Mathematica [A] time = 57.45, size = 0, normalized size = 0.00

$$\int \frac{\text{csch}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csch[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] Integrate[Csch[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\frac{\left(-i\,adf^2x^2 - 2i\,adefx - i\,ade^2 + \left(adf^2x^2 + 2\,adefx + ade^2\right)e^{(dx+c)}\right)\text{integral}\left(\frac{}{i\,adf^3x^3+3i\,adef^2x^2+3i\,ade^2fx+i\,ade^3+\left(adf^3x^3\right.}\right.}{-i\,adf^2x^2 - 2i\,adefx - i\,ade^2 + \left(a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x +
 a*d*e^2)*e^(d*x + c))*integral((2*(d*f*x + d*e + 2*f)*e^(2*d*x + 2*c) + (-
2*I*d*f*x - 2*I*d*e)*e^(d*x + c) - 4*f)/(I*a*d*f^3*x^3 + 3*I*a*d*e*f^2*x^2
+ 3*I*a*d*e^2*f*x + I*a*d*e^3 + (a*d*f^3*x^3 + 3*a*d*e*f^2*x^2 + 3*a*d*e^2*
f*x + a*d*e^3)*e^(3*d*x + 3*c) + (-I*a*d*f^3*x^3 - 3*I*a*d*e*f^2*x^2 - 3*I*
a*d*e^2*f*x - I*a*d*e^3)*e^(2*d*x + 2*c) - (a*d*f^3*x^3 + 3*a*d*e*f^2*x^2 +
 3*a*d*e^2*f*x + a*d*e^3)*e^(d*x + c)), x) + 2)/(-I*a*d*f^2*x^2 - 2*I*a*d*e
*f*x - I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*e^(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 1.86, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(dx+c\right)}{\left(fx+e\right)^{2}\left(a+ia\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$4\,f\int \frac{1}{-i\,adf^{3}x^{3}-3i\,adef^{2}x^{2}-3i\,ade^{2}fx-i\,ade^{3}+\left(adf^{3}x^{3}e^{c}+3\,adef^{2}x^{2}e^{c}+3\,ade^{2}fxe^{c}+ade^{3}e^{c}\right)e^{(dx)}}\,dx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 4*f*integrate(1/(-I*a*d*f^3*x^3 - 3*I*a*d*e*f^2*x^2 - 3*I*a*d*e^2*f*x - I*a
*d*e^3 + (a*d*f^3*x^3*e^c + 3*a*d*e*f^2*x^2*e^c + 3*a*d*e^2*f*x*e^c + a*d*e
^3*e^c)*e^(d*x)), x) + 2/(-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2 + (a*d
*f^2*x^2*e^c + 2*a*d*e*f*x*e^c + a*d*e^2*e^c)*e^(d*x)) + 2*integrate(1/2/(a
```

```
*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2*e^c + 2*a*e*f*x*e^c + a*e^2*e^c)*
e^(d*x)), x) + 2*integrate(-1/2/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 - (a*f^2*x^2
*e^c + 2*a*e*f*x*e^c + a*e^2*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sinh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2\,\left(a+a\,\sinh\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(1/(sinh(c + d*x)*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.211 $\int \frac{(e+fx)^3\operatorname{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=419

$$-\frac{12f^3\text{Li}_3\left(-ie^{c+dx}\right)}{ad^4}-\frac{3f^3\text{Li}_3\left(e^{2(c+dx)}\right)}{2ad^4}+\frac{6if^3\text{Li}_4\left(-e^{c+dx}\right)}{ad^4}-\frac{6if^3\text{Li}_4\left(e^{c+dx}\right)}{ad^4}+\frac{12f^2(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}+\frac{3f^2(e+\cdots}{\cdots}$$

```
[Out] -2*(f*x+e)^3/a/d-6*I*f^2*(f*x+e)*polylog(3,-exp(d*x+c))/a/d^3-(f*x+e)^3*cot
h(d*x+c)/a/d+6*f*(f*x+e)^2*ln(1+I*exp(d*x+c))/a/d^2+3*f*(f*x+e)^2*ln(1-exp(
2*d*x+2*c))/a/d^2-3*I*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a/d^2+12*f^2*(f*x+e
)*polylog(2,-I*exp(d*x+c))/a/d^3-6*I*f^3*polylog(4,exp(d*x+c))/a/d^4+3*f^2*
(f*x+e)*polylog(2,exp(2*d*x+2*c))/a/d^3+3*I*f*(f*x+e)^2*polylog(2,-exp(d*x+
c))/a/d^2-12*f^3*polylog(3,-I*exp(d*x+c))/a/d^4+2*I*(f*x+e)^3*arctanh(exp(d
*x+c))/a/d-3/2*f^3*polylog(3,exp(2*d*x+2*c))/a/d^4+6*I*f^3*polylog(4,-exp(d
*x+c))/a/d^4+6*I*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a/d^3-(f*x+e)^3*tanh(1/2
*c+1/4*I*Pi+1/2*d*x)/a/d
```

Rubi [A] time = 0.81, antiderivative size = 419, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 10, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.323, Rules used = {5575, 4184, 3716, 2190, 2531, 2282, 6589, 4182, 6609, 3318}

$$\frac{12f^2(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}+\frac{3f^2(e+fx)\text{PolyLog}\left(2,e^{2(c+dx)}\right)}{ad^3}-\frac{6if^2(e+fx)\text{PolyLog}\left(3,-e^{c+dx}\right)}{ad^3}+\frac{6if^2(e\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csch[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)^3)/(a*d) + ((2*I)*(e + f*x)^3*ArcTanh[E^(c + d*x)])/(a*d) - (
(e + f*x)^3*Coth[c + d*x])/(a*d) + (6*f*(e + f*x)^2*Log[1 + I*E^(c + d*x)])
/(a*d^2) + (3*f*(e + f*x)^2*Log[1 - E^(2*(c + d*x))])/(a*d^2) + ((3*I)*f*(e
 + f*x)^2*PolyLog[2, -E^(c + d*x)])/(a*d^2) + (12*f^2*(e + f*x)*PolyLog[2,
(-I)*E^(c + d*x)])/(a*d^3) - ((3*I)*f*(e + f*x)^2*PolyLog[2, E^(c + d*x)])/
(a*d^2) + (3*f^2*(e + f*x)*PolyLog[2, E^(2*(c + d*x))])/(a*d^3) - ((6*I)*f^
2*(e + f*x)*PolyLog[3, -E^(c + d*x)])/(a*d^3) - (12*f^3*PolyLog[3, (-I)*E^(
c + d*x)])/(a*d^4) + ((6*I)*f^2*(e + f*x)*PolyLog[3, E^(c + d*x)])/(a*d^3)
- (3*f^3*PolyLog[3, E^(2*(c + d*x))])/(2*a*d^4) + ((6*I)*f^3*PolyLog[4, -E^
(c + d*x)])/(a*d^4) - ((6*I)*f^3*PolyLog[4, E^(c + d*x)])/(a*d^4) - ((e + f
*x)^3*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\left(i\int \frac{(e+fx)^3\text{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx\right)+\frac{\int (e+fx)^3\text{csch}^2(c+dx)\,dx}{a}$$

$$= -\frac{(e+fx)^3\coth(c+dx)}{ad}-\frac{i\int (e+fx)^3\text{csch}(c+dx)\,dx}{a}+\frac{(3f)\int (e+fx)^2\coth(c}{ad}$$

$$= -\frac{(e+fx)^3}{ad}+\frac{2i(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^3\coth(c+dx)}{ad}-\frac{\int (e+fx)^3\,\text{c}}{}$$

$$= -\frac{(e+fx)^3}{ad}+\frac{2i(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^3\coth(c+dx)}{ad}+\frac{3f(e+fx)^2}{}$$

$$= -\frac{2(e+fx)^3}{ad}+\frac{2i(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^3\coth(c+dx)}{ad}+\frac{3f(e+fx)}{}$$

$$= -\frac{2(e+fx)^3}{ad}+\frac{2i(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^3\coth(c+dx)}{ad}+\frac{6f(e+fx)}{}$$

$$= -\frac{2(e+fx)^3}{ad}+\frac{2i(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^3\coth(c+dx)}{ad}+\frac{6f(e+fx)}{}$$

$$= -\frac{2(e+fx)^3}{ad}+\frac{2i(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^3\coth(c+dx)}{ad}+\frac{6f(e+fx)}{}$$

$$= -\frac{2(e+fx)^3}{ad}+\frac{2i(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^3\coth(c+dx)}{ad}+\frac{6f(e+fx)}{}$$

Mathematica [B] time = 17.15, size = 1042, normalized size = 2.49

$$-\frac{2i\left(d^3(e+fx)^3+3d^2\left(1+ie^c\right)f\log\left(1-ie^{-c-dx}\right)(e+fx)^2+6i\left(i-e^c\right)f^2\left(d(e+fx)\text{Li}_2\left(ie^{-c-dx}\right)+f\text{Li}_3\left(ie^{-c-dx}\right)\right.\right.}{ad^4\left(-i+e^c\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Csch[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-2*I)*(d^3*(e + f*x)^3 + 3*d^2*(1 + I*E^c)*f*(e + f*x)^2*Log[1 - I*E^(-c
- d*x)] + (6*I)*(I - E^c)*f^2*(d*(e + f*x)*PolyLog[2, I*E^(-c - d*x)] + f*P
olyLog[3, I*E^(-c - d*x)])))/(a*d^4*(-I + E^c)) + (-(d^3*(e + f*x)^3*(-1 +
```

```
Coth[c])) + I*d^2*e^2*(d*e + (3*I)*f)*(d*x - Log[1 - Cosh[c + d*x] - Sinh[c
 + d*x]]) + 3*d^2*e*f*(I*d*e + 2*f)*x*Log[1 + Cosh[c + d*x] - Sinh[c + d*x]
] + 3*d^2*f^2*(I*d*e + f)*x^2*Log[1 + Cosh[c + d*x] - Sinh[c + d*x]] + I*d^
3*f^3*x^3*Log[1 + Cosh[c + d*x] - Sinh[c + d*x]] + 3*d^2*e*f*((-I)*d*e + 2*
f)*x*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]] + 3*d^2*f^2*((-I)*d*e + f)*x^2*
Log[1 - Cosh[c + d*x] + Sinh[c + d*x]] - I*d^3*f^3*x^3*Log[1 - Cosh[c + d*x
] + Sinh[c + d*x]] - I*d^2*e^2*(d*e - (3*I)*f)*(d*x - Log[1 + Cosh[c + d*x]
 + Sinh[c + d*x]]) + (3*I)*d*e*(d*e + (2*I)*f)*f*PolyLog[2, Cosh[c + d*x] -
 Sinh[c + d*x]] - (3*I)*d*e*(d*e - (2*I)*f)*f*PolyLog[2, -Cosh[c + d*x] + S
inh[c + d*x]] + (6*I)*(d*e + I*f)*f^2*(d*x*PolyLog[2, Cosh[c + d*x] - Sinh[
c + d*x]] + PolyLog[3, Cosh[c + d*x] - Sinh[c + d*x]]) - 6*f^2*(I*d*e + f)*
(d*x*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + PolyLog[3, -Cosh[c + d*x]
 + Sinh[c + d*x]]) + (3*I)*f^3*(d^2*x^2*PolyLog[2, Cosh[c + d*x] - Sinh[c +
 d*x]] + 2*(d*x*PolyLog[3, Cosh[c + d*x] - Sinh[c + d*x]] + PolyLog[4, Cosh
[c + d*x] - Sinh[c + d*x]])) - (3*I)*f^3*(d^2*x^2*PolyLog[2, -Cosh[c + d*x]
 + Sinh[c + d*x]] + 2*(d*x*PolyLog[3, -Cosh[c + d*x] + Sinh[c + d*x]] + Pol
yLog[4, -Cosh[c + d*x] + Sinh[c + d*x]])))/(a*d^4) + (Sech[c/2]*Sech[c/2 +
(d*x)/2]*(-(e^3*Sinh[(d*x)/2]) - 3*e^2*f*x*Sinh[(d*x)/2] - 3*e*f^2*x^2*Sinh
[(d*x)/2] - f^3*x^3*Sinh[(d*x)/2]))/(2*a*d) + (Csch[c/2]*Csch[c/2 + (d*x)/2
]*(e^3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(d*x)/2] + 3*e*f^2*x^2*Sinh[(d*x)/2]
+ f^3*x^3*Sinh[(d*x)/2]))/(2*a*d) - (2*(e^3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[
(d*x)/2] + 3*e*f^2*x^2*Sinh[(d*x)/2] + f^3*x^3*Sinh[(d*x)/2]))/(a*d*(Cosh[c
/2] + I*Sinh[c/2])*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2]))
```

fricas [C] time = 0.98, size = 2577, normalized size = 6.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (4*I*d^3*e^3 - 12*I*c*d^2*e^2*f + 12*I*c^2*d*e*f^2 - 4*I*c^3*f^3 + (12*I*d*
f^3*x + 12*I*d*e*f^2 + 12*(d*f^3*x + d*e*f^2)*e^(3*d*x + 3*c) + (-12*I*d*f^
3*x - 12*I*d*e*f^2)*e^(2*d*x + 2*c) - 12*(d*f^3*x + d*e*f^2)*e^(d*x + c))*d
ilog(-I*e^(d*x + c)) - (3*d^2*f^3*x^2 + 3*d^2*e^2*f - 6*I*d*e*f^2 + (6*d^2*
e*f^2 - 6*I*d*f^3)*x - (3*I*d^2*f^3*x^2 + 3*I*d^2*e^2*f + 6*d*e*f^2 - 6*(-I
*d^2*e*f^2 - d*f^3)*x)*e^(3*d*x + 3*c) - (3*d^2*f^3*x^2 + 3*d^2*e^2*f - 6*I
*d*e*f^2 + (6*d^2*e*f^2 - 6*I*d*f^3)*x)*e^(2*d*x + 2*c) - (-3*I*d^2*f^3*x^2
 - 3*I*d^2*e^2*f - 6*d*e*f^2 - 6*(I*d^2*e*f^2 + d*f^3)*x)*e^(d*x + c))*dilo
g(-e^(d*x + c)) + (3*d^2*f^3*x^2 + 3*d^2*e^2*f + 6*I*d*e*f^2 + (6*d^2*e*f^2
 + 6*I*d*f^3)*x + (-3*I*d^2*f^3*x^2 - 3*I*d^2*e^2*f + 6*d*e*f^2 - 6*(I*d^2*
e*f^2 - d*f^3)*x)*e^(3*d*x + 3*c) - (3*d^2*f^3*x^2 + 3*d^2*e^2*f + 6*I*d*e*
f^2 + (6*d^2*e*f^2 + 6*I*d*f^3)*x)*e^(2*d*x + 2*c) + (3*I*d^2*f^3*x^2 + 3*I
*d^2*e^2*f - 6*d*e*f^2 - 6*(-I*d^2*e*f^2 + d*f^3)*x)*e^(d*x + c))*dilog(e^(
```

```
d*x + c)) - 4*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*
f - 3*c^2*d*e*f^2 + c^3*f^3)*e^(3*d*x + 3*c) + (2*I*d^3*f^3*x^3 + 6*I*d^3*e
*f^2*x^2 + 6*I*d^3*e^2*f*x - 2*I*d^3*e^3 + 12*I*c*d^2*e^2*f - 12*I*c^2*d*e*
f^2 + 4*I*c^3*f^3)*e^(2*d*x + 2*c) + 2*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d
^3*e^2*f*x - d^3*e^3 + 6*c*d^2*e^2*f - 6*c^2*d*e*f^2 + 2*c^3*f^3)*e^(d*x +
c) - (d^3*f^3*x^3 + d^3*e^3 - 3*I*d^2*e^2*f + (3*d^3*e*f^2 - 3*I*d^2*f^3)*x
^2 + 3*(d^3*e^2*f - 2*I*d^2*e*f^2)*x - (I*d^3*f^3*x^3 + I*d^3*e^3 + 3*d^2*e
^2*f - 3*(-I*d^3*e*f^2 - d^2*f^3)*x^2 + (3*I*d^3*e^2*f + 6*d^2*e*f^2)*x)*e^
(3*d*x + 3*c) - (d^3*f^3*x^3 + d^3*e^3 - 3*I*d^2*e^2*f + (3*d^3*e*f^2 - 3*I
*d^2*f^3)*x^2 + 3*(d^3*e^2*f - 2*I*d^2*e*f^2)*x)*e^(2*d*x + 2*c) - (-I*d^3*
f^3*x^3 - I*d^3*e^3 - 3*d^2*e^2*f - 3*(I*d^3*e*f^2 + d^2*f^3)*x^2 + (-3*I*d
^3*e^2*f - 6*d^2*e*f^2)*x)*e^(d*x + c))*log(e^(d*x + c) + 1) + (6*I*d^2*e^2
*f - 12*I*c*d*e*f^2 + 6*I*c^2*f^3 + 6*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*e
^(3*d*x + 3*c) + (-6*I*d^2*e^2*f + 12*I*c*d*e*f^2 - 6*I*c^2*f^3)*e^(2*d*x +
 2*c) - 6*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*e^(d*x + c))*log(e^(d*x + c)
- I) + (d^3*e^3 - (3*c - 3*I)*d^2*e^2*f + 3*(c^2 - 2*I*c)*d*e*f^2 - (c^3 -
3*I*c^2)*f^3 + (-I*d^3*e^3 - 3*(-I*c - 1)*d^2*e^2*f + (-3*I*c^2 - 6*c)*d*e*
f^2 + (I*c^3 + 3*c^2)*f^3)*e^(3*d*x + 3*c) - (d^3*e^3 - (3*c - 3*I)*d^2*e^2
*f + 3*(c^2 - 2*I*c)*d*e*f^2 - (c^3 - 3*I*c^2)*f^3)*e^(2*d*x + 2*c) + (I*d^
3*e^3 - 3*(I*c + 1)*d^2*e^2*f + (3*I*c^2 + 6*c)*d*e*f^2 + (-I*c^3 - 3*c^2)*
f^3)*e^(d*x + c))*log(e^(d*x + c) - 1) + (6*I*d^2*f^3*x^2 + 12*I*d^2*e*f^2*
x + 12*I*c*d*e*f^2 - 6*I*c^2*f^3 + 6*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e
*f^2 - c^2*f^3)*e^(3*d*x + 3*c) + (-6*I*d^2*f^3*x^2 - 12*I*d^2*e*f^2*x - 12
*I*c*d*e*f^2 + 6*I*c^2*f^3)*e^(2*d*x + 2*c) - 6*(d^2*f^3*x^2 + 2*d^2*e*f^2*
x + 2*c*d*e*f^2 - c^2*f^3)*e^(d*x + c))*log(I*e^(d*x + c) + 1) + (d^3*f^3*x
^3 + 3*c*d^2*e^2*f - 3*(c^2 - 2*I*c)*d*e*f^2 + (c^3 - 3*I*c^2)*f^3 + (3*d^3
*e*f^2 + 3*I*d^2*f^3)*x^2 + 3*(d^3*e^2*f + 2*I*d^2*e*f^2)*x + (-I*d^3*f^3*x
^3 - 3*I*c*d^2*e^2*f + (3*I*c^2 + 6*c)*d*e*f^2 + (-I*c^3 - 3*c^2)*f^3 - 3*(
I*d^3*e*f^2 - d^2*f^3)*x^2 + (-3*I*d^3*e^2*f + 6*d^2*e*f^2)*x)*e^(3*d*x + 3
*c) - (d^3*f^3*x^3 + 3*c*d^2*e^2*f - 3*(c^2 - 2*I*c)*d*e*f^2 + (c^3 - 3*I*c
^2)*f^3 + (3*d^3*e*f^2 + 3*I*d^2*f^3)*x^2 + 3*(d^3*e^2*f + 2*I*d^2*e*f^2)*x
)*e^(2*d*x + 2*c) + (I*d^3*f^3*x^3 + 3*I*c*d^2*e^2*f + (-3*I*c^2 - 6*c)*d*e
*f^2 + (I*c^3 + 3*c^2)*f^3 - 3*(-I*d^3*e*f^2 + d^2*f^3)*x^2 + (3*I*d^3*e^2*
f - 6*d^2*e*f^2)*x)*e^(d*x + c))*log(-e^(d*x + c) + 1) + (6*I*f^3*e^(3*d*x
+ 3*c) + 6*f^3*e^(2*d*x + 2*c) - 6*I*f^3*e^(d*x + c) - 6*f^3)*polylog(4, -e
^(d*x + c)) + (-6*I*f^3*e^(3*d*x + 3*c) - 6*f^3*e^(2*d*x + 2*c) + 6*I*f^3*e
^(d*x + c) + 6*f^3)*polylog(4, e^(d*x + c)) - (12*f^3*e^(3*d*x + 3*c) - 12*
I*f^3*e^(2*d*x + 2*c) - 12*f^3*e^(d*x + c) + 12*I*f^3)*polylog(3, -I*e^(d*x
 + c)) + (6*d*f^3*x + 6*d*e*f^2 - 6*I*f^3 + (-6*I*d*f^3*x - 6*I*d*e*f^2 - 6
*f^3)*e^(3*d*x + 3*c) - (6*d*f^3*x + 6*d*e*f^2 - 6*I*f^3)*e^(2*d*x + 2*c) +
 (6*I*d*f^3*x + 6*I*d*e*f^2 + 6*f^3)*e^(d*x + c))*polylog(3, -e^(d*x + c))
- (6*d*f^3*x + 6*d*e*f^2 + 6*I*f^3 - (6*I*d*f^3*x + 6*I*d*e*f^2 - 6*f^3)*e^
(3*d*x + 3*c) - (6*d*f^3*x + 6*d*e*f^2 + 6*I*f^3)*e^(2*d*x + 2*c) - (-6*I*d
*f^3*x - 6*I*d*e*f^2 + 6*f^3)*e^(d*x + c))*polylog(3, e^(d*x + c)))/(a*d^4*
e^(3*d*x + 3*c) - I*a*d^4*e^(2*d*x + 2*c) - a*d^4*e^(d*x + c) + I*a*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [B] time = 0.37, size = 1535, normalized size = 3.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
[Out] 6/a/d^2*e*f^2*ln(exp(d*x+c)+1)*x+I/a/d*f^3*ln(exp(d*x+c)+1)*x^3+I/a/d^4*f^3
*c^3*ln(exp(d*x+c)-1)+6*I*f^3*polylog(4,-exp(d*x+c))/a/d^4-6*I*f^3*polylog(
4,exp(d*x+c))/a/d^4+24/a/d^3*f^2*e*c*ln(exp(d*x+c))+12/a/d^2*f^2*e*ln(1+I*e
xp(d*x+c))*x+12/a/d^3*f^2*e*ln(1+I*exp(d*x+c))*c-24/a/d^2*f^2*e*c*x-12/a/d^
3*f^2*e*c*ln(exp(d*x+c)-I)-12*f^3*polylog(3,-I*exp(d*x+c))/a/d^4-6*f^3*poly
log(3,-exp(d*x+c))/a/d^4-6*f^3*polylog(3,exp(d*x+c))/a/d^4-2*I*(f^3*x^3*exp
(2*d*x+2*c)+3*e*f^2*x^2*exp(2*d*x+2*c)+3*e^2*f*x*exp(2*d*x+2*c)-2*x^3*f^3-I
*exp(d*x+c)*f^3*x^3+e^3*exp(2*d*x+2*c)-6*e*f^2*x^2-3*I*exp(d*x+c)*e*f^2*x^2
-6*e^2*f*x-3*I*exp(d*x+c)*e^2*f*x-2*e^3-I*exp(d*x+c)*e^3)/(exp(2*d*x+2*c)-1
)/(exp(d*x+c)-I)/d/a-4/a/d*f^3*x^3+8/a/d^4*f^3*c^3+3*I/a/d*e*f^2*ln(exp(d*x
+c)+1)*x^2+6*I/a/d^2*e*f^2*polylog(2,-exp(d*x+c))*x-3*I/a/d*e*f^2*ln(1-exp(
d*x+c))*x^2+3*I/a/d^3*e*f^2*ln(1-exp(d*x+c))*c^2-6*I/a/d^2*e*f^2*polylog(2,
exp(d*x+c))*x+3*I/a/d*ln(exp(d*x+c)+1)*e^2*f*x-3*I/a/d*ln(1-exp(d*x+c))*e^2
*f*x-3*I/a/d^3*e*f^2*c^2*ln(exp(d*x+c)-1)-3*I/a/d^2*ln(1-exp(d*x+c))*c*e^2*
f+3*I/a/d^2*e^2*f*c*ln(exp(d*x+c)-1)-6/a/d^3*e*f^2*c*ln(exp(d*x+c)-1)+6/a/d
^2*e*f^2*ln(1-exp(d*x+c))*x+6/a/d^3*e*f^2*ln(1-exp(d*x+c))*c+3*I/a/d^2*e^2*
f*polylog(2,-exp(d*x+c))-3*I/a/d^2*e^2*f*polylog(2,exp(d*x+c))-I/a/d^4*f^3*
c^3*ln(1-exp(d*x+c))+3*I/a/d^2*f^3*polylog(2,-exp(d*x+c))*x^2-6*I/a/d^3*f^3
*polylog(3,-exp(d*x+c))*x-I/a/d*f^3*ln(1-exp(d*x+c))*x^3-3*I/a/d^2*f^3*poly
log(2,exp(d*x+c))*x^2+6*I/a/d^3*f^3*polylog(3,exp(d*x+c))*x-6*I/a/d^3*e*f^2
*polylog(3,-exp(d*x+c))+6*I/a/d^3*e*f^2*polylog(3,exp(d*x+c))+12/a/d^3*f^3*
polylog(2,-I*exp(d*x+c))*x+6/a/d^4*f^3*c^2*ln(exp(d*x+c)-I)-12/a/d^2*f*ln(e
xp(d*x+c))*e^2+12/a/d^3*f^3*c^2*x+6/a/d^2*f*ln(exp(d*x+c)-I)*e^2-12/a/d^3*f
^2*e*c^2-12/a/d*f^2*e*x^2+12/a/d^3*f^2*e*polylog(2,-I*exp(d*x+c))-12/a/d^4*
f^3*c^2*ln(exp(d*x+c))+6/a/d^2*f^3*ln(1+I*exp(d*x+c))*x^2-6/a/d^4*f^3*ln(1+
I*exp(d*x+c))*c^2+3/a/d^4*f^3*c^2*ln(exp(d*x+c)-1)+6/a/d^3*e*f^2*polylog(2,
-exp(d*x+c))+6/a/d^3*e*f^2*polylog(2,exp(d*x+c))+3/a/d^2*e^2*f*ln(exp(d*x+c
)+1)+3/a/d^2*e^2*f*ln(exp(d*x+c)-1)+3/a/d^2*f^3*ln(exp(d*x+c)+1)*x^2+3/a/d^
```

```
2*f^3*ln(1-exp(d*x+c))*x^2-3/a/d^4*f^3*ln(1-exp(d*x+c))*c^2+6/a/d^3*f^3*pol
ylog(2,exp(d*x+c))*x+6/a/d^3*f^3*polylog(2,-exp(d*x+c))*x+I/a/d*e^3*ln(exp(
d*x+c)+1)-I/a/d*e^3*ln(exp(d*x+c)-1)
```

maxima [B] time = 1.07, size = 938, normalized size = 2.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -e^3*(4*(e^(-d*x - c) - I*e^(-2*d*x - 2*c) + 2*I)/((2*a*e^(-d*x - c) - 2*I*
a*e^(-2*d*x - 2*c) - 2*a*e^(-3*d*x - 3*c) + 2*I*a)*d) - I*log(e^(-d*x - c)
+ 1)/(a*d) + I*log(e^(-d*x - c) - 1)/(a*d)) - 12*e^2*f*x/(a*d) + 3*e^2*f*lo
g(e^(d*x + c) + 1)/(a*d^2) + 6*e^2*f*log(e^(d*x + c) - I)/(a*d^2) + 3*e^2*f
*log(e^(d*x + c) - 1)/(a*d^2) + (4*I*f^3*x^3 + 12*I*e*f^2*x^2 + 12*I*e^2*f*
x - (2*I*f^3*x^3*e^(2*c) + 6*I*e*f^2*x^2*e^(2*c) + 6*I*e^2*f*x*e^(2*c))*e^(
2*d*x) - 2*(f^3*x^3*e^c + 3*e*f^2*x^2*e^c + 3*e^2*f*x*e^c)*e^(d*x))/(a*d*e^
(3*d*x + 3*c) - I*a*d*e^(2*d*x + 2*c) - a*d*e^(d*x + c) + I*a*d) + 12*(d*x*
log(I*e^(d*x + c) + 1) + dilog(-I*e^(d*x + c)))*e*f^2/(a*d^3) + I*(d^3*x^3*
log(e^(d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^
(d*x + c)) + 6*polylog(4, -e^(d*x + c)))*f^3/(a*d^4) - I*(d^3*x^3*log(-e^(d
*x + c) + 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(d*x + c))
 + 6*polylog(4, e^(d*x + c)))*f^3/(a*d^4) + 6*(d^2*x^2*log(I*e^(d*x + c) +
1) + 2*d*x*dilog(-I*e^(d*x + c)) - 2*polylog(3, -I*e^(d*x + c)))*f^3/(a*d^4
) + (3*I*d*e^2*f + 6*e*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c))
)/(a*d^3) - (3*I*d*e^2*f - 6*e*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d
*x + c)))/(a*d^3) + (d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c
)) - 2*polylog(3, -e^(d*x + c)))*(3*I*d*e*f^2 + 3*f^3)/(a*d^4) - (d^2*x^2*l
og(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c))
)*(3*I*d*e*f^2 - 3*f^3)/(a*d^4) - 1/4*(I*d^4*f^3*x^4 + (4*I*d*e*f^2 + 4*f^3
)*d^3*x^3 + (6*I*d^2*e^2*f + 12*d*e*f^2)*d^2*x^2)/(a*d^4) + 1/4*(I*d^4*f^3*
x^4 + (4*I*d*e*f^2 - 4*f^3)*d^3*x^3 + (6*I*d^2*e^2*f - 12*d*e*f^2)*d^2*x^2)
/(a*d^4) - 2*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2)/(a*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{{\mathrm{sinh}\left(c+d\,x\right)}^2\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sinh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)^3/(sinh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csch(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
[Out] Timed out
```

3.212 $\int \frac{(e+fx)^2\mathbf{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=296

$$\frac{4f^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}+\frac{f^2\text{Li}_2\left(e^{2(c+dx)}\right)}{ad^3}-\frac{2if^2\text{Li}_3\left(-e^{c+dx}\right)}{ad^3}+\frac{2if^2\text{Li}_3\left(e^{c+dx}\right)}{ad^3}+\frac{2if(e+fx)\text{Li}_2\left(-e^{c+dx}\right)}{ad^2}-\frac{2if(e+fx)\text{Li}_2\left(\right.}{ad^2}$$

```
[Out] -2*(f*x+e)^2/a/d+2*I*(f*x+e)^2*arctanh(exp(d*x+c))/a/d-(f*x+e)^2*coth(d*x+c
)/a/d+4*f*(f*x+e)*ln(1+I*exp(d*x+c))/a/d^2+2*f*(f*x+e)*ln(1-exp(2*d*x+2*c))
/a/d^2+2*I*f*(f*x+e)*polylog(2,-exp(d*x+c))/a/d^2+4*f^2*polylog(2,-I*exp(d*
x+c))/a/d^3-2*I*f*(f*x+e)*polylog(2,exp(d*x+c))/a/d^2+f^2*polylog(2,exp(2*d
*x+2*c))/a/d^3-2*I*f^2*polylog(3,-exp(d*x+c))/a/d^3+2*I*f^2*polylog(3,exp(d
*x+c))/a/d^3-(f*x+e)^2*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a/d
```

Rubi [A] time = 0.58, antiderivative size = 296, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.355, Rules used = {5575, 4184, 3716, 2190, 2279, 2391, 4182, 2531, 2282, 6589, 3318}

$$\frac{2if(e+fx)\text{PolyLog}\left(2,-e^{c+dx}\right)}{ad^2}-\frac{2if(e+fx)\text{PolyLog}\left(2,e^{c+dx}\right)}{ad^2}+\frac{4f^2\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}+\frac{f^2\text{PolyLog}\left(2,e^{2(c+}\right.}{ad^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)^2)/(a*d) + ((2*I)*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d) - (
(e + f*x)^2*Coth[c + d*x])/(a*d) + (4*f*(e + f*x)*Log[1 + I*E^(c + d*x)])/(
a*d^2) + (2*f*(e + f*x)*Log[1 - E^(2*(c + d*x))])/(a*d^2) + ((2*I)*f*(e + f
*x)*PolyLog[2, -E^(c + d*x)])/(a*d^2) + (4*f^2*PolyLog[2, (-I)*E^(c + d*x)]
)/(a*d^3) - ((2*I)*f*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a*d^2) + (f^2*Poly
Log[2, E^(2*(c + d*x))])/(a*d^3) - ((2*I)*f^2*PolyLog[3, -E^(c + d*x)])/(a*
d^3) + ((2*I)*f^2*PolyLog[3, E^(c + d*x)])/(a*d^3) - ((e + f*x)^2*Tanh[c/2
+ (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
```

```
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\left(i\int \frac{(e+fx)^2\text{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx\right)+\frac{\int (e+fx)^2\text{csch}^2(c+dx)\,dx}{a}$$

$$= -\frac{(e+fx)^2\coth(c+dx)}{ad}-\frac{i\int (e+fx)^2\text{csch}(c+dx)\,dx}{a}+\frac{(2f)\int (e+fx)\coth(c$$

$$= -\frac{(e+fx)^2}{ad}+\frac{2i(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^2\coth(c+dx)}{ad}-\frac{\int (e+fx)^2$$

$$= -\frac{(e+fx)^2}{ad}+\frac{2i(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^2\coth(c+dx)}{ad}+\frac{2f(e+fx)$$

$$= -\frac{2(e+fx)^2}{ad}+\frac{2i(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^2\coth(c+dx)}{ad}+\frac{2f(e+fx$$

$$= -\frac{2(e+fx)^2}{ad}+\frac{2i(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^2\coth(c+dx)}{ad}+\frac{4f(e+fx$$

$$= -\frac{2(e+fx)^2}{ad}+\frac{2i(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^2\coth(c+dx)}{ad}+\frac{4f(e+fx$$

$$= -\frac{2(e+fx)^2}{ad}+\frac{2i(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+fx)^2\coth(c+dx)}{ad}+\frac{4f(e+fx$$

Mathematica [B] time = 12.92, size = 715, normalized size = 2.42

$$\frac{2\left(\frac{d(e+fx)\left(2(e^c-i)f\log\left(1-ie^{-c-dx}\right)-id(e+fx)\right)}{e^c-i}-2f^2\text{Li}_2\left(ie^{-c-dx}\right)\right)}{ad^3}+\frac{-i\left(e^{2c}-1\right)d^2f^2x^2\log\left(1-e^{-c-dx}\right)+i\left(e^{2c}-1\right)d^2f^2x^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (2*((d*(e + f*x)*((-I)*d*(e + f*x) + 2*(-I + E^c)*f*Log[1 - I*E^(-c - d*x)]
))/(-I + E^c) - 2*f^2*PolyLog[2, I*E^(-c - d*x)]))/(a*d^3) + (-2*d^2*(e + f
*x)^2 + 2*d*(-1 + E^(2*c))*f*((-I)*d*e + f)*x*Log[1 - E^(-c - d*x)] - I*d^2
*(-1 + E^(2*c))*f^2*x^2*Log[1 - E^(-c - d*x)] + 2*d*(-1 + E^(2*c))*f*(I*d*e
 + f)*x*Log[1 + E^(-c - d*x)] + I*d^2*(-1 + E^(2*c))*f^2*x^2*Log[1 + E^(-c
- d*x)] + I*d*e*(-1 + E^(2*c))*(d*e + (2*I)*f)*(d*x - Log[1 - E^(c + d*x)])
```

```
 + d*e*(1 - E^(2*c))*(I*d*e + 2*f)*(d*x - Log[1 + E^(c + d*x)]) - 2*(-1 + E
^(2*c))*f*(I*d*e + f)*PolyLog[2, -E^(-c - d*x)] + (2*I)*(-1 + E^(2*c))*(d*e
 + I*f)*f*PolyLog[2, E^(-c - d*x)] - (2*I)*(-1 + E^(2*c))*f^2*(d*x*PolyLog[
2, -E^(-c - d*x)] + PolyLog[3, -E^(-c - d*x)]) + (2*I)*(-1 + E^(2*c))*f^2*(
d*x*PolyLog[2, E^(-c - d*x)] + PolyLog[3, E^(-c - d*x)]))/(a*d^3*(-1 + E^(2
*c))) + (Sech[c/2]*Sech[c/2 + (d*x)/2]*(-(e^2*Sinh[(d*x)/2]) - 2*e*f*x*Sinh
[(d*x)/2] - f^2*x^2*Sinh[(d*x)/2]))/(2*a*d) + (Csch[c/2]*Csch[c/2 + (d*x)/2
]*(e^2*Sinh[(d*x)/2] + 2*e*f*x*Sinh[(d*x)/2] + f^2*x^2*Sinh[(d*x)/2]))/(2*a
*d) - (2*(e^2*Sinh[(d*x)/2] + 2*e*f*x*Sinh[(d*x)/2] + f^2*x^2*Sinh[(d*x)/2]
))/(a*d*(Cosh[c/2] + I*Sinh[c/2])*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)
/2]))
```

fricas [C] time = 0.66, size = 1370, normalized size = 4.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (4*I*d^2*e^2 - 8*I*c*d*e*f + 4*I*c^2*f^2 + (4*f^2*e^(3*d*x + 3*c) - 4*I*f^2
*e^(2*d*x + 2*c) - 4*f^2*e^(d*x + c) + 4*I*f^2)*dilog(-I*e^(d*x + c)) - (2*
d*f^2*x + 2*d*e*f - 2*I*f^2 - (2*I*d*f^2*x + 2*I*d*e*f + 2*f^2)*e^(3*d*x +
3*c) - (2*d*f^2*x + 2*d*e*f - 2*I*f^2)*e^(2*d*x + 2*c) - (-2*I*d*f^2*x - 2*
I*d*e*f - 2*f^2)*e^(d*x + c))*dilog(-e^(d*x + c)) + (2*d*f^2*x + 2*d*e*f +
2*I*f^2 + (-2*I*d*f^2*x - 2*I*d*e*f + 2*f^2)*e^(3*d*x + 3*c) - (2*d*f^2*x +
 2*d*e*f + 2*I*f^2)*e^(2*d*x + 2*c) + (2*I*d*f^2*x + 2*I*d*e*f - 2*f^2)*e^(
d*x + c))*dilog(e^(d*x + c)) - 4*(d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c
^2*f^2)*e^(3*d*x + 3*c) + (2*I*d^2*f^2*x^2 + 4*I*d^2*e*f*x - 2*I*d^2*e^2 +
8*I*c*d*e*f - 4*I*c^2*f^2)*e^(2*d*x + 2*c) + 2*(d^2*f^2*x^2 + 2*d^2*e*f*x -
 d^2*e^2 + 4*c*d*e*f - 2*c^2*f^2)*e^(d*x + c) - (d^2*f^2*x^2 + d^2*e^2 - 2*
I*d*e*f + (2*d^2*e*f - 2*I*d*f^2)*x - (I*d^2*f^2*x^2 + I*d^2*e^2 + 2*d*e*f
- 2*(-I*d^2*e*f - d*f^2)*x)*e^(3*d*x + 3*c) - (d^2*f^2*x^2 + d^2*e^2 - 2*I*
d*e*f + (2*d^2*e*f - 2*I*d*f^2)*x)*e^(2*d*x + 2*c) - (-I*d^2*f^2*x^2 - I*d^
2*e^2 - 2*d*e*f - 2*(I*d^2*e*f + d*f^2)*x)*e^(d*x + c))*log(e^(d*x + c) + 1
) + (4*I*d*e*f - 4*I*c*f^2 + 4*(d*e*f - c*f^2)*e^(3*d*x + 3*c) + (-4*I*d*e*
f + 4*I*c*f^2)*e^(2*d*x + 2*c) - 4*(d*e*f - c*f^2)*e^(d*x + c))*log(e^(d*x
+ c) - I) + (d^2*e^2 - (2*c - 2*I)*d*e*f + (c^2 - 2*I*c)*f^2 + (-I*d^2*e^2
- 2*(-I*c - 1)*d*e*f + (-I*c^2 - 2*c)*f^2)*e^(3*d*x + 3*c) - (d^2*e^2 - (2*
c - 2*I)*d*e*f + (c^2 - 2*I*c)*f^2)*e^(2*d*x + 2*c) + (I*d^2*e^2 - 2*(I*c +
 1)*d*e*f + (I*c^2 + 2*c)*f^2)*e^(d*x + c))*log(e^(d*x + c) - 1) + (4*I*d*f
^2*x + 4*I*c*f^2 + 4*(d*f^2*x + c*f^2)*e^(3*d*x + 3*c) + (-4*I*d*f^2*x - 4*
I*c*f^2)*e^(2*d*x + 2*c) - 4*(d*f^2*x + c*f^2)*e^(d*x + c))*log(I*e^(d*x +
c) + 1) + (d^2*f^2*x^2 + 2*c*d*e*f - (c^2 - 2*I*c)*f^2 + (2*d^2*e*f + 2*I*d
*f^2)*x + (-I*d^2*f^2*x^2 - 2*I*c*d*e*f + (I*c^2 + 2*c)*f^2 - 2*(I*d^2*e*f
```

```
- d*f^2)*x)*e^(3*d*x + 3*c) - (d^2*f^2*x^2 + 2*c*d*e*f - (c^2 - 2*I*c)*f^2
+ (2*d^2*e*f + 2*I*d*f^2)*x)*e^(2*d*x + 2*c) + (I*d^2*f^2*x^2 + 2*I*c*d*e*f
 + (-I*c^2 - 2*c)*f^2 - 2*(-I*d^2*e*f + d*f^2)*x)*e^(d*x + c))*log(-e^(d*x
+ c) + 1) + (-2*I*f^2*e^(3*d*x + 3*c) - 2*f^2*e^(2*d*x + 2*c) + 2*I*f^2*e^(
d*x + c) + 2*f^2)*polylog(3, -e^(d*x + c)) + (2*I*f^2*e^(3*d*x + 3*c) + 2*f
^2*e^(2*d*x + 2*c) - 2*I*f^2*e^(d*x + c) - 2*f^2)*polylog(3, e^(d*x + c)))/
(a*d^3*e^(3*d*x + 3*c) - I*a*d^3*e^(2*d*x + 2*c) - a*d^3*e^(d*x + c) + I*a*
d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.25, size = 847, normalized size = 2.86

$$\frac{4f^2 \operatorname{polylog}\left(2,-i e^{dx+c}\right)}{a\,d^3}-\frac{4f^2c^2}{a\,d^3}-\frac{2i\ln\left(1-e^{dx+c}\right)efx}{ad}+\frac{2iefc\ln\left(e^{dx+c}-1\right)}{a\,d^2}+\frac{2i\ln\left(e^{dx+c}+1\right)efx}{ad}-\frac{2i\ln\left(1-e^{d}\right.}{a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 2*I*f^2*polylog(3,exp(d*x+c))/a/d^3-4/a/d^3*f^2*c^2-2*I/a/d^2*ln(1-exp(d*x+
c))*c*e*f+2*I/a/d*ln(exp(d*x+c)+1)*e*f*x-2*I/a/d*ln(1-exp(d*x+c))*e*f*x+2*I
/a/d^2*e*f*c*ln(exp(d*x+c)-1)-2*I*f^2*polylog(3,-exp(d*x+c))/a/d^3+2*I/a/d^
2*f^2*polylog(2,-exp(d*x+c))*x-I/a/d*f^2*ln(1-exp(d*x+c))*x^2-2*I/a/d^2*f^2
*polylog(2,exp(d*x+c))*x-I/a/d^3*f^2*c^2*ln(exp(d*x+c)-1)+2*I/a/d^2*e*f*pol
ylog(2,-exp(d*x+c))-2*I/a/d^2*e*f*polylog(2,exp(d*x+c))+4*f^2*polylog(2,-I*
exp(d*x+c))/a/d^3+2*f^2*polylog(2,-exp(d*x+c))/a/d^3+2*f^2*polylog(2,exp(d*
x+c))/a/d^3-4*f^2*x^2/a/d+I/a/d^3*f^2*c^2*ln(1-exp(d*x+c))+I/a/d*f^2*ln(exp
(d*x+c)+1)*x^2-2*I*(f^2*x^2*exp(2*d*x+2*c)+2*e*f*x*exp(2*d*x+2*c)+e^2*exp(2
*d*x+2*c)-2*x^2*f^2-I*f^2*x^2*exp(d*x+c)-4*e*f*x-2*I*exp(d*x+c)*e*f*x-2*e^2
-I*exp(d*x+c)*e^2)/(exp(2*d*x+2*c)-1)/(exp(d*x+c)-I)/d/a+2/a/d^2*e*f*ln(exp
(d*x+c)-1)+2/a/d^2*f^2*ln(exp(d*x+c)+1)*x+2/a/d^2*f^2*ln(1-exp(d*x+c))*x+2/
a/d^3*f^2*ln(1-exp(d*x+c))*c-2/a/d^3*f^2*c*ln(exp(d*x+c)-1)+2/a/d^2*e*f*ln(
exp(d*x+c)+1)+I/a/d*e^2*ln(exp(d*x+c)+1)-I/a/d*e^2*ln(exp(d*x+c)-1)+4/a/d^2
*f*ln(exp(d*x+c)-I)*e-8/a/d^2*f*ln(exp(d*x+c))*e-8/a/d^2*f^2*c*x+4/a/d^2*f^
2*ln(1+I*exp(d*x+c))*x+4/a/d^3*f^2*ln(1+I*exp(d*x+c))*c-4/a/d^3*f^2*c*ln(ex
p(d*x+c)-I)+8/a/d^3*f^2*c*ln(exp(d*x+c))
```

maxima [B] time = 0.65, size = 603, normalized size = 2.04

$$-e^2\left(\frac{4\left(e^{(-dx-c)}-i\,e^{(-2\,dx-2\,c)}+2i\right)}{\left(2\,ae^{(-dx-c)}-2i\,ae^{(-2\,dx-2\,c)}-2\,ae^{(-3\,dx-3\,c)}+2i\,a\right)d}-\frac{i\,\log\left(e^{(-dx-c)}+1\right)}{ad}+\frac{i\,\log\left(e^{(-dx-c)}-1\right)}{ad}\right)-\frac{2\,f^2x^2}{ad}-\frac{8\,ef}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -e^2*(4*(e^(-d*x - c) - I*e^(-2*d*x - 2*c) + 2*I)/((2*a*e^(-d*x - c) - 2*I*
a*e^(-2*d*x - 2*c) - 2*a*e^(-3*d*x - 3*c) + 2*I*a)*d) - I*log(e^(-d*x - c)
+ 1)/(a*d) + I*log(e^(-d*x - c) - 1)/(a*d)) - 2*f^2*x^2/(a*d) - 8*e*f*x/(a*
d) + (4*I*f^2*x^2 + 8*I*e*f*x - (2*I*f^2*x^2*e^(2*c) + 4*I*e*f*x*e^(2*c))*e
^(2*d*x) - 2*(f^2*x^2*e^c + 2*e*f*x*e^c)*e^(d*x))/(a*d*e^(3*d*x + 3*c) - I*
a*d*e^(2*d*x + 2*c) - a*d*e^(d*x + c) + I*a*d) + 2*e*f*log(e^(d*x + c) + 1)
/(a*d^2) + 4*e*f*log(e^(d*x + c) - I)/(a*d^2) + 2*e*f*log(e^(d*x + c) - 1)/
(a*d^2) + I*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*p
olylog(3, -e^(d*x + c)))*f^2/(a*d^3) - I*(d^2*x^2*log(-e^(d*x + c) + 1) + 2
*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*f^2/(a*d^3) + 4*(d*x*l
og(I*e^(d*x + c) + 1) + dilog(-I*e^(d*x + c)))*f^2/(a*d^3) + (2*I*d*e*f + 2
*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a*d^3) - (2*I*d*e*f
 - 2*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a*d^3) - 1/3*(I
*d^3*f^2*x^3 + (3*I*d*e*f + 3*f^2)*d^2*x^2)/(a*d^3) + 1/3*(I*d^3*f^2*x^3 +
(3*I*d*e*f - 3*f^2)*d^2*x^2)/(a*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^2}{\mathrm{sinh}\left(c+d\,x\right)^2\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sinh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)^2/(sinh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e^2\operatorname{csch}^2(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{f^2x^2\operatorname{csch}^2(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{2efx\operatorname{csch}^2(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e**2*csch(c + d*x)**2/(sinh(c + d*x) - I), x) + Integral(f**2*
x**2*csch(c + d*x)**2/(sinh(c + d*x) - I), x) + Integral(2*e*f*x*csch(c + d
*x)**2/(sinh(c + d*x) - I), x))/a
```

3.213 $\int \frac{(e+fx)\text{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=163

$$\frac{if\text{Li}_2\left(-e^{c+dx}\right)}{ad^2}-\frac{if\text{Li}_2\left(e^{c+dx}\right)}{ad^2}+\frac{f\log(\sinh(c+dx))}{ad^2}+\frac{2f\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}+\frac{2i(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{(e+\ldots}{\ldots}$$

```
[Out] 2*I*(f*x+e)*arctanh(exp(d*x+c))/a/d-(f*x+e)*coth(d*x+c)/a/d+2*f*ln(cosh(1/2
*c+1/4*I*Pi+1/2*d*x))/a/d^2+f*ln(sinh(d*x+c))/a/d^2+I*f*polylog(2,-exp(d*x+
c))/a/d^2-I*f*polylog(2,exp(d*x+c))/a/d^2-(f*x+e)*tanh(1/2*c+1/4*I*Pi+1/2*d
*x)/a/d
```

Rubi [A] time = 0.23, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {5575, 4184, 3475, 4182, 2279, 2391, 3318}

$$\frac{if\text{PolyLog}\left(2,-e^{c+dx}\right)}{ad^2}-\frac{if\text{PolyLog}\left(2,e^{c+dx}\right)}{ad^2}+\frac{f\log(\sinh(c+dx))}{ad^2}+\frac{2f\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}+\frac{2i(e+fx)\tan\ldots}{ad\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((2*I)*(e + f*x)*ArcTanh[E^(c + d*x)])/(a*d) - ((e + f*x)*Coth[c + d*x])/(a
*d) + (2*f*Log[Cosh[c/2 + (I/4)*Pi + (d*x)/2]])/(a*d^2) + (f*Log[Sinh[c + d
*x]])/(a*d^2) + (I*f*PolyLog[2, -E^(c + d*x)])/(a*d^2) - (I*f*PolyLog[2, E^
(c + d*x)])/(a*d^2) - ((e + f*x)*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
```

```
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\text{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\left(i\int \frac{(e+fx)\text{csch}(c+dx)}{a+ia\sinh(c+dx)}\,dx\right) + \frac{\int (e+fx)\text{csch}^2(c+dx)\,dx}{a}$$

$$= -\frac{(e+fx)\coth(c+dx)}{ad} - \frac{i\int (e+fx)\text{csch}(c+dx)\,dx}{a} + \frac{f\int \coth(c+dx)\,dx}{ad} - \int$$

$$= \frac{2i(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{f\log(\sinh(c+dx))}{ad^2} - \frac{\int (e+}{}$$

$$= \frac{2i(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{f\log(\sinh(c+dx))}{ad^2} - \frac{(e+f}{}$$

$$= \frac{2i(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{2f\log\left(\cosh\left(\frac{c}{2}+\frac{i\pi}{4}+\frac{dx}{2}\right)\right)}{ad^2}$$

Mathematica [B] time = 5.22, size = 454, normalized size = 2.79

$$\frac{\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)\left(-4d(e+fx)\sinh\left(\frac{1}{2}(c+dx)\right)-id(e+fx)\sinh\left(\frac{1}{2}(c+dx)\right)\left(\tanh\left(\frac{1}{2}(c+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*(-(d*(e + f*x)*Cosh[(c + d*x)/2]
*(I + Coth[(c + d*x)/2])) + (4*I)*f*ArcTan[Tanh[(c + d*x)/2]]*(Cosh[(c + d*
x)/2] + I*Sinh[(c + d*x)/2]) + 2*f*Log[Cosh[c + d*x]]*(Cosh[(c + d*x)/2] +
I*Sinh[(c + d*x)/2]) + 2*f*Log[Sinh[c + d*x]]*(Cosh[(c + d*x)/2] + I*Sinh[(
c + d*x)/2]) + (2*I)*c*f*Log[Tanh[(c + d*x)/2]]*(Cosh[(c + d*x)/2] + I*Sinh
[(c + d*x)/2]) - (2*I)*f*((c + d*x)*(Log[1 - E^(-c - d*x)] - Log[1 + E^(-c
- d*x)]) + PolyLog[2, -E^(-c - d*x)] - PolyLog[2, E^(-c - d*x)])*(Cosh[(c +
 d*x)/2] + I*Sinh[(c + d*x)/2]) - 4*d*(e + f*x)*Sinh[(c + d*x)/2] + 2*f*(c
+ d*x)*((-I)*Cosh[(c + d*x)/2] + Sinh[(c + d*x)/2]) + 2*d*e*Log[Tanh[(c + d
*x)/2]]*((-I)*Cosh[(c + d*x)/2] + Sinh[(c + d*x)/2]) - I*d*(e + f*x)*Sinh[(
c + d*x)/2]*(-I + Tanh[(c + d*x)/2])))/(2*d^2*(a + I*a*Sinh[c + d*x]))
```

fricas [B] time = 0.55, size = 505, normalized size = 3.10

$$\frac{4ide-2icf+\left(ife^{(3dx+3c)}+fe^{(2dx+2c)}-ife^{(dx+c)}-f\right)\text{Li}_2\left(-e^{(dx+c)}\right)+\left(-ife^{(3dx+3c)}-fe^{(2dx+2c)}+ife^{(dx+c)}+f\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")

[Out] (4*I*d*e - 2*I*c*f + (I*f*e^(3*d*x + 3*c) + f*e^(2*d*x + 2*c) - I*f*e^(d*x + c) - f)*dilog(-e^(d*x + c)) + (-I*f*e^(3*d*x + 3*c) - f*e^(2*d*x + 2*c) + I*f*e^(d*x + c) + f)*dilog(e^(d*x + c)) - 2*(2*d*f*x + c*f)*e^(3*d*x + 3*c) + (2*I*d*f*x - 2*I*d*e + 2*I*c*f)*e^(2*d*x + 2*c) + 2*(d*f*x - d*e + c*f)*e^(d*x + c) - (d*f*x + d*e - (I*d*f*x + I*d*e + f)*e^(3*d*x + 3*c) - (d*f*x + d*e - I*f)*e^(2*d*x + 2*c) - (-I*d*f*x - I*d*e - f)*e^(d*x + c) - I*f)*log(e^(d*x + c) + 1) + (2*f*e^(3*d*x + 3*c) - 2*I*f*e^(2*d*x + 2*c) - 2*f*e^(d*x + c) + 2*I*f)*log(e^(d*x + c) - I) + (d*e - (c - I)*f + (-I*d*e + (I*c + 1)*f)*e^(3*d*x + 3*c) - (d*e - (c - I)*f)*e^(2*d*x + 2*c) + (I*d*e + (-I*c - 1)*f)*e^(d*x + c))*log(e^(d*x + c) - 1) + (d*f*x + c*f + (-I*d*f*x - I*c*f)*e^(3*d*x + 3*c) - (d*f*x + c*f)*e^(2*d*x + 2*c) + (I*d*f*x + I*c*f)*e^(d*x + c))*log(-e^(d*x + c) + 1))/(a*d^2*e^(3*d*x + 3*c) - I*a*d^2*e^(2*d*x + 2*c) - a*d^2*e^(d*x + c) + I*a*d^2)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\operatorname{csch}(dx+c)^2}{i\,a\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")

[Out] integrate((f*x + e)*csch(d*x + c)^2/(I*a*sinh(d*x + c) + a), x)

maple [B] time = 0.25, size = 316, normalized size = 1.94

$$-\frac{2i\left(fx\,e^{2dx+2c}+e\,e^{2dx+2c}-2fx-ie^{dx+c}fx-2e-ie^{dx+c}e\right)}{\left(e^{2dx+2c}-1\right)\left(e^{dx+c}-i\right)da}+\frac{ie\ln\left(e^{dx+c}+1\right)}{da}-\frac{ie\ln\left(e^{dx+c}-1\right)}{da}+\frac{i\ln\left(e^{dx+c}+1\right)}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f*x+e)*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)

[Out] -2*I*(f*x*exp(2*d*x+2*c)+e*exp(2*d*x+2*c)-2*f*x-I*exp(d*x+c)*f*x-2*e-I*exp(d*x+c)*e)/(exp(2*d*x+2*c)-1)/(exp(d*x+c)-I)/d/a+I/d/a*e*ln(exp(d*x+c)+1)-I/d/a*e*ln(exp(d*x+c)-1)+I/d/a*ln(exp(d*x+c)+1)*f*x-I/d/a*ln(1-exp(d*x+c))*f*x-I/d^2/a*ln(1-exp(d*x+c))*c*f+I*f*polylog(2,-exp(d*x+c))/a/d^2-I*f*polylog(2,exp(d*x+c))/a/d^2+2*f/a/d^2*ln(exp(d*x+c)-I)+1/d^2/a*f*ln(exp(d*x+c)+1)-4/d^2/a*f*ln(exp(d*x+c))+1/d^2/a*f*ln(exp(d*x+c)-1)+I/d^2/a*f*c*ln(exp(d*x+c)-1)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(4i\,d\int\frac{x}{4\left(ade^{(dx+c)}+ad\right)}\,dx+4i\,d\int\frac{x}{4\left(ade^{(dx+c)}-ad\right)}\,dx+\frac{4\left(xe^{(3\,dx+3\,c)}-i\,x\right)}{2\,ade^{(3\,dx+3\,c)}-2i\,ade^{(2\,dx+2\,c)}-2\,ade^{(dx+c)}+2i\,a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(4*I*d*integrate(1/4*x/(a*d*e^(d*x + c) + a*d), x) + 4*I*d*integrate(1/4*x
/(a*d*e^(d*x + c) - a*d), x) + 4*(x*e^(3*d*x + 3*c) - I*x)/(2*a*d*e^(3*d*x
+ 3*c) - 2*I*a*d*e^(2*d*x + 2*c) - 2*a*d*e^(d*x + c) + 2*I*a*d) + 2*(d*x +
c)/(a*d^2) - 2*log((e^(d*x + c) - I)*e^(-c))/(a*d^2) - log(e^(d*x + c) + 1)
/(a*d^2) - log(e^(d*x + c) - 1)/(a*d^2))*f - e*(4*(e^(-d*x - c) - I*e^(-2*d
*x - 2*c) + 2*I)/((2*a*e^(-d*x - c) - 2*I*a*e^(-2*d*x - 2*c) - 2*a*e^(-3*d*
x - 3*c) + 2*I*a)*d) - I*log(e^(-d*x - c) + 1)/(a*d) + I*log(e^(-d*x - c) -
 1)/(a*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{e+f\,x}{\sinh\left(c+d\,x\right)^2\,\left(a+a\,\sinh\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sinh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)/(sinh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e\operatorname{csch}^2(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{fx\operatorname{csch}^2(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e*csch(c + d*x)**2/(sinh(c + d*x) - I), x) + Integral(f*x*csch
(c + d*x)**2/(sinh(c + d*x) - I), x))/a
```

3.214 $\int \frac{\operatorname{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=57

$$-\frac{2\coth(c+dx)}{ad}+\frac{i\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{\coth(c+dx)}{d(a+ia\sinh(c+dx))}$$

[Out] I*arctanh(cosh(d*x+c))/a/d-2*coth(d*x+c)/a/d+coth(d*x+c)/d/(a+I*a*sinh(d*x+c))

Rubi [A] time = 0.09, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {2768, 2748, 3767, 8, 3770}

$$-\frac{2\coth(c+dx)}{ad}+\frac{i\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{\coth(c+dx)}{d(a+ia\sinh(c+dx))}$$

Antiderivative was successfully verified.

[In] Int[Csch[c + d*x]^2/(a + I*a*Sinh[c + d*x]),x]

[Out] (I*ArcTanh[Cosh[c + d*x]])/(a*d) - (2*Coth[c + d*x])/(a*d) + Coth[c + d*x]/(d*(a + I*a*Sinh[c + d*x]))

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2748

```
Int[((b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[c, Int[(b*Sin[e + f*x])^m, x], x] + Dist[d/b, Int[(b*Sin[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x]
```

Rule 2768

```
Int[((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[(b^2*Cos[e + f*x]*(c + d*Sin[e + f*x])^(n + 1))/(a*f*(b*c - a*d)*(a + b*Sin[e + f*x])), x] + Dist[d/(a*(b*c - a*d)), Int[(c + d*Sin[e + f*x])^n*(a*n - b*(n + 1)*Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && LtQ[n, 0] && (IntegerQ[2*n] || EqQ[c, 0])
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\operatorname{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx &= \frac{\coth(c+dx)}{d(a+ia\sinh(c+dx))}-\frac{\int \operatorname{csch}^2(c+dx)(-2a+ia\sinh(c+dx))\,dx}{a^2}\\ &= \frac{\coth(c+dx)}{d(a+ia\sinh(c+dx))}-\frac{i\int \operatorname{csch}(c+dx)\,dx}{a}+\frac{2\int \operatorname{csch}^2(c+dx)\,dx}{a}\\ &= \frac{i\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{\coth(c+dx)}{d(a+ia\sinh(c+dx))}-\frac{(2i)\operatorname{Subst}(\int 1\,dx,x,-i\coth(c+d\end{aligned}$$
$$\begin{aligned}&= \frac{i\tanh^{-1}(\cosh(c+dx))}{ad}-\frac{2\coth(c+dx)}{ad}+\frac{\coth(c+dx)}{d(a+ia\sinh(c+dx))}\end{aligned}$$

Mathematica [A] time = 0.20, size = 61, normalized size = 1.07

$$-\frac{\operatorname{sech}(c+dx)\left(2\sinh(c+dx)+\operatorname{csch}(c+dx)-i\sqrt{\cosh^2(c+dx)}\tanh^{-1}\left(\sqrt{\cosh^2(c+dx)}\right)+i\right)}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csch[c + d*x]^2/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] -((Sech[c + d*x]*(I - I*ArcTanh[Sqrt[Cosh[c + d*x]^2]]*Sqrt[Cosh[c + d*x]^2
] + Csch[c + d*x] + 2*Sinh[c + d*x]))/(a*d))
```

fricas [B] time = 0.56, size = 146, normalized size = 2.56

$$\frac{\left(i\,e^{(3\,dx+3\,c)}+e^{(2\,dx+2\,c)}-i\,e^{(dx+c)}-1\right)\log\left(e^{(dx+c)}+1\right)+\left(-i\,e^{(3\,dx+3\,c)}-e^{(2\,dx+2\,c)}+i\,e^{(dx+c)}+1\right)\log\left(e^{(dx+c)}-1\right)-2}{ade^{(3\,dx+3\,c)}-i\,ade^{(2\,dx+2\,c)}-ade^{(dx+c)}+i\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((I*e^(3*d*x + 3*c) + e^(2*d*x + 2*c) - I*e^(d*x + c) - 1)*log(e^(d*x + c)
+ 1) + (-I*e^(3*d*x + 3*c) - e^(2*d*x + 2*c) + I*e^(d*x + c) + 1)*log(e^(d*
x + c) - 1) - 2*I*e^(2*d*x + 2*c) - 2*e^(d*x + c) + 4*I)/(a*d*e^(3*d*x + 3*
c) - I*a*d*e^(2*d*x + 2*c) - a*d*e^(d*x + c) + I*a*d)
```

giac [A] time = 0.45, size = 90, normalized size = 1.58

$$-\frac{-\frac{i\log\left(e^{(dx+c)}+1\right)}{a}+\frac{i\log\left(e^{(dx+c)}-1\right)}{a}-\frac{2\left(e^{(2\,dx+2\,c)}-i\,e^{(dx+c)}-2\right)}{a\left(i\,e^{(3\,dx+3\,c)}+e^{(2\,dx+2\,c)}-i\,e^{(dx+c)}-1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -(-I*log(e^(d*x + c) + 1)/a + I*log(e^(d*x + c) - 1)/a - 2*(e^(2*d*x + 2*c)
 - I*e^(d*x + c) - 2)/(a*(I*e^(3*d*x + 3*c) + e^(2*d*x + 2*c) - I*e^(d*x +
c) - 1)))/d
```

maple [A] time = 0.08, size = 79, normalized size = 1.39

$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da}-\frac{2}{da\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}-\frac{1}{2da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{i\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/2/d/a*tanh(1/2*d*x+1/2*c)-2/d/a/(-I+tanh(1/2*d*x+1/2*c))-1/2/d/a/tanh(1/
2*d*x+1/2*c)-I/d/a*ln(tanh(1/2*d*x+1/2*c))
```

maxima [B] time = 0.61, size = 110, normalized size = 1.93

$$-\frac{4\left(e^{(-dx-c)}-i\,e^{(-2\,dx-2\,c)}+2i\right)}{\left(2\,ae^{(-dx-c)}-2i\,ae^{(-2\,dx-2\,c)}-2\,ae^{(-3\,dx-3\,c)}+2i\,a\right)d}+\frac{i\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{i\log\left(e^{(-dx-c)}-1\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -4*(e^(-d*x - c) - I*e^(-2*d*x - 2*c) + 2*I)/((2*a*e^(-d*x - c) - 2*I*a*e^(
-2*d*x - 2*c) - 2*a*e^(-3*d*x - 3*c) + 2*I*a)*d) + I*log(e^(-d*x - c) + 1)/
(a*d) - I*log(e^(-d*x - c) - 1)/(a*d)
```

mupad [B] time = 1.40, size = 122, normalized size = 2.14

$$\frac{\frac{2\,\mathrm{e}^{c+d\,x}}{a\,d}-\frac{4\mathrm{i}}{a\,d}+\frac{\mathrm{e}^{2\,c+2\,d\,x}\,2\mathrm{i}}{a\,d}}{\mathrm{e}^{c+d\,x}+\mathrm{e}^{2\,c+2\,d\,x}\,1\mathrm{i}-\mathrm{e}^{3\,c+3\,d\,x}-\mathrm{i}}-\frac{\ln\left(\mathrm{e}^{c+d\,x}\,2\mathrm{i}-2\mathrm{i}\right)\,1\mathrm{i}}{a\,d}+\frac{\ln\left(\mathrm{e}^{c+d\,x}\,2\mathrm{i}+2\mathrm{i}\right)\,1\mathrm{i}}{a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] ((2*exp(c + d*x))/(a*d) - 4i/(a*d) + (exp(2*c + 2*d*x)*2i)/(a*d))/(exp(c +
d*x) + exp(2*c + 2*d*x)*1i - exp(3*c + 3*d*x) - 1i) - (log(exp(c + d*x)*2i
- 2i)*1i)/(a*d) + (log(exp(c + d*x)*2i + 2i)*1i)/(a*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int\frac{\operatorname{csch}^{2}(c+dx)}{\sinh(c+dx)-i}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(csch(c + d*x)**2/(sinh(c + d*x) - I), x)/a
```

3.215 $\int \frac{\operatorname{csch}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\operatorname{Int}\left(\frac{\operatorname{csch}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csch[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
[Out] Defer[Int][Csch[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx=\int \frac{\operatorname{csch}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Mathematica [A] time = 133.44, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csch[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
[Out] Integrate[Csch[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\frac{\left(i\,adfx+i\,ade+\left(adfx+ade\right)e^{(3\,dx+3\,c)}+\left(-i\,adfx-i\,ade\right)e^{(2\,dx+2\,c)}-\left(adfx+ade\right)e^{(dx+c)}\right)\mathrm{integral}\left(\frac{}{i\,adf^2x^2+2i\,ad}\right.}{i\,adfx+i\,ade+\left(adfx+ade\right)e^{(3\,dx+3\,c)}+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((I*a*d*f*x + I*a*d*e + (a*d*f*x + a*d*e)*e^(3*d*x + 3*c) + (-I*a*d*f*x - I
*a*d*e)*e^(2*d*x + 2*c) - (a*d*f*x + a*d*e)*e^(d*x + c))*integral(((-2*I*d*
f*x - 2*I*d*e - 2*I*f)*e^(2*d*x + 2*c) - 2*(d*f*x + d*e + f)*e^(d*x + c) +
4*I*f)/(I*a*d*f^2*x^2 + 2*I*a*d*e*f*x + I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*
f*x + a*d*e^2)*e^(3*d*x + 3*c) + (-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^
2)*e^(2*d*x + 2*c) - (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*e^(d*x + c)), x)
 - 2*I*e^(2*d*x + 2*c) - 2*e^(d*x + c) + 4*I)/(I*a*d*f*x + I*a*d*e + (a*d*f
*x + a*d*e)*e^(3*d*x + 3*c) + (-I*a*d*f*x - I*a*d*e)*e^(2*d*x + 2*c) - (a*d
*f*x + a*d*e)*e^(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.65, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(dx+c\right)^{2}}{\left(fx+e\right)\left(a+ia\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-4if\int \frac{1}{-2iadf^{2}x^{2}-4iadefx-2iade^{2}+2\left(adf^{2}x^{2}e^{c}+2\,adefxe^{c}+ade^{2}e^{c}\right)e^{(dx)}}\,dx - \frac{}{2iadfx+2iade+2\left(adfx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -4*I*f*integrate(1/(-2*I*a*d*f^2*x^2 - 4*I*a*d*e*f*x - 2*I*a*d*e^2 + 2*(a*d
*f^2*x^2*e^c + 2*a*d*e*f*x*e^c + a*d*e^2*e^c)*e^(d*x)), x) - 4*(I*e^(2*d*x
```

```
+ 2*c) + e^(d*x + c) - 2*I)/(2*I*a*d*f*x + 2*I*a*d*e + 2*(a*d*f*x*e^(3*c) +
 a*d*e*e^(3*c))*e^(3*d*x) + (-2*I*a*d*f*x*e^(2*c) - 2*I*a*d*e*e^(2*c))*e^(2
*d*x) - 2*(a*d*f*x*e^c + a*d*e*e^c)*e^(d*x)) - 4*integrate(-1/4*(I*d*f*x +
I*d*e + f)/(a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2 - (a*d*f^2*x^2*e^c + 2*a*d*
e*f*x*e^c + a*d*e^2*e^c)*e^(d*x)), x) - 4*integrate(1/4*(I*d*f*x + I*d*e -
f)/(a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2 + (a*d*f^2*x^2*e^c + 2*a*d*e*f*x*e^
c + a*d*e^2*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sinh\left(c+d\,x\right)^2\,\left(e+f\,x\right)\,\left(a+a\,\sinh\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)^2*(e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(1/(sinh(c + d*x)^2*(e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int \frac{\operatorname{csch}^{2}{\left(c+dx \right)}}{e\sinh{\left(c+dx \right)}-ie+fx\sinh{\left(c+dx \right)}-ifx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(csch(c + d*x)**2/(e*sinh(c + d*x) - I*e + f*x*sinh(c + d*x) - I
*f*x), x)/a
```

3.216 $\int \frac{\operatorname{csch}^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\operatorname{Int}\left(\frac{\operatorname{csch}^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csch[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] Defer[Int][Csch[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx = \int \frac{\operatorname{csch}^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Csch[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] $Aborted
```

fricas [A] time = 0.66, size = 0, normalized size = 0.00

$$\frac{\left(i\,adf^2x^2 + 2i\,adefx + i\,ade^2 + \left(adf^2x^2 + 2\,adefx + ade^2\right)e^{(3\,dx+3\,c)} + \left(-i\,adf^2x^2 - 2i\,adefx - i\,ade^2\right)e^{(2\,dx+2\,c)} - \left(\right.}{i\,adf^2x^2 + 2i\,adefx +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] ((I*a*d*f^2*x^2 + 2*I*a*d*e*f*x + I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x +
a*d*e^2)*e^(3*d*x + 3*c) + (-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2)*e^(
2*d*x + 2*c) - (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*e^(d*x + c))*integral(
((-2*I*d*f*x - 2*I*d*e - 4*I*f)*e^(2*d*x + 2*c) - 2*(d*f*x + d*e + 2*f)*e^(
d*x + c) + 8*I*f)/(I*a*d*f^3*x^3 + 3*I*a*d*e*f^2*x^2 + 3*I*a*d*e^2*f*x + I*
a*d*e^3 + (a*d*f^3*x^3 + 3*a*d*e*f^2*x^2 + 3*a*d*e^2*f*x + a*d*e^3)*e^(3*d*
x + 3*c) + (-I*a*d*f^3*x^3 - 3*I*a*d*e*f^2*x^2 - 3*I*a*d*e^2*f*x - I*a*d*e^
3)*e^(2*d*x + 2*c) - (a*d*f^3*x^3 + 3*a*d*e*f^2*x^2 + 3*a*d*e^2*f*x + a*d*e
^3)*e^(d*x + c)), x) - 2*I*e^(2*d*x + 2*c) - 2*e^(d*x + c) + 4*I)/(I*a*d*f^
2*x^2 + 2*I*a*d*e*f*x + I*a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*e
^(3*d*x + 3*c) + (-I*a*d*f^2*x^2 - 2*I*a*d*e*f*x - I*a*d*e^2)*e^(2*d*x + 2*
c) - (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*e^(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 1.67, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(dx+c\right)^{2}}{\left(fx+e\right)^{2}\left(a+ia\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-4if\int \frac{1}{-i\,adf^{3}x^{3}-3i\,adef^{2}x^{2}-3i\,ade^{2}fx-i\,ade^{3}+\left(adf^{3}x^{3}e^{c}+3\,adef^{2}x^{2}e^{c}+3\,ade^{2}fxe^{c}+ade^{3}e^{c}\right)e^{(dx)}}\,dx-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -4*I*f*integrate(1/(-I*a*d*f^3*x^3 - 3*I*a*d*e*f^2*x^2 - 3*I*a*d*e^2*f*x -
I*a*d*e^3 + (a*d*f^3*x^3*e^c + 3*a*d*e*f^2*x^2*e^c + 3*a*d*e^2*f*x*e^c + a*
d*e^3*e^c)*e^(d*x)), x) - 4*(I*e^(2*d*x + 2*c) + e^(d*x + c) - 2*I)/(2*I*a*
d*f^2*x^2 + 4*I*a*d*e*f*x + 2*I*a*d*e^2 + 2*(a*d*f^2*x^2*e^(3*c) + 2*a*d*e*
f*x*e^(3*c) + a*d*e^2*e^(3*c))*e^(3*d*x) + (-2*I*a*d*f^2*x^2*e^(2*c) - 4*I*
a*d*e*f*x*e^(2*c) - 2*I*a*d*e^2*e^(2*c))*e^(2*d*x) - 2*(a*d*f^2*x^2*e^c + 2
*a*d*e*f*x*e^c + a*d*e^2*e^c)*e^(d*x)) - 4*integrate(-1/4*(I*d*f*x + I*d*e
+ 2*f)/(a*d*f^3*x^3 + 3*a*d*e*f^2*x^2 + 3*a*d*e^2*f*x + a*d*e^3 - (a*d*f^3*
x^3*e^c + 3*a*d*e*f^2*x^2*e^c + 3*a*d*e^2*f*x*e^c + a*d*e^3*e^c)*e^(d*x)),
x) - 4*integrate(1/4*(I*d*f*x + I*d*e - 2*f)/(a*d*f^3*x^3 + 3*a*d*e*f^2*x^2
 + 3*a*d*e^2*f*x + a*d*e^3 + (a*d*f^3*x^3*e^c + 3*a*d*e*f^2*x^2*e^c + 3*a*d
*e^2*f*x*e^c + a*d*e^3*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sinh\left(c+d\,x\right)^2\,{\left(e+f\,x\right)}^2\,\left(a+a\,\sinh\left(c+d\,x\right)\,1{}\mathrm{i}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)^2*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(1/(sinh(c + d*x)^2*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.217 $\int \frac{(e+fx)^3\operatorname{csch}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=546

$$-\frac{3f^3\text{Li}_2\left(-e^{c+dx}\right)}{ad^4}+\frac{3f^3\text{Li}_2\left(e^{c+dx}\right)}{ad^4}+\frac{12if^3\text{Li}_3\left(-ie^{c+dx}\right)}{ad^4}+\frac{3if^3\text{Li}_3\left(e^{2(c+dx)}\right)}{2ad^4}+\frac{9f^3\text{Li}_4\left(-e^{c+dx}\right)}{ad^4}-\frac{9f^3\text{Li}_4\left(e^{c+dx}\right)}{ad^4}-12$$

```
[Out] -12*I*f^2*(f*x+e)*polylog(2,-I*exp(d*x+c))/a/d^3-6*f^2*(f*x+e)*arctanh(exp(
d*x+c))/a/d^3+3*(f*x+e)^3*arctanh(exp(d*x+c))/a/d+12*I*f^3*polylog(3,-I*exp
(d*x+c))/a/d^4-3/2*f*(f*x+e)^2*csch(d*x+c)/a/d^2-1/2*(f*x+e)^3*coth(d*x+c)*
csch(d*x+c)/a/d-3*I*f*(f*x+e)^2*ln(1-exp(2*d*x+2*c))/a/d^2+3/2*I*f^3*polylo
g(3,exp(2*d*x+2*c))/a/d^4-3*f^3*polylog(2,-exp(d*x+c))/a/d^4+9/2*f*(f*x+e)^
2*polylog(2,-exp(d*x+c))/a/d^2+I*(f*x+e)^3*coth(d*x+c)/a/d+3*f^3*polylog(2,
exp(d*x+c))/a/d^4-9/2*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a/d^2+2*I*(f*x+e)^3
/a/d-9*f^2*(f*x+e)*polylog(3,-exp(d*x+c))/a/d^3+I*(f*x+e)^3*tanh(1/2*c+1/4*
I*Pi+1/2*d*x)/a/d+9*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a/d^3-3*I*f^2*(f*x+e)
*polylog(2,exp(2*d*x+2*c))/a/d^3+9*f^3*polylog(4,-exp(d*x+c))/a/d^4-9*f^3*p
olylog(4,exp(d*x+c))/a/d^4-6*I*f*(f*x+e)^2*ln(1+I*exp(d*x+c))/a/d^2
```

Rubi [A] time = 1.21, antiderivative size = 546, normalized size of antiderivative = 1.00, number of steps used = 40, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.419$, Rules used = {5575, 4186, 4182, 2279, 2391, 2531, 6609, 2282, 6589, 4184, 3716, 2190, 3318}

$$-\frac{12if^2(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}-\frac{3if^2(e+fx)\text{PolyLog}\left(2,e^{2(c+dx)}\right)}{ad^3}-\frac{9f^2(e+fx)\text{PolyLog}\left(3,-e^{c+dx}\right)}{ad^3}+\frac{9f^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csch[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((2*I)*(e + f*x)^3)/(a*d) - (6*f^2*(e + f*x)*ArcTanh[E^(c + d*x)])/(a*d^3)
+ (3*(e + f*x)^3*ArcTanh[E^(c + d*x)])/(a*d) + (I*(e + f*x)^3*Coth[c + d*x]
)/(a*d) - (3*f*(e + f*x)^2*Csch[c + d*x])/(2*a*d^2) - ((e + f*x)^3*Coth[c +
 d*x]*Csch[c + d*x])/(2*a*d) - ((6*I)*f*(e + f*x)^2*Log[1 + I*E^(c + d*x)])
/(a*d^2) - ((3*I)*f*(e + f*x)^2*Log[1 - E^(2*(c + d*x))])/(a*d^2) - (3*f^3*
PolyLog[2, -E^(c + d*x)])/(a*d^4) + (9*f*(e + f*x)^2*PolyLog[2, -E^(c + d*x
)])/(2*a*d^2) - ((12*I)*f^2*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^3)
 + (3*f^3*PolyLog[2, E^(c + d*x)])/(a*d^4) - (9*f*(e + f*x)^2*PolyLog[2, E^
(c + d*x)])/(2*a*d^2) - ((3*I)*f^2*(e + f*x)*PolyLog[2, E^(2*(c + d*x))])/(
a*d^3) - (9*f^2*(e + f*x)*PolyLog[3, -E^(c + d*x)])/(a*d^3) + ((12*I)*f^3*P
olyLog[3, (-I)*E^(c + d*x)])/(a*d^4) + (9*f^2*(e + f*x)*PolyLog[3, E^(c + d
*x)])/(a*d^3) + (((3*I)/2)*f^3*PolyLog[3, E^(2*(c + d*x))])/(a*d^4) + (9*f^
```

```
3*PolyLog[4, -E^(c + d*x)])/(a*d^4) - (9*f^3*PolyLog[4, E^(c + d*x)])/(a*d^
4) + (I*(e + f*x)^3*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{csch}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\left(i\int \frac{(e+fx)^3\text{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx\right)+\frac{\int (e+fx)^3\text{csch}^3(c+dx)\,dx}{a}$$

$$= -\frac{3f(e+fx)^2\text{csch}(c+dx)}{2ad^2}-\frac{(e+fx)^3\coth(c+dx)\text{csch}(c+dx)}{2ad}-\frac{i\int (e+fx)^3\text{c}$$

$$= -\frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{i(e+fx)^3\coth(c+dx}{ad}$$

$$= \frac{i(e+fx)^3}{ad}-\frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{3(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{i(e+fx)^3}{}$$

$$= \frac{i(e+fx)^3}{ad}-\frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{3(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{i(e+fx)^3}{}$$

$$= \frac{2i(e+fx)^3}{ad}-\frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{3(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{i(e+fx}{}$$

$$= \frac{2i(e+fx)^3}{ad}-\frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{3(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{i(e+fx}{}$$

$$= \frac{2i(e+fx)^3}{ad}-\frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{3(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{i(e+fx}{}$$

$$= \frac{2i(e+fx)^3}{ad}-\frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{3(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{i(e+fx}{}$$

$$= \frac{2i(e+fx)^3}{ad}-\frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{3(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}+\frac{i(e+fx}{}$$

Mathematica [B] time = 69.68, size = 2478, normalized size = 4.54

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csch[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (-3*e^3*Log[Tanh[(c + d*x)/2]])/(2*a*d) + (3*e*f^2*Log[Tanh[(c + d*x)/2]])/
(a*d^3) - (9*e^2*f*(-(c*Log[Tanh[(c + d*x)/2]]) - I*((I*c + I*d*x)*(Log[1 -
 E^(I*(I*c + I*d*x))] - Log[1 + E^(I*(I*c + I*d*x))]) + I*(PolyLog[2, -E^(I
*(I*c + I*d*x))] - PolyLog[2, E^(I*(I*c + I*d*x))]))))/(2*a*d^2) + (3*f^3*(
-(c*Log[Tanh[(c + d*x)/2]]) - I*((I*c + I*d*x)*(Log[1 - E^(I*(I*c + I*d*x))
] - Log[1 + E^(I*(I*c + I*d*x))]) + I*(PolyLog[2, -E^(I*(I*c + I*d*x))] - P
olyLog[2, E^(I*(I*c + I*d*x))]))))/(a*d^4) - (2*(d^3*(e + f*x)^3 + 3*d^2*(1
 + I*E^c)*f*(e + f*x)^2*Log[1 - I*E^(-c - d*x)] + (6*I)*(I - E^c)*f^2*(d*(e
 + f*x)*PolyLog[2, I*E^(-c - d*x)] + f*PolyLog[3, I*E^(-c - d*x)])))/(a*d^4
*(-I + E^c)) + ((I/2)*E^c*f^3*Csch[c]*((2*d^3*x^3)/E^(2*c) - 3*d^2*(1 - E^(
-2*c))*x^2*Log[1 - E^(-c - d*x)] - 3*d^2*(1 - E^(-2*c))*x^2*Log[1 + E^(-c -
 d*x)] + 6*(1 - E^(-2*c))*(d*x*PolyLog[2, -E^(-c - d*x)] + PolyLog[3, -E^(-
c - d*x)]) + 6*(1 - E^(-2*c))*(d*x*PolyLog[2, E^(-c - d*x)] + PolyLog[3, E^
(-c - d*x)])))/(a*d^4) + (9*e*f^2*(d^2*x^2*ArcTanh[Cosh[c + d*x] + Sinh[c +
 d*x]] + d*x*PolyLog[2, -Cosh[c + d*x] - Sinh[c + d*x]] - d*x*PolyLog[2, Co
sh[c + d*x] + Sinh[c + d*x]] - PolyLog[3, -Cosh[c + d*x] - Sinh[c + d*x]] +
 PolyLog[3, Cosh[c + d*x] + Sinh[c + d*x]]))/(a*d^3) - (3*f^3*(-2*d^3*x^3*A
rcTanh[Cosh[c + d*x] + Sinh[c + d*x]] - 3*d^2*x^2*PolyLog[2, -Cosh[c + d*x]
 - Sinh[c + d*x]] + 3*d^2*x^2*PolyLog[2, Cosh[c + d*x] + Sinh[c + d*x]] + 6
*d*x*PolyLog[3, -Cosh[c + d*x] - Sinh[c + d*x]] - 6*d*x*PolyLog[3, Cosh[c +
 d*x] + Sinh[c + d*x]] - 6*PolyLog[4, -Cosh[c + d*x] - Sinh[c + d*x]] + 6*P
olyLog[4, Cosh[c + d*x] + Sinh[c + d*x]]))/(2*a*d^4) + ((3*I)*e^2*f*Csch[c]
*(-(d*x*Cosh[c]) + Log[Cosh[d*x]*Sinh[c] + Cosh[c]*Sinh[d*x]]*Sinh[c]))/(a*
d^2*(-Cosh[c]^2 + Sinh[c]^2)) + (Csch[c]*Csch[c + d*x]^2*(3*e^2*f*Cosh[(d*x
)/2] + 6*e*f^2*x*Cosh[(d*x)/2] + 3*f^3*x^2*Cosh[(d*x)/2] + 3*e^2*f*Cosh[(3*
d*x)/2] + 6*e*f^2*x*Cosh[(3*d*x)/2] + 3*f^3*x^2*Cosh[(3*d*x)/2] + (5*I)*d*e
^3*Cosh[c - (d*x)/2] + (15*I)*d*e^2*f*x*Cosh[c - (d*x)/2] + (15*I)*d*e*f^2*
x^2*Cosh[c - (d*x)/2] + (5*I)*d*f^3*x^3*Cosh[c - (d*x)/2] - I*d*e^3*Cosh[c
+ (d*x)/2] - (3*I)*d*e^2*f*x*Cosh[c + (d*x)/2] - (3*I)*d*e*f^2*x^2*Cosh[c +
 (d*x)/2] - I*d*f^3*x^3*Cosh[c + (d*x)/2] - 3*e^2*f*Cosh[2*c + (d*x)/2] - 6
*e*f^2*x*Cosh[2*c + (d*x)/2] - 3*f^3*x^2*Cosh[2*c + (d*x)/2] + I*d*e^3*Cosh
[c + (3*d*x)/2] + (3*I)*d*e^2*f*x*Cosh[c + (3*d*x)/2] + (3*I)*d*e*f^2*x^2*C
osh[c + (3*d*x)/2] + I*d*f^3*x^3*Cosh[c + (3*d*x)/2] - 3*e^2*f*Cosh[2*c + (
3*d*x)/2] - 6*e*f^2*x*Cosh[2*c + (3*d*x)/2] - 3*f^3*x^2*Cosh[2*c + (3*d*x)/
2] - (3*I)*d*e^3*Cosh[3*c + (3*d*x)/2] - (9*I)*d*e^2*f*x*Cosh[3*c + (3*d*x)
/2] - (9*I)*d*e*f^2*x^2*Cosh[3*c + (3*d*x)/2] - (3*I)*d*f^3*x^3*Cosh[3*c +
(3*d*x)/2] - (4*I)*d*e^3*Cosh[c + (5*d*x)/2] - (12*I)*d*e^2*f*x*Cosh[c + (5
```

```
*d*x)/2] - (12*I)*d*e*f^2*x^2*Cosh[c + (5*d*x)/2] - (4*I)*d*f^3*x^3*Cosh[c
+ (5*d*x)/2] + (2*I)*d*e^3*Cosh[3*c + (5*d*x)/2] + (6*I)*d*e^2*f*x*Cosh[3*c
 + (5*d*x)/2] + (6*I)*d*e*f^2*x^2*Cosh[3*c + (5*d*x)/2] + (2*I)*d*f^3*x^3*C
osh[3*c + (5*d*x)/2] - d*e^3*Sinh[(d*x)/2] - 3*d*e^2*f*x*Sinh[(d*x)/2] - 3*
d*e*f^2*x^2*Sinh[(d*x)/2] - d*f^3*x^3*Sinh[(d*x)/2] - d*e^3*Sinh[(3*d*x)/2]
 - 3*d*e^2*f*x*Sinh[(3*d*x)/2] - 3*d*e*f^2*x^2*Sinh[(3*d*x)/2] - d*f^3*x^3*
Sinh[(3*d*x)/2] + (3*I)*e^2*f*Sinh[c - (d*x)/2] + (6*I)*e*f^2*x*Sinh[c - (d
*x)/2] + (3*I)*f^3*x^2*Sinh[c - (d*x)/2] + (3*I)*e^2*f*Sinh[c + (d*x)/2] +
(6*I)*e*f^2*x*Sinh[c + (d*x)/2] + (3*I)*f^3*x^2*Sinh[c + (d*x)/2] - 3*d*e^3
*Sinh[2*c + (d*x)/2] - 9*d*e^2*f*x*Sinh[2*c + (d*x)/2] - 9*d*e*f^2*x^2*Sinh
[2*c + (d*x)/2] - 3*d*f^3*x^3*Sinh[2*c + (d*x)/2] + (3*I)*e^2*f*Sinh[c + (3
*d*x)/2] + (6*I)*e*f^2*x*Sinh[c + (3*d*x)/2] + (3*I)*f^3*x^2*Sinh[c + (3*d*
x)/2] - d*e^3*Sinh[2*c + (3*d*x)/2] - 3*d*e^2*f*x*Sinh[2*c + (3*d*x)/2] - 3
*d*e*f^2*x^2*Sinh[2*c + (3*d*x)/2] - d*f^3*x^3*Sinh[2*c + (3*d*x)/2] - (3*I
)*e^2*f*Sinh[3*c + (3*d*x)/2] - (6*I)*e*f^2*x*Sinh[3*c + (3*d*x)/2] - (3*I)
*f^3*x^2*Sinh[3*c + (3*d*x)/2] + 2*d*e^3*Sinh[2*c + (5*d*x)/2] + 6*d*e^2*f*
x*Sinh[2*c + (5*d*x)/2] + 6*d*e*f^2*x^2*Sinh[2*c + (5*d*x)/2] + 2*d*f^3*x^3
*Sinh[2*c + (5*d*x)/2]))/(8*a*d^2*(Cosh[c/2] + I*Sinh[c/2])*(Cosh[c/2 + (d*
x)/2] + I*Sinh[c/2 + (d*x)/2])) + ((3*I)*e*f^2*Csch[c]*Sech[c]*((d^2*x^2)/E
^ArcTanh[Tanh[c]] - (I*(-(d*x*(-Pi + (2*I)*ArcTanh[Tanh[c]])) - Pi*Log[1 +
E^(2*d*x)] - 2*(I*d*x + I*ArcTanh[Tanh[c]])*Log[1 - E^((2*I)*(I*d*x + I*Arc
Tanh[Tanh[c]]))] + Pi*Log[Cosh[d*x]] + (2*I)*ArcTanh[Tanh[c]]*Log[I*Sinh[d*
x + ArcTanh[Tanh[c]]]] + I*PolyLog[2, E^((2*I)*(I*d*x + I*ArcTanh[Tanh[c]])
)])*Tanh[c])/Sqrt[1 - Tanh[c]^2]))/(a*d^3*Sqrt[Sech[c]^2*(Cosh[c]^2 - Sinh[
c]^2)])
```

fricas [C] time = 0.71, size = 4289, normalized size = 7.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -(8*d^3*e^3 - 24*c*d^2*e^2*f + 24*c^2*d*e*f^2 - 8*c^3*f^3 + (24*d*f^3*x + 2
4*d*e*f^2 - (-24*I*d*f^3*x - 24*I*d*e*f^2)*e^(5*d*x + 5*c) + 24*(d*f^3*x +
d*e*f^2)*e^(4*d*x + 4*c) - (48*I*d*f^3*x + 48*I*d*e*f^2)*e^(3*d*x + 3*c) -
48*(d*f^3*x + d*e*f^2)*e^(2*d*x + 2*c) - (-24*I*d*f^3*x - 24*I*d*e*f^2)*e^(
d*x + c))*dilog(-I*e^(d*x + c)) - (-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f - 12*d*
e*f^2 + 6*I*f^3 - 6*(3*I*d^2*e*f^2 + 2*d*f^3)*x + (9*d^2*f^3*x^2 + 9*d^2*e^
2*f - 12*I*d*e*f^2 - 6*f^3 + (18*d^2*e*f^2 - 12*I*d*f^3)*x)*e^(5*d*x + 5*c)
 + (-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f - 12*d*e*f^2 + 6*I*f^3 - 6*(3*I*d^2*e*
f^2 + 2*d*f^3)*x)*e^(4*d*x + 4*c) - (18*d^2*f^3*x^2 + 18*d^2*e^2*f - 24*I*d
*e*f^2 - 12*f^3 + (36*d^2*e*f^2 - 24*I*d*f^3)*x)*e^(3*d*x + 3*c) + (18*I*d^
2*f^3*x^2 + 18*I*d^2*e^2*f + 24*d*e*f^2 - 12*I*f^3 - 12*(-3*I*d^2*e*f^2 - 2
```

```
*d*f^3)*x)*e^(2*d*x + 2*c) + (9*d^2*f^3*x^2 + 9*d^2*e^2*f - 12*I*d*e*f^2 -
6*f^3 + (18*d^2*e*f^2 - 12*I*d*f^3)*x)*e^(d*x + c))*dilog(-e^(d*x + c)) - (
9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f - 12*d*e*f^2 - 6*I*f^3 - 6*(-3*I*d^2*e*f^2
+ 2*d*f^3)*x - (9*d^2*f^3*x^2 + 9*d^2*e^2*f + 12*I*d*e*f^2 - 6*f^3 + (18*d^
2*e*f^2 + 12*I*d*f^3)*x)*e^(5*d*x + 5*c) + (9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f
 - 12*d*e*f^2 - 6*I*f^3 - 6*(-3*I*d^2*e*f^2 + 2*d*f^3)*x)*e^(4*d*x + 4*c) +
 (18*d^2*f^3*x^2 + 18*d^2*e^2*f + 24*I*d*e*f^2 - 12*f^3 + (36*d^2*e*f^2 + 2
4*I*d*f^3)*x)*e^(3*d*x + 3*c) + (-18*I*d^2*f^3*x^2 - 18*I*d^2*e^2*f + 24*d*
e*f^2 + 12*I*f^3 - 12*(3*I*d^2*e*f^2 - 2*d*f^3)*x)*e^(2*d*x + 2*c) - (9*d^2
*f^3*x^2 + 9*d^2*e^2*f + 12*I*d*e*f^2 - 6*f^3 + (18*d^2*e*f^2 + 12*I*d*f^3)
*x)*e^(d*x + c))*dilog(e^(d*x + c)) - (8*I*d^3*f^3*x^3 + 24*I*d^3*e*f^2*x^2
 + 24*I*d^3*e^2*f*x + 24*I*c*d^2*e^2*f - 24*I*c^2*d*e*f^2 + 8*I*c^3*f^3)*e^
(5*d*x + 5*c) - 2*(d^3*f^3*x^3 - 3*d^3*e^3 + 3*(4*c - 1)*d^2*e^2*f - 12*c^2
*d*e*f^2 + 4*c^3*f^3 + 3*(d^3*e*f^2 - d^2*f^3)*x^2 + 3*(d^3*e^2*f - 2*d^2*e
*f^2)*x)*e^(4*d*x + 4*c) - (-10*I*d^3*f^3*x^3 + 6*I*d^3*e^3 + (-48*I*c + 6*
I)*d^2*e^2*f + 48*I*c^2*d*e*f^2 - 16*I*c^3*f^3 + (-30*I*d^3*e*f^2 + 6*I*d^2
*f^3)*x^2 + (-30*I*d^3*e^2*f + 12*I*d^2*e*f^2)*x)*e^(3*d*x + 3*c) + 2*(3*d^
3*f^3*x^3 - 5*d^3*e^3 + 3*(8*c - 1)*d^2*e^2*f - 24*c^2*d*e*f^2 + 8*c^3*f^3
+ 3*(3*d^3*e*f^2 - d^2*f^3)*x^2 + 3*(3*d^3*e^2*f - 2*d^2*e*f^2)*x)*e^(2*d*x
 + 2*c) - (6*I*d^3*f^3*x^3 - 2*I*d^3*e^3 + (24*I*c - 6*I)*d^2*e^2*f - 24*I*
c^2*d*e*f^2 + 8*I*c^3*f^3 + (18*I*d^3*e*f^2 - 6*I*d^2*f^3)*x^2 + (18*I*d^3*
e^2*f - 12*I*d^2*e*f^2)*x)*e^(d*x + c) - (-3*I*d^3*f^3*x^3 - 3*I*d^3*e^3 -
6*d^2*e^2*f + 6*I*d*e*f^2 - 3*(3*I*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (-9*I*d^3*e
^2*f - 12*d^2*e*f^2 + 6*I*d*f^3)*x + (3*d^3*f^3*x^3 + 3*d^3*e^3 - 6*I*d^2*e
^2*f - 6*d*e*f^2 + (9*d^3*e*f^2 - 6*I*d^2*f^3)*x^2 + 3*(3*d^3*e^2*f - 4*I*d
^2*e*f^2 - 2*d*f^3)*x)*e^(5*d*x + 5*c) + (-3*I*d^3*f^3*x^3 - 3*I*d^3*e^3 -
6*d^2*e^2*f + 6*I*d*e*f^2 - 3*(3*I*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (-9*I*d^3*e
^2*f - 12*d^2*e*f^2 + 6*I*d*f^3)*x)*e^(4*d*x + 4*c) - (6*d^3*f^3*x^3 + 6*d^
3*e^3 - 12*I*d^2*e^2*f - 12*d*e*f^2 + (18*d^3*e*f^2 - 12*I*d^2*f^3)*x^2 + 6
*(3*d^3*e^2*f - 4*I*d^2*e*f^2 - 2*d*f^3)*x)*e^(3*d*x + 3*c) + (6*I*d^3*f^3*
x^3 + 6*I*d^3*e^3 + 12*d^2*e^2*f - 12*I*d*e*f^2 - 6*(-3*I*d^3*e*f^2 - 2*d^2
*f^3)*x^2 + (18*I*d^3*e^2*f + 24*d^2*e*f^2 - 12*I*d*f^3)*x)*e^(2*d*x + 2*c)
 + (3*d^3*f^3*x^3 + 3*d^3*e^3 - 6*I*d^2*e^2*f - 6*d*e*f^2 + (9*d^3*e*f^2 -
6*I*d^2*f^3)*x^2 + 3*(3*d^3*e^2*f - 4*I*d^2*e*f^2 - 2*d*f^3)*x)*e^(d*x + c)
)*log(e^(d*x + c) + 1) + (12*d^2*e^2*f - 24*c*d*e*f^2 + 12*c^2*f^3 - (-12*I
*d^2*e^2*f + 24*I*c*d*e*f^2 - 12*I*c^2*f^3)*e^(5*d*x + 5*c) + 12*(d^2*e^2*f
 - 2*c*d*e*f^2 + c^2*f^3)*e^(4*d*x + 4*c) - (24*I*d^2*e^2*f - 48*I*c*d*e*f^
2 + 24*I*c^2*f^3)*e^(3*d*x + 3*c) - 24*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*
e^(2*d*x + 2*c) - (-12*I*d^2*e^2*f + 24*I*c*d*e*f^2 - 12*I*c^2*f^3)*e^(d*x
+ c))*log(e^(d*x + c) - I) - (3*I*d^3*e^3 - 3*(3*I*c + 2)*d^2*e^2*f + (9*I*
c^2 + 12*c - 6*I)*d*e*f^2 + (-3*I*c^3 - 6*c^2 + 6*I*c)*f^3 - (3*d^3*e^3 - (
9*c - 6*I)*d^2*e^2*f + 3*(3*c^2 - 4*I*c - 2)*d*e*f^2 - (3*c^3 - 6*I*c^2 - 6
*c)*f^3)*e^(5*d*x + 5*c) + (3*I*d^3*e^3 - 3*(3*I*c + 2)*d^2*e^2*f + (9*I*c^
2 + 12*c - 6*I)*d*e*f^2 + (-3*I*c^3 - 6*c^2 + 6*I*c)*f^3)*e^(4*d*x + 4*c) +
 (6*d^3*e^3 - (18*c - 12*I)*d^2*e^2*f + 6*(3*c^2 - 4*I*c - 2)*d*e*f^2 - (6*
```

```
c^3 - 12*I*c^2 - 12*c)*f^3)*e^(3*d*x + 3*c) + (-6*I*d^3*e^3 - 6*(-3*I*c - 2
)*d^2*e^2*f + (-18*I*c^2 - 24*c + 12*I)*d*e*f^2 + (6*I*c^3 + 12*c^2 - 12*I*
c)*f^3)*e^(2*d*x + 2*c) - (3*d^3*e^3 - (9*c - 6*I)*d^2*e^2*f + 3*(3*c^2 - 4
*I*c - 2)*d*e*f^2 - (3*c^3 - 6*I*c^2 - 6*c)*f^3)*e^(d*x + c))*log(e^(d*x +
c) - 1) + (12*d^2*f^3*x^2 + 24*d^2*e*f^2*x + 24*c*d*e*f^2 - 12*c^2*f^3 - (-
12*I*d^2*f^3*x^2 - 24*I*d^2*e*f^2*x - 24*I*c*d*e*f^2 + 12*I*c^2*f^3)*e^(5*d
*x + 5*c) + 12*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*e^(4*d
*x + 4*c) - (24*I*d^2*f^3*x^2 + 48*I*d^2*e*f^2*x + 48*I*c*d*e*f^2 - 24*I*c^
2*f^3)*e^(3*d*x + 3*c) - 24*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^
2*f^3)*e^(2*d*x + 2*c) - (-12*I*d^2*f^3*x^2 - 24*I*d^2*e*f^2*x - 24*I*c*d*e
*f^2 + 12*I*c^2*f^3)*e^(d*x + c))*log(I*e^(d*x + c) + 1) - (3*I*d^3*f^3*x^3
 + 9*I*c*d^2*e^2*f + (-9*I*c^2 - 12*c)*d*e*f^2 + (3*I*c^3 + 6*c^2 - 6*I*c)*
f^3 - 3*(-3*I*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (9*I*d^3*e^2*f - 12*d^2*e*f^2 -
6*I*d*f^3)*x - (3*d^3*f^3*x^3 + 9*c*d^2*e^2*f - 3*(3*c^2 - 4*I*c)*d*e*f^2 +
 (3*c^3 - 6*I*c^2 - 6*c)*f^3 + (9*d^3*e*f^2 + 6*I*d^2*f^3)*x^2 + 3*(3*d^3*e
^2*f + 4*I*d^2*e*f^2 - 2*d*f^3)*x)*e^(5*d*x + 5*c) + (3*I*d^3*f^3*x^3 + 9*I
*c*d^2*e^2*f + (-9*I*c^2 - 12*c)*d*e*f^2 + (3*I*c^3 + 6*c^2 - 6*I*c)*f^3 -
3*(-3*I*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (9*I*d^3*e^2*f - 12*d^2*e*f^2 - 6*I*d*
f^3)*x)*e^(4*d*x + 4*c) + (6*d^3*f^3*x^3 + 18*c*d^2*e^2*f - 6*(3*c^2 - 4*I*
c)*d*e*f^2 + (6*c^3 - 12*I*c^2 - 12*c)*f^3 + (18*d^3*e*f^2 + 12*I*d^2*f^3)*
x^2 + 6*(3*d^3*e^2*f + 4*I*d^2*e*f^2 - 2*d*f^3)*x)*e^(3*d*x + 3*c) + (-6*I*
d^3*f^3*x^3 - 18*I*c*d^2*e^2*f + (18*I*c^2 + 24*c)*d*e*f^2 + (-6*I*c^3 - 12
*c^2 + 12*I*c)*f^3 - 6*(3*I*d^3*e*f^2 - 2*d^2*f^3)*x^2 + (-18*I*d^3*e^2*f +
 24*d^2*e*f^2 + 12*I*d*f^3)*x)*e^(2*d*x + 2*c) - (3*d^3*f^3*x^3 + 9*c*d^2*e
^2*f - 3*(3*c^2 - 4*I*c)*d*e*f^2 + (3*c^3 - 6*I*c^2 - 6*c)*f^3 + (9*d^3*e*f
^2 + 6*I*d^2*f^3)*x^2 + 3*(3*d^3*e^2*f + 4*I*d^2*e*f^2 - 2*d*f^3)*x)*e^(d*x
 + c))*log(-e^(d*x + c) + 1) - (18*f^3*e^(5*d*x + 5*c) - 18*I*f^3*e^(4*d*x
+ 4*c) - 36*f^3*e^(3*d*x + 3*c) + 36*I*f^3*e^(2*d*x + 2*c) + 18*f^3*e^(d*x
+ c) - 18*I*f^3)*polylog(4, -e^(d*x + c)) + (18*f^3*e^(5*d*x + 5*c) - 18*I*
f^3*e^(4*d*x + 4*c) - 36*f^3*e^(3*d*x + 3*c) + 36*I*f^3*e^(2*d*x + 2*c) + 1
8*f^3*e^(d*x + c) - 18*I*f^3)*polylog(4, e^(d*x + c)) - (24*I*f^3*e^(5*d*x
+ 5*c) + 24*f^3*e^(4*d*x + 4*c) - 48*I*f^3*e^(3*d*x + 3*c) - 48*f^3*e^(2*d*
x + 2*c) + 24*I*f^3*e^(d*x + c) + 24*f^3)*polylog(3, -I*e^(d*x + c)) - (18*
I*d*f^3*x + 18*I*d*e*f^2 + 12*f^3 - (18*d*f^3*x + 18*d*e*f^2 - 12*I*f^3)*e^
(5*d*x + 5*c) + (18*I*d*f^3*x + 18*I*d*e*f^2 + 12*f^3)*e^(4*d*x + 4*c) + (3
6*d*f^3*x + 36*d*e*f^2 - 24*I*f^3)*e^(3*d*x + 3*c) + (-36*I*d*f^3*x - 36*I*
d*e*f^2 - 24*f^3)*e^(2*d*x + 2*c) - (18*d*f^3*x + 18*d*e*f^2 - 12*I*f^3)*e^
(d*x + c))*polylog(3, -e^(d*x + c)) - (-18*I*d*f^3*x - 18*I*d*e*f^2 + 12*f^
3 + (18*d*f^3*x + 18*d*e*f^2 + 12*I*f^3)*e^(5*d*x + 5*c) + (-18*I*d*f^3*x -
 18*I*d*e*f^2 + 12*f^3)*e^(4*d*x + 4*c) - (36*d*f^3*x + 36*d*e*f^2 + 24*I*f
^3)*e^(3*d*x + 3*c) + (36*I*d*f^3*x + 36*I*d*e*f^2 - 24*f^3)*e^(2*d*x + 2*c
) + (18*d*f^3*x + 18*d*e*f^2 + 12*I*f^3)*e^(d*x + c))*polylog(3, e^(d*x + c
)))/(2*a*d^4*e^(5*d*x + 5*c) - 2*I*a*d^4*e^(4*d*x + 4*c) - 4*a*d^4*e^(3*d*x
 + 3*c) + 4*I*a*d^4*e^(2*d*x + 2*c) + 2*a*d^4*e^(d*x + c) - 2*I*a*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [B] time = 0.39, size = 2058, normalized size = 3.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
[Out] -12*I/a/d^2*e*f^2*ln(1+I*exp(d*x+c))*x-12*I/a/d^3*e*f^2*ln(1+I*exp(d*x+c))*
c+12*I/a/d^3*e*f^2*c*ln(exp(d*x+c)-I)-12*I/a/d^3*f^3*polylog(2,-I*exp(d*x+c
))*x-6*I/a/d^2*f^3*ln(1+I*exp(d*x+c))*x^2+6*I/a/d^4*f^3*ln(1+I*exp(d*x+c))*
c^2-6*I/a/d^4*f^3*c^2*ln(exp(d*x+c)-I)-12*I/a/d^3*e*f^2*polylog(2,-I*exp(d*
x+c))-6*I/a/d^2*ln(exp(d*x+c)-I)*e^2*f-3*f^3*polylog(2,-exp(d*x+c))/a/d^4+3
*f^3*polylog(2,exp(d*x+c))/a/d^4+9*f^3*polylog(4,-exp(d*x+c))/a/d^4-9*f^3*p
olylog(4,exp(d*x+c))/a/d^4+12*I*f^3*polylog(3,-I*exp(d*x+c))/a/d^4-3/2/a/d*
e^3*ln(exp(d*x+c)-1)+3/2/a/d*e^3*ln(exp(d*x+c)+1)+9/2/a/d^2*e^2*f*c*ln(exp(
d*x+c)-1)-9/2/a/d^2*ln(1-exp(d*x+c))*c*e^2*f-9/2/a/d^3*e*f^2*c^2*ln(exp(d*x
+c)-1)+6*I/a/d^3*e*f^2*c*ln(exp(d*x+c)-1)-24*I/a/d^3*e*f^2*c*ln(exp(d*x+c))
+24*I/a/d^2*c*e*f^2*x-6*I/a/d^2*ln(1-exp(d*x+c))*e*f^2*x-6*I/a/d^2*ln(exp(d
*x+c)+1)*e*f^2*x+12*I/a/d^2*e^2*f*ln(exp(d*x+c))+12*I/a/d^4*f^3*c^2*ln(exp(
d*x+c))-3*I/a/d^4*f^3*c^2*ln(exp(d*x+c)-1)-3*I/a/d^2*e^2*f*ln(exp(d*x+c)+1)
-3*I/a/d^2*e^2*f*ln(exp(d*x+c)-1)-12*I/a/d^3*f^3*c^2*x+12*I/a/d*e*f^2*x^2-6
*I/a/d^3*e*f^2*polylog(2,exp(d*x+c))-6*I/a/d^3*e*f^2*polylog(2,-exp(d*x+c))
+12*I/a/d^3*c^2*e*f^2-3*I/a/d^2*f^3*ln(exp(d*x+c)+1)*x^2-3*I/a/d^2*f^3*ln(1
-exp(d*x+c))*x^2+3*I/a/d^4*f^3*ln(1-exp(d*x+c))*c^2-6*I/a/d^3*f^3*polylog(2
,exp(d*x+c))*x-6*I/a/d^3*f^3*polylog(2,-exp(d*x+c))*x-(4*d*e^3+3*I*exp(d*x+
c)*e^2*f-3*I*f^3*x^2*exp(3*d*x+3*c)-3*I*d*e^3*exp(3*d*x+3*c)+I*d*f^3*x^3*ex
p(d*x+c)-5*d*e^3*exp(2*d*x+2*c)-3*f^3*x^2*exp(2*d*x+2*c)-3*e^2*f*exp(2*d*x+
2*c)+3*I*d*e*f^2*x^2*exp(d*x+c)-9*I*d*e^2*f*x*exp(3*d*x+3*c)-9*I*d*e*f^2*x^
2*exp(3*d*x+3*c)+3*I*d*e^2*f*x*exp(d*x+c)+12*d*e*f^2*x^2+12*d*e^2*f*x+3*I*f
^3*x^2*exp(d*x+c)+4*d*f^3*x^3+6*I*e*f^2*x*exp(d*x+c)+I*d*e^3*exp(d*x+c)-3*I
*e^2*f*exp(3*d*x+3*c)+3*d*f^3*x^3*exp(4*d*x+4*c)+6*e*f^2*x*exp(4*d*x+4*c)+3
*d*e^3*exp(4*d*x+4*c)+3*e^2*f*exp(4*d*x+4*c)+3*f^3*x^2*exp(4*d*x+4*c)-5*d*f
^3*x^3*exp(2*d*x+2*c)-6*e*f^2*x*exp(2*d*x+2*c)-3*I*d*f^3*x^3*exp(3*d*x+3*c)
-6*I*e*f^2*x*exp(3*d*x+3*c)+9*d*e*f^2*x^2*exp(4*d*x+4*c)+9*d*e^2*f*x*exp(4*
d*x+4*c)-15*d*e*f^2*x^2*exp(2*d*x+2*c)-15*d*e^2*f*x*exp(2*d*x+2*c))/(exp(2*
```

```
d*x+2*c)-1)^2/d^2/(exp(d*x+c)-I)/a+9/2/a/d^3*e*f^2*c^2*ln(1-exp(d*x+c))+9/2
/a/d*e*f^2*ln(exp(d*x+c)+1)*x^2+9/a/d^2*e*f^2*polylog(2,-exp(d*x+c))*x-9/2/
a/d*e*f^2*ln(1-exp(d*x+c))*x^2-9/a/d^2*e*f^2*polylog(2,exp(d*x+c))*x+9/2/a/
d*ln(exp(d*x+c)+1)*e^2*f*x-9/2/a/d*ln(1-exp(d*x+c))*e^2*f*x-6*I/a/d^3*ln(1-
exp(d*x+c))*c*e*f^2+3/a/d^4*f^3*c*ln(1-exp(d*x+c))-3/a/d^3*e*f^2*ln(exp(d*x
+c)+1)+3/a/d^3*e*f^2*ln(exp(d*x+c)-1)-3/a/d^3*f^3*ln(exp(d*x+c)+1)*x+3/a/d^
3*f^3*ln(1-exp(d*x+c))*x+3/2/a/d*f^3*ln(exp(d*x+c)+1)*x^3-9/a/d^3*e*f^2*pol
ylog(3,-exp(d*x+c))+9/a/d^3*e*f^2*polylog(3,exp(d*x+c))+3/2/a/d^4*f^3*c^3*l
n(exp(d*x+c)-1)+9/2/a/d^2*f^3*polylog(2,-exp(d*x+c))*x^2-9/a/d^3*f^3*polylo
g(3,-exp(d*x+c))*x-3/2/a/d*f^3*ln(1-exp(d*x+c))*x^3-3/2/a/d^4*f^3*ln(1-exp(
d*x+c))*c^3-9/2/a/d^2*f^3*polylog(2,exp(d*x+c))*x^2+9/a/d^3*f^3*polylog(3,e
xp(d*x+c))*x+9/2/a/d^2*e^2*f*polylog(2,-exp(d*x+c))-9/2/a/d^2*e^2*f*polylog
(2,exp(d*x+c))-3/a/d^4*f^3*c*ln(exp(d*x+c)-1)+4*I/a/d*f^3*x^3+6*I/a/d^4*f^3
*polylog(3,exp(d*x+c))+6*I/a/d^4*f^3*polylog(3,-exp(d*x+c))-8*I/a/d^4*f^3*c
^3
```

maxima [B] time = 0.93, size = 1316, normalized size = 2.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -1/2*e^3*(16*(-I*e^(-d*x - c) - 5*e^(-2*d*x - 2*c) + 3*I*e^(-3*d*x - 3*c) +
 3*e^(-4*d*x - 4*c) + 4)/((8*a*e^(-d*x - c) - 16*I*a*e^(-2*d*x - 2*c) - 16*
a*e^(-3*d*x - 3*c) + 8*I*a*e^(-4*d*x - 4*c) + 8*a*e^(-5*d*x - 5*c) + 8*I*a)
*d) - 3*log(e^(-d*x - c) + 1)/(a*d) + 3*log(e^(-d*x - c) - 1)/(a*d)) + 6*I*
e^2*f*x/(a*d) - 6*I*e^2*f*log(I*e^(d*x + c) + 1)/(a*d^2) - (4*d*f^3*x^3 + 1
2*d*e*f^2*x^2 + 12*d*e^2*f*x + 3*(d*f^3*x^3*e^(4*c) + e^2*f*e^(4*c) + (3*d*
e*f^2 + f^3)*x^2*e^(4*c) + (3*d*e^2*f + 2*e*f^2)*x*e^(4*c))*e^(4*d*x) + (-3
*I*d*f^3*x^3*e^(3*c) - 3*I*e^2*f*e^(3*c) + (-9*I*d*e*f^2 - 3*I*f^3)*x^2*e^(
3*c) + (-9*I*d*e^2*f - 6*I*e*f^2)*x*e^(3*c))*e^(3*d*x) - (5*d*f^3*x^3*e^(2*
c) + 3*e^2*f*e^(2*c) + 3*(5*d*e*f^2 + f^3)*x^2*e^(2*c) + 3*(5*d*e^2*f + 2*e
*f^2)*x*e^(2*c))*e^(2*d*x) + (I*d*f^3*x^3*e^c + 3*I*e^2*f*e^c + (3*I*d*e*f^
2 + 3*I*f^3)*x^2*e^c + (3*I*d*e^2*f + 6*I*e*f^2)*x*e^c)*e^(d*x))/(a*d^2*e^(
5*d*x + 5*c) - I*a*d^2*e^(4*d*x + 4*c) - 2*a*d^2*e^(3*d*x + 3*c) + 2*I*a*d^
2*e^(2*d*x + 2*c) + a*d^2*e^(d*x + c) - I*a*d^2) - 12*I*(d*x*log(I*e^(d*x +
 c) + 1) + dilog(-I*e^(d*x + c)))*e*f^2/(a*d^3) + 3/2*(d^3*x^3*log(e^(d*x +
 c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x + c)) +
 6*polylog(4, -e^(d*x + c)))*f^3/(a*d^4) - 3/2*(d^3*x^3*log(-e^(d*x + c) +
1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*polyl
og(4, e^(d*x + c)))*f^3/(a*d^4) - 6*I*(d^2*x^2*log(I*e^(d*x + c) + 1) + 2*d
*x*dilog(-I*e^(d*x + c)) - 2*polylog(3, -I*e^(d*x + c)))*f^3/(a*d^4) + (3*I
*d*e^2*f + 3*e*f^2)*x/(a*d^2) + (3*I*d*e^2*f - 3*e*f^2)*x/(a*d^2) - (3*I*d*
```

```
e^2*f + 3*e*f^2)*log(e^(d*x + c) + 1)/(a*d^3) - (3*I*d*e^2*f - 3*e*f^2)*log
(e^(d*x + c) - 1)/(a*d^3) - 3/2*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilo
g(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*(3*d*e*f^2 + 2*I*f^3)/(a*d^4) +
 3/2*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(
3, -e^(d*x + c)))*(3*d*e*f^2 - 2*I*f^3)/(a*d^4) + 1/2*(9*d^2*e^2*f - 12*I*d
*e*f^2 - 6*f^3)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a*d^4) -
1/2*(9*d^2*e^2*f + 12*I*d*e*f^2 - 6*f^3)*(d*x*log(-e^(d*x + c) + 1) + dilog
(e^(d*x + c)))/(a*d^4) + 1/8*(3*d^4*f^3*x^4 + 4*(3*d*e*f^2 + 2*I*f^3)*d^3*x
^3 + (18*d^2*e^2*f + 24*I*d*e*f^2 - 12*f^3)*d^2*x^2)/(a*d^4) - 1/8*(3*d^4*f
^3*x^4 + 4*(3*d*e*f^2 - 2*I*f^3)*d^3*x^3 + (18*d^2*e^2*f - 24*I*d*e*f^2 - 1
2*f^3)*d^2*x^2)/(a*d^4) + (2*I*d^3*f^3*x^3 + 6*I*d^3*e*f^2*x^2)/(a*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{{\mathrm{sinh}\left(c+d\,x\right)}^3\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sinh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)),x)
[Out] int((e + f*x)^3/(sinh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csch(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
[Out] Timed out
```

3.218 $\int \frac{(e+fx)^2\mathbf{csch}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=368

$$-\frac{4if^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^3}-\frac{if^2\text{Li}_2\left(e^{2(c+dx)}\right)}{ad^3}-\frac{3f^2\text{Li}_3\left(-e^{c+dx}\right)}{ad^3}+\frac{3f^2\text{Li}_3\left(e^{c+dx}\right)}{ad^3}-\frac{f^2\tanh^{-1}(\cosh(c+dx))}{ad^3}+\frac{3f(e+fx)\text{Li}_2}{ad^2}$$

```
[Out] 2*I*(f*x+e)^2/a/d+3*(f*x+e)^2*arctanh(exp(d*x+c))/a/d-f^2*arctanh(cosh(d*x+
c))/a/d^3+I*(f*x+e)^2*coth(d*x+c)/a/d-f*(f*x+e)*csch(d*x+c)/a/d^2-1/2*(f*x+
e)^2*coth(d*x+c)*csch(d*x+c)/a/d-4*I*f*(f*x+e)*ln(1+I*exp(d*x+c))/a/d^2-2*I
*f*(f*x+e)*ln(1-exp(2*d*x+2*c))/a/d^2+3*f*(f*x+e)*polylog(2,-exp(d*x+c))/a/
d^2-4*I*f^2*polylog(2,-I*exp(d*x+c))/a/d^3-3*f*(f*x+e)*polylog(2,exp(d*x+c)
)/a/d^2-I*f^2*polylog(2,exp(2*d*x+2*c))/a/d^3-3*f^2*polylog(3,-exp(d*x+c))/
a/d^3+3*f^2*polylog(3,exp(d*x+c))/a/d^3+I*(f*x+e)^2*tanh(1/2*c+1/4*I*Pi+1/2
*d*x)/a/d
```

Rubi [A] time = 0.86, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.419, Rules used = {5575, 4186, 3770, 4182, 2531, 2282, 6589, 4184, 3716, 2190, 2279, 2391, 3318}

$$\frac{3f(e+fx)\text{PolyLog}\left(2,-e^{c+dx}\right)}{ad^2}-\frac{3f(e+fx)\text{PolyLog}\left(2,e^{c+dx}\right)}{ad^2}-\frac{4if^2\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}-\frac{if^2\text{PolyLog}\left(2,e^{2(c+d}\right.}{ad^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((2*I)*(e + f*x)^2)/(a*d) + (3*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d) - (f
^2*ArcTanh[Cosh[c + d*x]])/(a*d^3) + (I*(e + f*x)^2*Coth[c + d*x])/(a*d) -
(f*(e + f*x)*Csch[c + d*x])/(a*d^2) - ((e + f*x)^2*Coth[c + d*x]*Csch[c + d
*x])/(2*a*d) - ((4*I)*f*(e + f*x)*Log[1 + I*E^(c + d*x)])/(a*d^2) - ((2*I)*
f*(e + f*x)*Log[1 - E^(2*(c + d*x))])/(a*d^2) + (3*f*(e + f*x)*PolyLog[2, -
E^(c + d*x)])/(a*d^2) - ((4*I)*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^3) -
(3*f*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a*d^2) - (I*f^2*PolyLog[2, E^(2*(c
 + d*x))])/(a*d^3) - (3*f^2*PolyLog[3, -E^(c + d*x)])/(a*d^3) + (3*f^2*Poly
Log[3, E^(c + d*x)])/(a*d^3) + (I*(e + f*x)^2*Tanh[c/2 + (I/4)*Pi + (d*x)/2
])/(a*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\operatorname{csch}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\left(i\int \frac{(e+fx)^2\operatorname{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx\right)+\frac{\int (e+fx)^2\operatorname{csch}^3(c+dx)\,dx}{a}$$

$$= -\frac{f(e+fx)\operatorname{csch}(c+dx)}{ad^2}-\frac{(e+fx)^2\coth(c+dx)\operatorname{csch}(c+dx)}{2ad}-\frac{i\int (e+fx)^2\mathrm{cs}}{}$$

$$= \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tanh^{-1}(\cosh(c+dx))}{ad^3}+\frac{i(e+fx)^2\coth(c+dx)}{ad}$$

$$= \frac{i(e+fx)^2}{ad}+\frac{3(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tanh^{-1}(\cosh(c+dx))}{ad^3}+\frac{i(e+fx)^2}{}$$

$$= \frac{i(e+fx)^2}{ad}+\frac{3(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tanh^{-1}(\cosh(c+dx))}{ad^3}+\frac{i(e+fx)^2}{}$$

$$= \frac{2i(e+fx)^2}{ad}+\frac{3(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tanh^{-1}(\cosh(c+dx))}{ad^3}+\frac{i(e+fx)}{}$$

$$= \frac{2i(e+fx)^2}{ad}+\frac{3(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tanh^{-1}(\cosh(c+dx))}{ad^3}+\frac{i(e+fx)}{}$$

$$= \frac{2i(e+fx)^2}{ad}+\frac{3(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tanh^{-1}(\cosh(c+dx))}{ad^3}+\frac{i(e+fx)}{}$$

$$= \frac{2i(e+fx)^2}{ad}+\frac{3(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tanh^{-1}(\cosh(c+dx))}{ad^3}+\frac{i(e+fx)}{}$$

<u>Mathematica</u> [B] time = 16.85, size = 1378, normalized size = 3.74

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (-2*d*(e + f*x)*(d*(e + f*x) + 2*(1 + I*E^c)*f*Log[1 - I*E^(-c - d*x)]) + 4
*(1 + I*E^c)*f^2*PolyLog[2, I*E^(-c - d*x)])/(a*d^3*(-I + E^c)) + ((2*I)*d^
2*(e + f*x)^2*(-1 + Coth[c]) + (3*d^2*e^2 + (4*I)*d*e*f - 2*f^2)*(d*x - Log
[1 - Cosh[c + d*x] - Sinh[c + d*x]]) + 2*d*(3*d*e - (2*I)*f)*f*x*Log[1 + Co
sh[c + d*x] - Sinh[c + d*x]] + 3*d^2*f^2*x^2*Log[1 + Cosh[c + d*x] - Sinh[c
 + d*x]] - 2*d*(3*d*e + (2*I)*f)*f*x*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]]
```

```
 - 3*d^2*f^2*x^2*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]] - (3*d^2*e^2 - (4*I
)*d*e*f - 2*f^2)*(d*x - Log[1 + Cosh[c + d*x] + Sinh[c + d*x]]) + 2*(3*d*e
+ (2*I)*f)*f*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] - 2*(3*d*e - (2*I)*f
)*f*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + 6*f^2*(d*x*PolyLog[2, Cosh
[c + d*x] - Sinh[c + d*x]] + PolyLog[3, Cosh[c + d*x] - Sinh[c + d*x]]) - 6
*f^2*(d*x*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + PolyLog[3, -Cosh[c +
 d*x] + Sinh[c + d*x]]))/(2*a*d^3) + (Csch[c]*Csch[c + d*x]^2*(2*e*f*Cosh[(
d*x)/2] + 2*f^2*x*Cosh[(d*x)/2] + 2*e*f*Cosh[(3*d*x)/2] + 2*f^2*x*Cosh[(3*d
*x)/2] + (5*I)*d*e^2*Cosh[c - (d*x)/2] + (10*I)*d*e*f*x*Cosh[c - (d*x)/2] +
 (5*I)*d*f^2*x^2*Cosh[c - (d*x)/2] - I*d*e^2*Cosh[c + (d*x)/2] - (2*I)*d*e*
f*x*Cosh[c + (d*x)/2] - I*d*f^2*x^2*Cosh[c + (d*x)/2] - 2*e*f*Cosh[2*c + (d
*x)/2] - 2*f^2*x*Cosh[2*c + (d*x)/2] + I*d*e^2*Cosh[c + (3*d*x)/2] + (2*I)*
d*e*f*x*Cosh[c + (3*d*x)/2] + I*d*f^2*x^2*Cosh[c + (3*d*x)/2] - 2*e*f*Cosh[
2*c + (3*d*x)/2] - 2*f^2*x*Cosh[2*c + (3*d*x)/2] - (3*I)*d*e^2*Cosh[3*c + (
3*d*x)/2] - (6*I)*d*e*f*x*Cosh[3*c + (3*d*x)/2] - (3*I)*d*f^2*x^2*Cosh[3*c
+ (3*d*x)/2] - (4*I)*d*e^2*Cosh[c + (5*d*x)/2] - (8*I)*d*e*f*x*Cosh[c + (5*
d*x)/2] - (4*I)*d*f^2*x^2*Cosh[c + (5*d*x)/2] + (2*I)*d*e^2*Cosh[3*c + (5*d
*x)/2] + (4*I)*d*e*f*x*Cosh[3*c + (5*d*x)/2] + (2*I)*d*f^2*x^2*Cosh[3*c + (
5*d*x)/2] - d*e^2*Sinh[(d*x)/2] - 2*d*e*f*x*Sinh[(d*x)/2] - d*f^2*x^2*Sinh[
(d*x)/2] - d*e^2*Sinh[(3*d*x)/2] - 2*d*e*f*x*Sinh[(3*d*x)/2] - d*f^2*x^2*Si
nh[(3*d*x)/2] + (2*I)*e*f*Sinh[c - (d*x)/2] + (2*I)*f^2*x*Sinh[c - (d*x)/2]
 + (2*I)*e*f*Sinh[c + (d*x)/2] + (2*I)*f^2*x*Sinh[c + (d*x)/2] - 3*d*e^2*Si
nh[2*c + (d*x)/2] - 6*d*e*f*x*Sinh[2*c + (d*x)/2] - 3*d*f^2*x^2*Sinh[2*c +
(d*x)/2] + (2*I)*e*f*Sinh[c + (3*d*x)/2] + (2*I)*f^2*x*Sinh[c + (3*d*x)/2]
- d*e^2*Sinh[2*c + (3*d*x)/2] - 2*d*e*f*x*Sinh[2*c + (3*d*x)/2] - d*f^2*x^2
*Sinh[2*c + (3*d*x)/2] - (2*I)*e*f*Sinh[3*c + (3*d*x)/2] - (2*I)*f^2*x*Sinh
[3*c + (3*d*x)/2] + 2*d*e^2*Sinh[2*c + (5*d*x)/2] + 4*d*e*f*x*Sinh[2*c + (5
*d*x)/2] + 2*d*f^2*x^2*Sinh[2*c + (5*d*x)/2]))/(8*a*d^2*(Cosh[c/2] + I*Sinh
[c/2])*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2]))
```

fricas [C] time = 0.53, size = 2213, normalized size = 6.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -(8*d^2*e^2 - 16*c*d*e*f + 8*c^2*f^2 - (-8*I*f^2*e^(5*d*x + 5*c) - 8*f^2*e^
(4*d*x + 4*c) + 16*I*f^2*e^(3*d*x + 3*c) + 16*f^2*e^(2*d*x + 2*c) - 8*I*f^2
*e^(d*x + c) - 8*f^2)*dilog(-I*e^(d*x + c)) - (-6*I*d*f^2*x - 6*I*d*e*f - 4
*f^2 + (6*d*f^2*x + 6*d*e*f - 4*I*f^2)*e^(5*d*x + 5*c) + (-6*I*d*f^2*x - 6*
I*d*e*f - 4*f^2)*e^(4*d*x + 4*c) - (12*d*f^2*x + 12*d*e*f - 8*I*f^2)*e^(3*d
*x + 3*c) + (12*I*d*f^2*x + 12*I*d*e*f + 8*f^2)*e^(2*d*x + 2*c) + (6*d*f^2*
x + 6*d*e*f - 4*I*f^2)*e^(d*x + c))*dilog(-e^(d*x + c)) - (6*I*d*f^2*x + 6*
```

```
I*d*e*f - 4*f^2 - (6*d*f^2*x + 6*d*e*f + 4*I*f^2)*e^(5*d*x + 5*c) + (6*I*d*
f^2*x + 6*I*d*e*f - 4*f^2)*e^(4*d*x + 4*c) + (12*d*f^2*x + 12*d*e*f + 8*I*f
^2)*e^(3*d*x + 3*c) + (-12*I*d*f^2*x - 12*I*d*e*f + 8*f^2)*e^(2*d*x + 2*c)
- (6*d*f^2*x + 6*d*e*f + 4*I*f^2)*e^(d*x + c))*dilog(e^(d*x + c)) - (8*I*d^
2*f^2*x^2 + 16*I*d^2*e*f*x + 16*I*c*d*e*f - 8*I*c^2*f^2)*e^(5*d*x + 5*c) -
2*(d^2*f^2*x^2 - 3*d^2*e^2 + 2*(4*c - 1)*d*e*f - 4*c^2*f^2 + 2*(d^2*e*f - d
*f^2)*x)*e^(4*d*x + 4*c) - (-10*I*d^2*f^2*x^2 + 6*I*d^2*e^2 + (-32*I*c + 4*
I)*d*e*f + 16*I*c^2*f^2 + (-20*I*d^2*e*f + 4*I*d*f^2)*x)*e^(3*d*x + 3*c) +
2*(3*d^2*f^2*x^2 - 5*d^2*e^2 + 2*(8*c - 1)*d*e*f - 8*c^2*f^2 + 2*(3*d^2*e*f
 - d*f^2)*x)*e^(2*d*x + 2*c) - (6*I*d^2*f^2*x^2 - 2*I*d^2*e^2 + (16*I*c - 4
*I)*d*e*f - 8*I*c^2*f^2 + (12*I*d^2*e*f - 4*I*d*f^2)*x)*e^(d*x + c) - (-3*I
*d^2*f^2*x^2 - 3*I*d^2*e^2 - 4*d*e*f + 2*I*f^2 - 2*(3*I*d^2*e*f + 2*d*f^2)*
x + (3*d^2*f^2*x^2 + 3*d^2*e^2 - 4*I*d*e*f - 2*f^2 + (6*d^2*e*f - 4*I*d*f^2
)*x)*e^(5*d*x + 5*c) + (-3*I*d^2*f^2*x^2 - 3*I*d^2*e^2 - 4*d*e*f + 2*I*f^2
- 2*(3*I*d^2*e*f + 2*d*f^2)*x)*e^(4*d*x + 4*c) - (6*d^2*f^2*x^2 + 6*d^2*e^2
 - 8*I*d*e*f - 4*f^2 + (12*d^2*e*f - 8*I*d*f^2)*x)*e^(3*d*x + 3*c) + (6*I*d
^2*f^2*x^2 + 6*I*d^2*e^2 + 8*d*e*f - 4*I*f^2 - 4*(-3*I*d^2*e*f - 2*d*f^2)*x
)*e^(2*d*x + 2*c) + (3*d^2*f^2*x^2 + 3*d^2*e^2 - 4*I*d*e*f - 2*f^2 + (6*d^2
*e*f - 4*I*d*f^2)*x)*e^(d*x + c))*log(e^(d*x + c) + 1) + (8*d*e*f - 8*c*f^2
 - (-8*I*d*e*f + 8*I*c*f^2)*e^(5*d*x + 5*c) + 8*(d*e*f - c*f^2)*e^(4*d*x +
4*c) - (16*I*d*e*f - 16*I*c*f^2)*e^(3*d*x + 3*c) - 16*(d*e*f - c*f^2)*e^(2*
d*x + 2*c) - (-8*I*d*e*f + 8*I*c*f^2)*e^(d*x + c))*log(e^(d*x + c) - I) - (
3*I*d^2*e^2 - 2*(3*I*c + 2)*d*e*f + (3*I*c^2 + 4*c - 2*I)*f^2 - (3*d^2*e^2
- (6*c - 4*I)*d*e*f + (3*c^2 - 4*I*c - 2)*f^2)*e^(5*d*x + 5*c) + (3*I*d^2*e
^2 - 2*(3*I*c + 2)*d*e*f + (3*I*c^2 + 4*c - 2*I)*f^2)*e^(4*d*x + 4*c) + (6*
d^2*e^2 - (12*c - 8*I)*d*e*f + 2*(3*c^2 - 4*I*c - 2)*f^2)*e^(3*d*x + 3*c) +
 (-6*I*d^2*e^2 - 4*(-3*I*c - 2)*d*e*f + (-6*I*c^2 - 8*c + 4*I)*f^2)*e^(2*d*
x + 2*c) - (3*d^2*e^2 - (6*c - 4*I)*d*e*f + (3*c^2 - 4*I*c - 2)*f^2)*e^(d*x
 + c))*log(e^(d*x + c) - 1) + (8*d*f^2*x + 8*c*f^2 - (-8*I*d*f^2*x - 8*I*c*
f^2)*e^(5*d*x + 5*c) + 8*(d*f^2*x + c*f^2)*e^(4*d*x + 4*c) - (16*I*d*f^2*x
+ 16*I*c*f^2)*e^(3*d*x + 3*c) - 16*(d*f^2*x + c*f^2)*e^(2*d*x + 2*c) - (-8*
I*d*f^2*x - 8*I*c*f^2)*e^(d*x + c))*log(I*e^(d*x + c) + 1) - (3*I*d^2*f^2*x
^2 + 6*I*c*d*e*f + (-3*I*c^2 - 4*c)*f^2 - 2*(-3*I*d^2*e*f + 2*d*f^2)*x - (3
*d^2*f^2*x^2 + 6*c*d*e*f - (3*c^2 - 4*I*c)*f^2 + (6*d^2*e*f + 4*I*d*f^2)*x)
*e^(5*d*x + 5*c) + (3*I*d^2*f^2*x^2 + 6*I*c*d*e*f + (-3*I*c^2 - 4*c)*f^2 -
2*(-3*I*d^2*e*f + 2*d*f^2)*x)*e^(4*d*x + 4*c) + (6*d^2*f^2*x^2 + 12*c*d*e*f
 - 2*(3*c^2 - 4*I*c)*f^2 + (12*d^2*e*f + 8*I*d*f^2)*x)*e^(3*d*x + 3*c) + (-
6*I*d^2*f^2*x^2 - 12*I*c*d*e*f + (6*I*c^2 + 8*c)*f^2 - 4*(3*I*d^2*e*f - 2*d
*f^2)*x)*e^(2*d*x + 2*c) - (3*d^2*f^2*x^2 + 6*c*d*e*f - (3*c^2 - 4*I*c)*f^2
 + (6*d^2*e*f + 4*I*d*f^2)*x)*e^(d*x + c))*log(-e^(d*x + c) + 1) + (6*f^2*e
^(5*d*x + 5*c) - 6*I*f^2*e^(4*d*x + 4*c) - 12*f^2*e^(3*d*x + 3*c) + 12*I*f^
2*e^(2*d*x + 2*c) + 6*f^2*e^(d*x + c) - 6*I*f^2)*polylog(3, -e^(d*x + c)) -
 (6*f^2*e^(5*d*x + 5*c) - 6*I*f^2*e^(4*d*x + 4*c) - 12*f^2*e^(3*d*x + 3*c)
+ 12*I*f^2*e^(2*d*x + 2*c) + 6*f^2*e^(d*x + c) - 6*I*f^2)*polylog(3, e^(d*x
 + c)))/(2*a*d^3*e^(5*d*x + 5*c) - 2*I*a*d^3*e^(4*d*x + 4*c) - 4*a*d^3*e^(3
```

```
*d*x + 3*c) + 4*I*a*d^3*e^(2*d*x + 2*c) + 2*a*d^3*e^(d*x + c) - 2*I*a*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.32, size = 1107, normalized size = 3.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -4*I/a/d^2*ln(exp(d*x+c)-I)*e*f-4*I/a/d^2*f^2*ln(1+I*exp(d*x+c))*x-4*I/a/d^
3*f^2*ln(1+I*exp(d*x+c))*c+4*I/a/d^3*f^2*c*ln(exp(d*x+c)-I)-3/a/d*ln(1-exp(
d*x+c))*e*f*x-3/a/d^2*ln(1-exp(d*x+c))*c*e*f+3/a/d^2*e*f*c*ln(exp(d*x+c)-1)
+3/a/d*ln(exp(d*x+c)+1)*e*f*x-3*f^2*polylog(3,-exp(d*x+c))/a/d^3+3*f^2*poly
log(3,exp(d*x+c))/a/d^3-4*I*f^2*polylog(2,-I*exp(d*x+c))/a/d^3+3/2/a/d^3*f^
2*c^2*ln(1-exp(d*x+c))+3/2/a/d*f^2*ln(exp(d*x+c)+1)*x^2+3/a/d^2*f^2*polylog
(2,-exp(d*x+c))*x-3/2/a/d*f^2*ln(1-exp(d*x+c))*x^2-3/a/d^2*f^2*polylog(2,ex
p(d*x+c))*x+3/2/a/d*e^2*ln(exp(d*x+c)+1)-3/2/a/d*e^2*ln(exp(d*x+c)-1)-3/2/a
/d^3*f^2*c^2*ln(exp(d*x+c)-1)+3/a/d^2*e*f*polylog(2,-exp(d*x+c))-3/a/d^2*e*
f*polylog(2,exp(d*x+c))-2*I/d^2/a*f*e*ln(exp(d*x+c)+1)-2*I/d^2/a*f*e*ln(exp
(d*x+c)-1)+8*I/d^2/a*e*f*ln(exp(d*x+c))+2*I/d^3/a*f^2*c*ln(exp(d*x+c)-1)-8*
I/d^3/a*f^2*c*ln(exp(d*x+c))+8*I/d^2/a*c*f^2*x-2*I/d^3/a*ln(1-exp(d*x+c))*c
*f^2-2*I/d^2/a*ln(exp(d*x+c)+1)*f^2*x-2*I/d^2/a*ln(1-exp(d*x+c))*f^2*x-(2*I
*f^2*x*exp(d*x+c)-2*I*e*f*exp(3*d*x+3*c)-10*d*e*f*x*exp(2*d*x+2*c)+6*d*e*f*
x*exp(4*d*x+4*c)+2*I*d*e*f*x*exp(d*x+c)+I*d*e^2*exp(d*x+c)+4*d*e^2-5*d*f^2*
x^2*exp(2*d*x+2*c)-6*I*d*e*f*x*exp(3*d*x+3*c)+2*I*exp(d*x+c)*e*f+I*d*f^2*x^
2*exp(d*x+c)-3*I*d*f^2*x^2*exp(3*d*x+3*c)-3*I*d*e^2*exp(3*d*x+3*c)+3*d*f^2*
x^2*exp(4*d*x+4*c)-2*I*f^2*x*exp(3*d*x+3*c)-5*d*e^2*exp(2*d*x+2*c)+8*d*e*f*
x+3*d*e^2*exp(4*d*x+4*c)+2*f^2*x*exp(4*d*x+4*c)+2*e*f*exp(4*d*x+4*c)-2*f^2*
x*exp(2*d*x+2*c)-2*e*f*exp(2*d*x+2*c)+4*d*f^2*x^2)/(exp(2*d*x+2*c)-1)^2/d^2
/(exp(d*x+c)-I)/a-1/d^3/a*f^2*ln(exp(d*x+c)+1)+1/d^3/a*f^2*ln(exp(d*x+c)-1)
+4*I/d^3/a*c^2*f^2+4*I/d/a*f^2*x^2-2*I/d^3/a*f^2*polylog(2,exp(d*x+c))-2*I/
d^3/a*f^2*polylog(2,-exp(d*x+c))
```

maxima [B] time = 1.02, size = 863, normalized size = 2.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -1/2*e^2*(16*(-I*e^(-d*x - c) - 5*e^(-2*d*x - 2*c) + 3*I*e^(-3*d*x - 3*c) +
 3*e^(-4*d*x - 4*c) + 4)/((8*a*e^(-d*x - c) - 16*I*a*e^(-2*d*x - 2*c) - 16*
a*e^(-3*d*x - 3*c) + 8*I*a*e^(-4*d*x - 4*c) + 8*a*e^(-5*d*x - 5*c) + 8*I*a)
*d) - 3*log(e^(-d*x - c) + 1)/(a*d) + 3*log(e^(-d*x - c) - 1)/(a*d)) + 2*I*
f^2*x^2/(a*d) + 4*I*e*f*x/(a*d) - (4*d*f^2*x^2 + 8*d*e*f*x + (3*d*f^2*x^2*e
^(4*c) + 2*e*f*e^(4*c) + 2*(3*d*e*f + f^2)*x*e^(4*c))*e^(4*d*x) + (-3*I*d*f
^2*x^2*e^(3*c) - 2*I*e*f*e^(3*c) + (-6*I*d*e*f - 2*I*f^2)*x*e^(3*c))*e^(3*d
*x) - (5*d*f^2*x^2*e^(2*c) + 2*e*f*e^(2*c) + 2*(5*d*e*f + f^2)*x*e^(2*c))*e
^(2*d*x) + (I*d*f^2*x^2*e^c + 2*I*e*f*e^c + (2*I*d*e*f + 2*I*f^2)*x*e^c)*e^
(d*x))/(a*d^2*e^(5*d*x + 5*c) - I*a*d^2*e^(4*d*x + 4*c) - 2*a*d^2*e^(3*d*x
+ 3*c) + 2*I*a*d^2*e^(2*d*x + 2*c) + a*d^2*e^(d*x + c) - I*a*d^2) - 4*I*e*f
*log(I*e^(d*x + c) + 1)/(a*d^2) + 3/2*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x
*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*f^2/(a*d^3) - 3/2*(d^2*x
^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x +
 c)))*f^2/(a*d^3) - 4*I*(d*x*log(I*e^(d*x + c) + 1) + dilog(-I*e^(d*x + c))
)*f^2/(a*d^3) + (2*I*d*e*f + f^2)*x/(a*d^2) + (2*I*d*e*f - f^2)*x/(a*d^2) +
 (3*d*e*f - 2*I*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a*d^
3) - (3*d*e*f + 2*I*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(
a*d^3) - (2*I*d*e*f + f^2)*log(e^(d*x + c) + 1)/(a*d^3) - (2*I*d*e*f - f^2)
*log(e^(d*x + c) - 1)/(a*d^3) + 1/2*(d^3*f^2*x^3 + (3*d*e*f + 2*I*f^2)*d^2*
x^2)/(a*d^3) - 1/2*(d^3*f^2*x^3 + (3*d*e*f - 2*I*f^2)*d^2*x^2)/(a*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^2}{\mathrm{sinh}\left(c+d\,x\right)^3\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sinh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)^2/(sinh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.219 $\int \frac{(e+fx)\mathrm{csch}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=214

$$\frac{3f\mathrm{Li}_2\left(-e^{c+dx}\right)}{2ad^2}-\frac{3f\mathrm{Li}_2\left(e^{c+dx}\right)}{2ad^2}-\frac{f\mathrm{csch}(c+dx)}{2ad^2}-\frac{if\log(\sinh(c+dx))}{ad^2}-\frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right)\right)}{ad^2}+\frac{3(e+fx)\,\mathrm{ta}}{a}$$

[Out] 3*(f*x+e)*arctanh(exp(d*x+c))/a/d+I*(f*x+e)*coth(d*x+c)/a/d-1/2*f*csch(d*x+c)/a/d^2-1/2*(f*x+e)*coth(d*x+c)*csch(d*x+c)/a/d-2*I*f*ln(cosh(1/2*c+1/4*I*Pi+1/2*d*x))/a/d^2-I*f*ln(sinh(d*x+c))/a/d^2+3/2*f*polylog(2,-exp(d*x+c))/a/d^2-3/2*f*polylog(2,exp(d*x+c))/a/d^2+I*(f*x+e)*tanh(1/2*c+1/4*I*Pi+1/2*d*x)/a/d

Rubi [A] time = 0.37, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {5575, 4185, 4182, 2279, 2391, 4184, 3475, 3318}

$$\frac{3f\mathrm{PolyLog}\left(2,-e^{c+dx}\right)}{2ad^2}-\frac{3f\mathrm{PolyLog}\left(2,e^{c+dx}\right)}{2ad^2}-\frac{f\mathrm{csch}(c+dx)}{2ad^2}-\frac{if\log(\sinh(c+dx))}{ad^2}-\frac{2if\log\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}+\frac{i\pi}{4}\right.\right.}{ad^2}$$

Antiderivative was successfully verified.

[In] Int[((e + f*x)*Csch[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]

[Out] (3*(e + f*x)*ArcTanh[E^(c + d*x)])/(a*d) + (I*(e + f*x)*Coth[c + d*x])/(a*d) - (f*Csch[c + d*x])/(2*a*d^2) - ((e + f*x)*Coth[c + d*x]*Csch[c + d*x])/(2*a*d) - ((2*I)*f*Log[Cosh[c/2 + (I/4)*Pi + (d*x)/2]])/(a*d^2) - (I*f*Log[Sinh[c + d*x]])/(a*d^2) + (3*f*PolyLog[2, -E^(c + d*x)])/(2*a*d^2) - (3*f*PolyLog[2, E^(c + d*x)])/(2*a*d^2) + (I*(e + f*x)*Tanh[c/2 + (I/4)*Pi + (d*x)/2])/(a*d)

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\operatorname{csch}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\left(i\int \frac{(e+fx)\operatorname{csch}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx\right) + \frac{\int (e+fx)\operatorname{csch}^3(c+dx)\,dx}{a}$$

$$= -\frac{f\operatorname{csch}(c+dx)}{2ad^2} - \frac{(e+fx)\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} - \frac{i\int (e+fx)\operatorname{csch}^2(c+dx)\,d}{a}$$

$$= \frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} + \frac{i(e+fx)\coth(c+dx)}{ad} - \frac{f\operatorname{csch}(c+dx)}{2ad^2} - (e+fx)\coth$$

$$= \frac{3(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} + \frac{i(e+fx)\coth(c+dx)}{ad} - \frac{f\operatorname{csch}(c+dx)}{2ad^2} - (e+fx)\cot$$

$$= \frac{3(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} + \frac{i(e+fx)\coth(c+dx)}{ad} - \frac{f\operatorname{csch}(c+dx)}{2ad^2} - (e+fx)\cot$$

$$= \frac{3(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} + \frac{i(e+fx)\coth(c+dx)}{ad} - \frac{f\operatorname{csch}(c+dx)}{2ad^2} - (e+fx)\cot$$

Mathematica [B] time = 2.75, size = 541, normalized size = 2.53

$$\left(\cosh\left(\tfrac{1}{2}(c+dx)\right) + i\sinh\left(\tfrac{1}{2}(c+dx)\right)\right)\left(16id(e+fx)\sinh\left(\tfrac{1}{2}(c+dx)\right) + 2i\cosh\left(\tfrac{1}{2}(c+dx)\right)\left(\coth\left(\tfrac{1}{2}(c+dx)\right) + \right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*((2*I)*(I*f + 2*d*(e + f*x))*Cos
h[(c + d*x)/2]*(I + Coth[(c + d*x)/2]) - d*(e + f*x)*(I + Coth[(c + d*x)/2]
)*Csch[(c + d*x)/2] - 8*f*(c + d*x)*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2
]) + 16*f*ArcTan[Tanh[(c + d*x)/2]]*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2
]) - 12*d*e*Log[Tanh[(c + d*x)/2]]*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2]
) + 12*c*f*Log[Tanh[(c + d*x)/2]]*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])
 - 12*f*((c + d*x)*(Log[1 - E^(-c - d*x)] - Log[1 + E^(-c - d*x)]) + PolyLo
g[2, -E^(-c - d*x)] - PolyLog[2, E^(-c - d*x)])*(Cosh[(c + d*x)/2] + I*Sinh
[(c + d*x)/2]) + (16*I)*d*(e + f*x)*Sinh[(c + d*x)/2] + 8*f*Log[Cosh[c + d*
x]]*((-I)*Cosh[(c + d*x)/2] + Sinh[(c + d*x)/2]) + 8*f*Log[Sinh[c + d*x]]*(
(-I)*Cosh[(c + d*x)/2] + Sinh[(c + d*x)/2]) + 2*(f + (2*I)*d*(e + f*x))*(Co
sh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*Tanh[(c + d*x)/2] - I*d*(e + f*x)*Se
ch[(c + d*x)/2]*(-I + Tanh[(c + d*x)/2])))/(8*d^2*(a + I*a*Sinh[c + d*x]))
```

fricas [B] time = 0.56, size = 824, normalized size = 3.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(8*d*e - 4*c*f - (3*f*e^(5*d*x + 5*c) - 3*I*f*e^(4*d*x + 4*c) - 6*f*e^(3*d
*x + 3*c) + 6*I*f*e^(2*d*x + 2*c) + 3*f*e^(d*x + c) - 3*I*f)*dilog(-e^(d*x
+ c)) + (3*f*e^(5*d*x + 5*c) - 3*I*f*e^(4*d*x + 4*c) - 6*f*e^(3*d*x + 3*c)
+ 6*I*f*e^(2*d*x + 2*c) + 3*f*e^(d*x + c) - 3*I*f)*dilog(e^(d*x + c)) - (8*
I*d*f*x + 4*I*c*f)*e^(5*d*x + 5*c) - 2*(d*f*x - 3*d*e + (2*c - 1)*f)*e^(4*d
*x + 4*c) - (-10*I*d*f*x + 6*I*d*e + (-8*I*c + 2*I)*f)*e^(3*d*x + 3*c) + 2*
(3*d*f*x - 5*d*e + (4*c - 1)*f)*e^(2*d*x + 2*c) - (6*I*d*f*x - 2*I*d*e + (4
*I*c - 2*I)*f)*e^(d*x + c) - (-3*I*d*f*x - 3*I*d*e + (3*d*f*x + 3*d*e - 2*I
*f)*e^(5*d*x + 5*c) + (-3*I*d*f*x - 3*I*d*e - 2*f)*e^(4*d*x + 4*c) - (6*d*f
*x + 6*d*e - 4*I*f)*e^(3*d*x + 3*c) + (6*I*d*f*x + 6*I*d*e + 4*f)*e^(2*d*x
+ 2*c) + (3*d*f*x + 3*d*e - 2*I*f)*e^(d*x + c) - 2*f)*log(e^(d*x + c) + 1)
- (-4*I*f*e^(5*d*x + 5*c) - 4*f*e^(4*d*x + 4*c) + 8*I*f*e^(3*d*x + 3*c) + 8
*f*e^(2*d*x + 2*c) - 4*I*f*e^(d*x + c) - 4*f)*log(e^(d*x + c) - I) - (3*I*d
*e + (-3*I*c - 2)*f - (3*d*e - (3*c - 2*I)*f)*e^(5*d*x + 5*c) + (3*I*d*e +
(-3*I*c - 2)*f)*e^(4*d*x + 4*c) + (6*d*e - (6*c - 4*I)*f)*e^(3*d*x + 3*c) -
 2*(3*I*d*e + (-3*I*c - 2)*f)*e^(2*d*x + 2*c) - (3*d*e - (3*c - 2*I)*f)*e^(
d*x + c))*log(e^(d*x + c) - 1) - (3*I*d*f*x + 3*I*c*f - 3*(d*f*x + c*f)*e^(
5*d*x + 5*c) + (3*I*d*f*x + 3*I*c*f)*e^(4*d*x + 4*c) + 6*(d*f*x + c*f)*e^(3
*d*x + 3*c) + (-6*I*d*f*x - 6*I*c*f)*e^(2*d*x + 2*c) - 3*(d*f*x + c*f)*e^(d
*x + c))*log(-e^(d*x + c) + 1))/(2*a*d^2*e^(5*d*x + 5*c) - 2*I*a*d^2*e^(4*d
*x + 4*c) - 4*a*d^2*e^(3*d*x + 3*c) + 4*I*a*d^2*e^(2*d*x + 2*c) + 2*a*d^2*e
^(d*x + c) - 2*I*a*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\operatorname{csch}\left(dx+c\right)^{3}}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*csch(d*x + c)^3/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.30, size = 423, normalized size = 1.98

$$-\frac{ide\,e^{dx+c}-5dfx\,e^{2dx+2c}+3dfx\,e^{4dx+4c}+ie^{dx+c}f-5de\,e^{2dx+2c}+3de\,e^{4dx+4c}+idfx\,e^{dx+c}+4dfx+f\,e^{4dx+4c}-}{\left(e^{2dx+2c}-1\right)^{2}d^{2}\left(e^{dx+c}-i\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -(I*d*e*exp(d*x+c)-5*d*f*x*exp(2*d*x+2*c)+3*d*f*x*exp(4*d*x+4*c)+I*exp(d*x+
c)*f-5*d*e*exp(2*d*x+2*c)+3*d*e*exp(4*d*x+4*c)+I*d*f*x*exp(d*x+c)+4*d*f*x+f
*exp(4*d*x+4*c)-3*I*d*e*exp(3*d*x+3*c)-I*exp(3*d*x+3*c)*f+4*d*e-f*exp(2*d*x
+2*c)-3*I*d*f*x*exp(3*d*x+3*c))/(exp(2*d*x+2*c)-1)^2/d^2/(exp(d*x+c)-I)/a-I
/a/d^2*f*ln(exp(d*x+c)+1)-I/a/d^2*f*ln(exp(d*x+c)-1)+3/2/a/d*e*ln(exp(d*x+c
)+1)-3/2/a/d*e*ln(exp(d*x+c)-1)+3/2/a/d*ln(exp(d*x+c)+1)*f*x-3/2/a/d*ln(1-e
xp(d*x+c))*f*x-3/2/a/d^2*ln(1-exp(d*x+c))*c*f+3/2/a/d^2*f*c*ln(exp(d*x+c)-1
)+4*I/a/d^2*f*ln(exp(d*x+c))-2*I*f/a/d^2*ln(exp(d*x+c)-I)+3/2*f*polylog(2,-
exp(d*x+c))/a/d^2-3/2*f*polylog(2,exp(d*x+c))/a/d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(24\,d\int\frac{x}{16\left(ade^{(dx+c)}+ad\right)}\,dx+24\,d\int\frac{x}{16\left(ade^{(dx+c)}-ad\right)}\,dx+\frac{8\left(2\,dxe^{(5\,dx+5\,c)}+2i\,dx+\left(i\,dxe^{(4\,c)}+i\,e^{(4\,c)}\right)e^{(4}\right.}{8i\,ad^2e^{(5\,dx+5\,c)}+8\,ad^2e^{(4\,dx+4\,c)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(24*d*integrate(1/16*x/(a*d*e^(d*x + c) + a*d), x) + 24*d*integrate(1/16*x
/(a*d*e^(d*x + c) - a*d), x) + 8*(2*d*x*e^(5*d*x + 5*c) + 2*I*d*x + (I*d*x*
e^(4*c) + I*e^(4*c))*e^(4*d*x) - (d*x*e^(3*c) - e^(3*c))*e^(3*d*x) + (-I*d*
x*e^(2*c) - I*e^(2*c))*e^(2*d*x) + (d*x*e^c - e^c)*e^(d*x))/(8*I*a*d^2*e^(5
*d*x + 5*c) + 8*a*d^2*e^(4*d*x + 4*c) - 16*I*a*d^2*e^(3*d*x + 3*c) - 16*a*d
^2*e^(2*d*x + 2*c) + 8*I*a*d^2*e^(d*x + c) + 8*a*d^2) - 2*I*(d*x + c)/(a*d^
2) + 2*I*log((e^(d*x + c) - I)*e^(-c))/(a*d^2) + I*log(e^(d*x + c) + 1)/(a*
d^2) + I*log(e^(d*x + c) - 1)/(a*d^2))*f - 1/2*e*(16*(-I*e^(-d*x - c) - 5*e
^(-2*d*x - 2*c) + 3*I*e^(-3*d*x - 3*c) + 3*e^(-4*d*x - 4*c) + 4)/((8*a*e^(-
d*x - c) - 16*I*a*e^(-2*d*x - 2*c) - 16*a*e^(-3*d*x - 3*c) + 8*I*a*e^(-4*d*
x - 4*c) + 8*a*e^(-5*d*x - 5*c) + 8*I*a)*d) - 3*log(e^(-d*x - c) + 1)/(a*d)
 + 3*log(e^(-d*x - c) - 1)/(a*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{e+f\,x}{{\mathrm{sinh}\left(c+d\,x\right)}^3\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sinh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)/(sinh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int\frac{e\operatorname{csch}^3(c+dx)}{\sinh(c+dx)-i}\,dx+\int\frac{fx\operatorname{csch}^3(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e*csch(c + d*x)**3/(sinh(c + d*x) - I), x) + Integral(f*x*csch
(c + d*x)**3/(sinh(c + d*x) - I), x))/a
```

3.220 $\int \frac{\text{csch}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=87

$$\frac{2i\coth(c+dx)}{ad}+\frac{3\tanh^{-1}(\cosh(c+dx))}{2ad}-\frac{3\coth(c+dx)\text{csch}(c+dx)}{2ad}+\frac{\coth(c+dx)\text{csch}(c+dx)}{d(a+ia\sinh(c+dx))}$$

```
[Out] 3/2*arctanh(cosh(d*x+c))/a/d+2*I*coth(d*x+c)/a/d-3/2*coth(d*x+c)*csch(d*x+c
)/a/d+coth(d*x+c)*csch(d*x+c)/d/(a+I*a*sinh(d*x+c))
```

Rubi [A] time = 0.12, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2768, 2748, 3768, 3770, 3767, 8}

$$\frac{2i\coth(c+dx)}{ad}+\frac{3\tanh^{-1}(\cosh(c+dx))}{2ad}-\frac{3\coth(c+dx)\text{csch}(c+dx)}{2ad}+\frac{\coth(c+dx)\text{csch}(c+dx)}{d(a+ia\sinh(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[Csch[c + d*x]^3/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (3*ArcTanh[Cosh[c + d*x]])/(2*a*d) + ((2*I)*Coth[c + d*x])/(a*d) - (3*Coth[
c + d*x]*Csch[c + d*x])/(2*a*d) + (Coth[c + d*x]*Csch[c + d*x])/(d*(a + I*a
*Sinh[c + d*x]))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2748

```
Int[((b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*sin[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Sin[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Sin[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x]
```

Rule 2768

```
Int[((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)/((a_) + (b_.)*sin[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[(b^2*Cos[e + f*x]*(c + d*Sin[e + f*x])^(n
+ 1))/(a*f*(b*c - a*d)*(a + b*Sin[e + f*x])), x] + Dist[d/(a*(b*c - a*d)),
Int[(c + d*Sin[e + f*x])^n*(a*n - b*(n + 1)*Sin[e + f*x]), x], x] /; FreeQ[
{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2
 - d^2, 0] && LtQ[n, 0] && (IntegerQ[2*n] || EqQ[c, 0])
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3768

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Csc[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[(b^2*(n - 2))/(n - 1), I
nt[(b*Csc[c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] &&
IntegerQ[2*n]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{d(a+ia\sinh(c+dx))} - \frac{\int \operatorname{csch}^3(c+dx)(-3a+2ia\sinh(c+dx))\,dx}{a^2}$$

$$= \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{d(a+ia\sinh(c+dx))} - \frac{(2i)\int \operatorname{csch}^2(c+dx)\,dx}{a} + \frac{3\int \operatorname{csch}^3(c+dx)\,dx}{a}$$

$$= -\frac{3\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} + \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{d(a+ia\sinh(c+dx))} - \frac{3\int \operatorname{csch}(c+dx)\,dx}{2a} -$$

$$= \frac{3\tanh^{-1}(\cosh(c+dx))}{2ad} + \frac{2i\coth(c+dx)}{ad} - \frac{3\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} + \frac{\coth(c}{d(a+}$$

Mathematica [A] time = 0.44, size = 90, normalized size = 1.03

$$\frac{4i\tanh(c+dx) + 4i\operatorname{csch}(2(c+dx)) - 3\operatorname{sech}(c+dx) + \operatorname{csch}^2(c+dx)(-\operatorname{sech}(c+dx)) + 3\sqrt{\cosh^2(c+dx)}\operatorname{sech}(}{2ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csch[c + d*x]^3/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((4*I)*Csch[2*(c + d*x)] - 3*Sech[c + d*x] + 3*ArcTanh[Sqrt[Cosh[c + d*x]^2
]]*Sqrt[Cosh[c + d*x]^2]*Sech[c + d*x] - Csch[c + d*x]^2*Sech[c + d*x] + (4
*I)*Tanh[c + d*x])/(2*a*d)
```

fricas [B] time = 0.58, size = 242, normalized size = 2.78

$$\frac{\left(3\,e^{(5\,dx+5\,c)} - 3i\,e^{(4\,dx+4\,c)} - 6\,e^{(3\,dx+3\,c)} + 6i\,e^{(2\,dx+2\,c)} + 3\,e^{(dx+c)} - 3i\right)\log\left(e^{(dx+c)} + 1\right) - \left(3\,e^{(5\,dx+5\,c)} - 3i\,e^{(4\,dx+4\,c)} - \cdots\right.}{2\,ade^{(5\,dx+5\,c)} - 2i\,ade^{(4\,dx+4\,c)} - 4\,ade^{(3\,dx+\cdots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((3*e^(5*d*x + 5*c) - 3*I*e^(4*d*x + 4*c) - 6*e^(3*d*x + 3*c) + 6*I*e^(2*d*
x + 2*c) + 3*e^(d*x + c) - 3*I)*log(e^(d*x + c) + 1) - (3*e^(5*d*x + 5*c) -
 3*I*e^(4*d*x + 4*c) - 6*e^(3*d*x + 3*c) + 6*I*e^(2*d*x + 2*c) + 3*e^(d*x +
 c) - 3*I)*log(e^(d*x + c) - 1) - 6*e^(4*d*x + 4*c) + 6*I*e^(3*d*x + 3*c) +
 10*e^(2*d*x + 2*c) - 2*I*e^(d*x + c) - 8)/(2*a*d*e^(5*d*x + 5*c) - 2*I*a*d
*e^(4*d*x + 4*c) - 4*a*d*e^(3*d*x + 3*c) + 4*I*a*d*e^(2*d*x + 2*c) + 2*a*d*
e^(d*x + c) - 2*I*a*d)
```

giac [A] time = 0.75, size = 97, normalized size = 1.11

$$\frac{\frac{3\,\log\left(e^{(dx+c)}+1\right)}{a} - \frac{3\,\log\left(e^{(dx+c)}-1\right)}{a} - \frac{2\left(e^{(3\,dx+3\,c)}-2i\,e^{(2\,dx+2\,c)}+e^{(dx+c)}+2i\right)}{a\left(e^{(2\,dx+2\,c)}-1\right)^{2}} - \frac{4i}{a\left(i\,e^{(dx+c)}+1\right)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(3*log(e^(d*x + c) + 1)/a - 3*log(e^(d*x + c) - 1)/a - 2*(e^(3*d*x + 3*
c) - 2*I*e^(2*d*x + 2*c) + e^(d*x + c) + 2*I)/(a*(e^(2*d*x + 2*c) - 1)^2) -
 4*I/(a*(I*e^(d*x + c) + 1)))/d
```

maple [A] time = 0.11, size = 119, normalized size = 1.37

$$\frac{i\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da}+\frac{\tanh^{2}\left(\frac{dx}{2}+\frac{c}{2}\right)}{8da}+\frac{2i}{da\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}-\frac{1}{8da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^{2}}+\frac{i}{2da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{3\ln\left(\tanh\cdots\right.}{2d\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 1/2*I/d/a*tanh(1/2*d*x+1/2*c)+1/8/d/a*tanh(1/2*d*x+1/2*c)^2+2*I/d/a/(-I+tan
h(1/2*d*x+1/2*c))-1/8/d/a/tanh(1/2*d*x+1/2*c)^2+1/2*I/d/a/tanh(1/2*d*x+1/2*
c)-3/2/d/a*ln(tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.32, size = 158, normalized size = 1.82

$$-\frac{8\left(-i\,e^{(-dx-c)}-5\,e^{(-2\,dx-2\,c)}+3i\,e^{(-3\,dx-3\,c)}+3\,e^{(-4\,dx-4\,c)}+4\right)}{\left(8\,ae^{(-dx-c)}-16i\,ae^{(-2\,dx-2\,c)}-16\,ae^{(-3\,dx-3\,c)}+8i\,ae^{(-4\,dx-4\,c)}+8\,ae^{(-5\,dx-5\,c)}+8i\,a\right)d}+\frac{3\,\log\left(e^{(-dx-c)}+1\right)}{2\,ad}-\frac{3\,\mathrm{lo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -8*(-I*e^(-d*x - c) - 5*e^(-2*d*x - 2*c) + 3*I*e^(-3*d*x - 3*c) + 3*e^(-4*d
*x - 4*c) + 4)/((8*a*e^(-d*x - c) - 16*I*a*e^(-2*d*x - 2*c) - 16*a*e^(-3*d*
x - 3*c) + 8*I*a*e^(-4*d*x - 4*c) + 8*a*e^(-5*d*x - 5*c) + 8*I*a)*d) + 3/2*
log(e^(-d*x - c) + 1)/(a*d) - 3/2*log(e^(-d*x - c) - 1)/(a*d)
```

mupad [B] time = 0.61, size = 132, normalized size = 1.52

$$\frac{3\,\mathrm{atan}\left(\frac{\mathrm{e}^{d\,x}\,\mathrm{e}^{c}\,\sqrt{-a^2\,d^2}}{a\,d}\right)}{\sqrt{-a^2\,d^2}}-\frac{2}{a\,d\,\left(\mathrm{e}^{c+d\,x}-\mathrm{i}\right)}-\frac{\mathrm{e}^{c+d\,x}}{a\,d\,\left(\mathrm{e}^{2\,c+2\,d\,x}-1\right)}-\frac{2\,\mathrm{e}^{c+d\,x}}{a\,d\,{\left(\mathrm{e}^{2\,c+2\,d\,x}-1\right)}^2}+\frac{2\mathrm{i}}{a\,d\,\left(\mathrm{e}^{2\,c+2\,d\,x}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] (3*atan((exp(d*x)*exp(c)*(-a^2*d^2)^(1/2))/(a*d)))/(-a^2*d^2)^(1/2) - 2/(a*
d*(exp(c + d*x) - 1i)) + 2i/(a*d*(exp(2*c + 2*d*x) - 1)) - exp(c + d*x)/(a*
d*(exp(2*c + 2*d*x) - 1)) - (2*exp(c + d*x))/(a*d*(exp(2*c + 2*d*x) - 1)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int\frac{\mathrm{csch}^3\,(c+dx)}{\sinh\,(c+dx)-i}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(csch(c + d*x)**3/(sinh(c + d*x) - I), x)/a
```

3.221 $\int \frac{\text{csch}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))} \, dx$

Optimal. Leaf size=34

$$\text{Int}\left(\frac{\text{csch}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{csch}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[Csch[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
[Out] Defer[Int][Csch[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\text{csch}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))} \, dx = \int \frac{\text{csch}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))} \, dx$$

Mathematica [F] time = 180.02, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Csch[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
[Out] $Aborted
```

fricas [A] time = 0.90, size = 0, normalized size = 0.00

$$-\frac{4\,dfx + 4\,de + \left(3\,dfx + 3\,de - f\right)e^{(4\,dx+4\,c)} - \left(3i\,dfx + 3i\,de - i\,f\right)e^{(3\,dx+3\,c)} - \left(5\,dfx + 5\,de - f\right)e^{(2\,dx+2\,c)} - \left(-i\,d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(4*d*f*x + 4*d*e + (3*d*f*x + 3*d*e - f)*e^(4*d*x + 4*c) - (3*I*d*f*x + 3*
I*d*e - I*f)*e^(3*d*x + 3*c) - (5*d*f*x + 5*d*e - f)*e^(2*d*x + 2*c) - (-I*
d*f*x - I*d*e + I*f)*e^(d*x + c) - (-I*a*d^2*f^2*x^2 - 2*I*a*d^2*e*f*x - I*
a*d^2*e^2 + (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*e^(5*d*x + 5*c) + (
-I*a*d^2*f^2*x^2 - 2*I*a*d^2*e*f*x - I*a*d^2*e^2)*e^(4*d*x + 4*c) - 2*(a*d^
2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*e^(3*d*x + 3*c) + (2*I*a*d^2*f^2*x^2
 + 4*I*a*d^2*e*f*x + 2*I*a*d^2*e^2)*e^(2*d*x + 2*c) + (a*d^2*f^2*x^2 + 2*a*
d^2*e*f*x + a*d^2*e^2)*e^(d*x + c))*integral((4*d*f^2*x + 4*d*e*f - (3*d^2*
f^2*x^2 + 3*d^2*e^2 + 2*d*e*f - 2*f^2 + 2*(3*d^2*e*f + d*f^2)*x)*e^(2*d*x +
 2*c) + (3*I*d^2*f^2*x^2 + 3*I*d^2*e^2 + 2*I*d*e*f - 2*I*f^2 + (6*I*d^2*e*f
 + 2*I*d*f^2)*x)*e^(d*x + c))/(I*a*d^2*f^3*x^3 + 3*I*a*d^2*e*f^2*x^2 + 3*I*
a*d^2*e^2*f*x + I*a*d^2*e^3 + (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*
e^2*f*x + a*d^2*e^3)*e^(3*d*x + 3*c) + (-I*a*d^2*f^3*x^3 - 3*I*a*d^2*e*f^2*
x^2 - 3*I*a*d^2*e^2*f*x - I*a*d^2*e^3)*e^(2*d*x + 2*c) - (a*d^2*f^3*x^3 + 3
*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*e^(d*x + c)), x))/(-I*a*d^2
*f^2*x^2 - 2*I*a*d^2*e*f*x - I*a*d^2*e^2 + (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x +
 a*d^2*e^2)*e^(5*d*x + 5*c) + (-I*a*d^2*f^2*x^2 - 2*I*a*d^2*e*f*x - I*a*d^2
*e^2)*e^(4*d*x + 4*c) - 2*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*e^(3*
d*x + 3*c) + (2*I*a*d^2*f^2*x^2 + 4*I*a*d^2*e*f*x + 2*I*a*d^2*e^2)*e^(2*d*x
 + 2*c) + (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*e^(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 1.70, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(dx+c\right)^{3}}{\left(fx+e\right)\left(a+ia\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-8\,f\int \frac{1}{-4i\,adf^2x^2-8i\,adefx-4i\,ade^2+4\left(adf^2x^2e^c+2\,adefxe^c+ade^2e^c\right)e^{(dx)}}\,dx-\frac{}{-8i\,ad^2f^2x^2-16i\,ad^2efx-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -8*f*integrate(1/(-4*I*a*d*f^2*x^2 - 8*I*a*d*e*f*x - 4*I*a*d*e^2 + 4*(a*d*f
^2*x^2*e^c + 2*a*d*e*f*x*e^c + a*d*e^2*e^c)*e^(d*x)), x) - 8*(4*d*f*x + 4*d
*e + (3*d*f*x*e^(4*c) + (3*d*e - f)*e^(4*c))*e^(4*d*x) + (-3*I*d*f*x*e^(3*c
) + (-3*I*d*e + I*f)*e^(3*c))*e^(3*d*x) - (5*d*f*x*e^(2*c) + (5*d*e - f)*e^
(2*c))*e^(2*d*x) + (I*d*f*x*e^c + (I*d*e - I*f)*e^c)*e^(d*x))/(-8*I*a*d^2*f
^2*x^2 - 16*I*a*d^2*e*f*x - 8*I*a*d^2*e^2 + 8*(a*d^2*f^2*x^2*e^(5*c) + 2*a*
d^2*e*f*x*e^(5*c) + a*d^2*e^2*e^(5*c))*e^(5*d*x) + (-8*I*a*d^2*f^2*x^2*e^(4
*c) - 16*I*a*d^2*e*f*x*e^(4*c) - 8*I*a*d^2*e^2*e^(4*c))*e^(4*d*x) - 16*(a*d
^2*f^2*x^2*e^(3*c) + 2*a*d^2*e*f*x*e^(3*c) + a*d^2*e^2*e^(3*c))*e^(3*d*x) +
 (16*I*a*d^2*f^2*x^2*e^(2*c) + 32*I*a*d^2*e*f*x*e^(2*c) + 16*I*a*d^2*e^2*e^
(2*c))*e^(2*d*x) + 8*(a*d^2*f^2*x^2*e^c + 2*a*d^2*e*f*x*e^c + a*d^2*e^2*e^c
)*e^(d*x)) - 8*integrate(1/16*(3*d^2*f^2*x^2 + 3*d^2*e^2 + 2*I*d*e*f - 2*f^
2 + 2*(3*d^2*e*f + I*d*f^2)*x)/(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2
*e^2*f*x + a*d^2*e^3 + (a*d^2*f^3*x^3*e^c + 3*a*d^2*e*f^2*x^2*e^c + 3*a*d^2
*e^2*f*x*e^c + a*d^2*e^3*e^c)*e^(d*x)), x) - 8*integrate(-1/16*(3*d^2*f^2*x
^2 + 3*d^2*e^2 - 2*I*d*e*f - 2*f^2 + 2*(3*d^2*e*f - I*d*f^2)*x)/(a*d^2*f^3*
x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3 - (a*d^2*f^3*x^3*e^c
+ 3*a*d^2*e*f^2*x^2*e^c + 3*a*d^2*e^2*f*x*e^c + a*d^2*e^3*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sinh\left(c+d\,x\right)^3\,\left(e+f\,x\right)\,\left(a+a\sinh\left(c+d\,x\right)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)^3*(e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(1/(sinh(c + d*x)^3*(e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.222 $\int \frac{\operatorname{csch}^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\operatorname{Int}\left(\frac{\operatorname{csch}^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csch[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] Defer[Int][Csch[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx=\int \frac{\operatorname{csch}^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.04, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Csch[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] $Aborted
```

fricas [A] time = 0.73, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -(4*d*f*x + 4*d*e + (3*d*f*x + 3*d*e - 2*f)*e^(4*d*x + 4*c) - (3*I*d*f*x +
3*I*d*e - 2*I*f)*e^(3*d*x + 3*c) - (5*d*f*x + 5*d*e - 2*f)*e^(2*d*x + 2*c)
- (-I*d*f*x - I*d*e + 2*I*f)*e^(d*x + c) - (-I*a*d^2*f^3*x^3 - 3*I*a*d^2*e*
f^2*x^2 - 3*I*a*d^2*e^2*f*x - I*a*d^2*e^3 + (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*
x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*e^(5*d*x + 5*c) + (-I*a*d^2*f^3*x^3 - 3*
I*a*d^2*e*f^2*x^2 - 3*I*a*d^2*e^2*f*x - I*a*d^2*e^3)*e^(4*d*x + 4*c) - 2*(a
*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*e^(3*d*x +
3*c) + (2*I*a*d^2*f^3*x^3 + 6*I*a*d^2*e*f^2*x^2 + 6*I*a*d^2*e^2*f*x + 2*I*a
*d^2*e^3)*e^(2*d*x + 2*c) + (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^
2*f*x + a*d^2*e^3)*e^(d*x + c))*integral((8*d*f^2*x + 8*d*e*f - (3*d^2*f^2*
x^2 + 3*d^2*e^2 + 4*d*e*f - 6*f^2 + 2*(3*d^2*e*f + 2*d*f^2)*x)*e^(2*d*x + 2
*c) + (3*I*d^2*f^2*x^2 + 3*I*d^2*e^2 + 4*I*d*e*f - 6*I*f^2 + (6*I*d^2*e*f +
 4*I*d*f^2)*x)*e^(d*x + c))/(I*a*d^2*f^4*x^4 + 4*I*a*d^2*e*f^3*x^3 + 6*I*a*
d^2*e^2*f^2*x^2 + 4*I*a*d^2*e^3*f*x + I*a*d^2*e^4 + (a*d^2*f^4*x^4 + 4*a*d^
2*e*f^3*x^3 + 6*a*d^2*e^2*f^2*x^2 + 4*a*d^2*e^3*f*x + a*d^2*e^4)*e^(3*d*x +
 3*c) + (-I*a*d^2*f^4*x^4 - 4*I*a*d^2*e*f^3*x^3 - 6*I*a*d^2*e^2*f^2*x^2 - 4
*I*a*d^2*e^3*f*x - I*a*d^2*e^4)*e^(2*d*x + 2*c) - (a*d^2*f^4*x^4 + 4*a*d^2*
e*f^3*x^3 + 6*a*d^2*e^2*f^2*x^2 + 4*a*d^2*e^3*f*x + a*d^2*e^4)*e^(d*x + c))
, x))/(-I*a*d^2*f^3*x^3 - 3*I*a*d^2*e*f^2*x^2 - 3*I*a*d^2*e^2*f*x - I*a*d^2
*e^3 + (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*e^
(5*d*x + 5*c) + (-I*a*d^2*f^3*x^3 - 3*I*a*d^2*e*f^2*x^2 - 3*I*a*d^2*e^2*f*x
 - I*a*d^2*e^3)*e^(4*d*x + 4*c) - 2*(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*
a*d^2*e^2*f*x + a*d^2*e^3)*e^(3*d*x + 3*c) + (2*I*a*d^2*f^3*x^3 + 6*I*a*d^2
*e*f^2*x^2 + 6*I*a*d^2*e^2*f*x + 2*I*a*d^2*e^3)*e^(2*d*x + 2*c) + (a*d^2*f^
3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*e^(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 2.83, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx+c)^{3}}{\left(fx+e\right)^{2}\left(a+ia\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -8*f*integrate(1/(-2*I*a*d*f^3*x^3 - 6*I*a*d*e*f^2*x^2 - 6*I*a*d*e^2*f*x -
2*I*a*d*e^3 + 2*(a*d*f^3*x^3*e^c + 3*a*d*e*f^2*x^2*e^c + 3*a*d*e^2*f*x*e^c
+ a*d*e^3*e^c)*e^(d*x)), x) - 8*(4*d*f*x + 4*d*e + (3*d*f*x*e^(4*c) + (3*d*
e - 2*f)*e^(4*c))*e^(4*d*x) + (-3*I*d*f*x*e^(3*c) + (-3*I*d*e + 2*I*f)*e^(3
*c))*e^(3*d*x) - (5*d*f*x*e^(2*c) + (5*d*e - 2*f)*e^(2*c))*e^(2*d*x) + (I*d
*f*x*e^c + (I*d*e - 2*I*f)*e^c)*e^(d*x))/(-8*I*a*d^2*f^3*x^3 - 24*I*a*d^2*e
*f^2*x^2 - 24*I*a*d^2*e^2*f*x - 8*I*a*d^2*e^3 + 8*(a*d^2*f^3*x^3*e^(5*c) +
3*a*d^2*e*f^2*x^2*e^(5*c) + 3*a*d^2*e^2*f*x*e^(5*c) + a*d^2*e^3*e^(5*c))*e^
(5*d*x) + (-8*I*a*d^2*f^3*x^3*e^(4*c) - 24*I*a*d^2*e*f^2*x^2*e^(4*c) - 24*I
*a*d^2*e^2*f*x*e^(4*c) - 8*I*a*d^2*e^3*e^(4*c))*e^(4*d*x) - 16*(a*d^2*f^3*x
^3*e^(3*c) + 3*a*d^2*e*f^2*x^2*e^(3*c) + 3*a*d^2*e^2*f*x*e^(3*c) + a*d^2*e^
3*e^(3*c))*e^(3*d*x) + (16*I*a*d^2*f^3*x^3*e^(2*c) + 48*I*a*d^2*e*f^2*x^2*e
^(2*c) + 48*I*a*d^2*e^2*f*x*e^(2*c) + 16*I*a*d^2*e^3*e^(2*c))*e^(2*d*x) + 8
*(a*d^2*f^3*x^3*e^c + 3*a*d^2*e*f^2*x^2*e^c + 3*a*d^2*e^2*f*x*e^c + a*d^2*e
^3*e^c)*e^(d*x)) - 8*integrate(1/16*(3*d^2*f^2*x^2 + 3*d^2*e^2 + 4*I*d*e*f
- 6*f^2 + 2*(3*d^2*e*f + 2*I*d*f^2)*x)/(a*d^2*f^4*x^4 + 4*a*d^2*e*f^3*x^3 +
 6*a*d^2*e^2*f^2*x^2 + 4*a*d^2*e^3*f*x + a*d^2*e^4 + (a*d^2*f^4*x^4*e^c + 4
*a*d^2*e*f^3*x^3*e^c + 6*a*d^2*e^2*f^2*x^2*e^c + 4*a*d^2*e^3*f*x*e^c + a*d^
2*e^4*e^c)*e^(d*x)), x) - 8*integrate(-1/16*(3*d^2*f^2*x^2 + 3*d^2*e^2 - 4*
I*d*e*f - 6*f^2 + 2*(3*d^2*e*f - 2*I*d*f^2)*x)/(a*d^2*f^4*x^4 + 4*a*d^2*e*f
^3*x^3 + 6*a*d^2*e^2*f^2*x^2 + 4*a*d^2*e^3*f*x + a*d^2*e^4 - (a*d^2*f^4*x^4
*e^c + 4*a*d^2*e*f^3*x^3*e^c + 6*a*d^2*e^2*f^2*x^2*e^c + 4*a*d^2*e^3*f*x*e^
c + a*d^2*e^4*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sinh\left(c+d\,x\right)^3\,{\left(e+f\,x\right)}^2\,\left(a+a\,\sinh\left(c+d\,x\right)\,1{}\mathrm{i}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)^3*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(1/(sinh(c + d*x)^3*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
[Out] Timed out
```

3.223 $\int \frac{(e+fx)^3 \sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=453

$$-\frac{6af^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\sqrt{a^2+b^2}}+\frac{6af^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^4\sqrt{a^2+b^2}}+\frac{6af^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{6af^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-$$

```
[Out] 1/4*(f*x+e)^4/b/f-a*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d/(a
^2+b^2)^(1/2)+a*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/d/(a^2+b
^2)^(1/2)-3*a*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d^
2/(a^2+b^2)^(1/2)+3*a*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2
)))/b/d^2/(a^2+b^2)^(1/2)+6*a*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b
^2)^(1/2)))/b/d^3/(a^2+b^2)^(1/2)-6*a*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(
a+(a^2+b^2)^(1/2)))/b/d^3/(a^2+b^2)^(1/2)-6*a*f^3*polylog(4,-b*exp(d*x+c)/(
a-(a^2+b^2)^(1/2)))/b/d^4/(a^2+b^2)^(1/2)+6*a*f^3*polylog(4,-b*exp(d*x+c)/(
a+(a^2+b^2)^(1/2)))/b/d^4/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.79, antiderivative size = 453, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {5557, 32, 3322, 2264, 2190, 2531, 6609, 2282, 6589}

$$\frac{6af^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{6af^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{3af(e+fx)^2\text{PolyLog}\left(2,-\frac{be^{c+}}{a-\sqrt{a^2}}\right)}{bd^2\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e + f*x)^4/(4*b*f) - (a*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2
+ b^2])])/(b*Sqrt[a^2 + b^2]*d) + (a*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2])])/(b*Sqrt[a^2 + b^2]*d) - (3*a*f*(e + f*x)^2*PolyLog[2,
 -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^2) + (3*a*
f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*Sqrt
[a^2 + b^2]*d^2) + (6*a*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqr
t[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) - (6*a*f^2*(e + f*x)*PolyLog[3, -(
(b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) - (6*a*f^3
*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d
^4) + (6*a*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*Sqr
t[a^2 + b^2]*d^4)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
```

```
] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\,dx}{b} - \frac{a\int \frac{(e+fx)^3}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{(2a)\int \frac{e^{c+dx}(e+fx)^3}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{b}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{(2a)\int \frac{e^{c+dx}(e+fx)^3}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\sqrt{a^2+b^2}} + \frac{(2a)\int \frac{e^{c+dx}(e+fx)^3}{2a+2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\sqrt{a^2+b^2}}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{(3a}{}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} - \frac{3af}{}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} - \frac{3af}{}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} - \frac{3af}{}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} - \frac{3af}{}$$

<u>**Mathematica**</u> **[A]** time = 2.28, size = 607, normalized size = 1.34

$$\frac{a\left(2d^3e^3\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) - 3d^3e^2fx\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) + 3d^3e^2fx\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right) - 3d^3ef^2x^2\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3))/(4*b) + (a*(2*d^3*e^3*ArcTa
nh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d
*x))/(a - Sqrt[a^2 + b^2])] - 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a -
Sqrt[a^2 + b^2])] - d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
])] + 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 3*d^3*
```

```
e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^3*f^3*x^3*Log[
1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 3*d^2*f*(e + f*x)^2*PolyLog[2,
 (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 3*d^2*f*(e + f*x)^2*PolyLog[2, -
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 6*d*e*f^2*PolyLog[3, (b*E^(c + d
*x))/(-a + Sqrt[a^2 + b^2])] + 6*d*f^3*x*PolyLog[3, (b*E^(c + d*x))/(-a + S
qrt[a^2 + b^2])] - 6*d*e*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b
^2]))] - 6*d*f^3*x*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 6
*f^3*PolyLog[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*f^3*PolyLog[4,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(b*Sqrt[a^2 + b^2]*d^4)
```

fricas **[C]** time = 1.01, size = 1112, normalized size = 2.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*((a^2 + b^2)*d^4*f^3*x^4 + 4*(a^2 + b^2)*d^4*e*f^2*x^3 + 6*(a^2 + b^2)*
d^4*e^2*f*x^2 + 4*(a^2 + b^2)*d^4*e^3*x - 24*a*b*f^3*sqrt((a^2 + b^2)/b^2)*
polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*a*b*f^3*sqrt((a^2 + b^2)/b^2)*polyl
og(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*x + a
*b*d^2*e^2*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c
) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) +
 12*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*x + a*b*d^2*e^2*f)*sqrt((a^2 + b^2)/
b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 4*(a*b*d^3*e^3 - 3*a*b*c*d^2*e
^2*f + 3*a*b*c^2*d*e*f^2 - a*b*c^3*f^3)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(
d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 4*(a*b*d^
3*e^3 - 3*a*b*c*d^2*e^2*f + 3*a*b*c^2*d*e*f^2 - a*b*c^3*f^3)*sqrt((a^2 + b^
2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^
2) + 2*a) - 4*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x +
3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)*sqrt((a^2 + b^2)/b^2)*
log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2) - b)/b) + 4*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2
 + 3*a*b*d^3*e^2*f*x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)
*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*
x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 24*(a*b*d*f^3*x +
 a*b*d*e*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*
x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 24
*(a*b*d*f^3*x + a*b*d*e*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x +
 c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2
)/b^2))/b))/((a^2*b + b^3)*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sinh\left(dx+c\right)}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sinh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sinh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^{3}\left(\frac{a\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{\sqrt{a^{2}+b^{2}}\,bd}-\frac{dx+c}{bd}\right)+\frac{f^{3}x^{4}+4\,ef^{2}x^{3}+6\,e^{2}fx^{2}}{4\,b}-\int \frac{2\left(af^{3}x^{3}e^{c}+3\,aef^{2}x^{2}e^{c}+3\,ae^{2}fxe^{c}\right)e^{(dx)}}{b^{2}e^{(2\,dx+2\,c)}+2\,abe^{(dx+c)}-b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e^3*(a*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sq
rt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b*d) - (d*x + c)/(b*d)) + 1/4*(f^3*x^4 + 4
*e*f^2*x^3 + 6*e^2*f*x^2)/b - integrate(2*(a*f^3*x^3*e^c + 3*a*e*f^2*x^2*e^
c + 3*a*e^2*f*x*e^c)*e^(d*x)/(b^2*e^(2*d*x + 2*c) + 2*a*b*e^(d*x + c) - b^2
), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^{3}}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((sinh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.224 $\int \frac{(e+fx)^2\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=337

$$\frac{2af^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{2af^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{2af(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2\sqrt{a^2+b^2}}+\frac{2af(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^2\sqrt{a^2+b^2}}-\frac{a(e+\cdots}{}$$

```
[Out] 1/3*(f*x+e)^3/b/f-a*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d/(a
^2+b^2)^(1/2)+a*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/d/(a^2+b
^2)^(1/2)-2*a*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d^2/
(a^2+b^2)^(1/2)+2*a*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/
b/d^2/(a^2+b^2)^(1/2)+2*a*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/
b/d^3/(a^2+b^2)^(1/2)-2*a*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/
b/d^3/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.71, antiderivative size = 337, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {5557, 32, 3322, 2264, 2190, 2531, 2282, 6589}

$$-\frac{2af(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2\sqrt{a^2+b^2}}+\frac{2af(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^2\sqrt{a^2+b^2}}+\frac{2af^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{2a\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e + f*x)^3/(3*b*f) - (a*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2
+ b^2])])/(b*Sqrt[a^2 + b^2]*d) + (a*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2])])/(b*Sqrt[a^2 + b^2]*d) - (2*a*f*(e + f*x)*PolyLog[2, -
((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^2) + (2*a*f*
(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2
 + b^2]*d^2) + (2*a*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))
])/(b*Sqrt[a^2 + b^2]*d^3) - (2*a*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqr
t[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\,dx}{b} - \frac{a\int \frac{(e+fx)^2}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)^3}{3bf} - \frac{(2a)\int \frac{e^{c+dx}(e+fx)^2}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{b}$$

$$= \frac{(e+fx)^3}{3bf} - \frac{(2a)\int \frac{e^{c+dx}(e+fx)^2}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\sqrt{a^2+b^2}} + \frac{(2a)\int \frac{e^{c+dx}(e+fx)^2}{2a+2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\sqrt{a^2+b^2}}$$

$$= \frac{(e+fx)^3}{3bf} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + (2a$$

$$= \frac{(e+fx)^3}{3bf} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} - 2af$$

$$= \frac{(e+fx)^3}{3bf} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} - 2af$$

$$= \frac{(e+fx)^3}{3bf} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} - 2af$$

Mathematica [A] time = 1.60, size = 366, normalized size = 1.09

$$a\left(2d^2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) - 2d^2efx\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) + 2d^2efx\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right) - d^2f^2x^2\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (x*(3*e^2 + 3*e*f*x + f^2*x^2))/(3*b) + (a*(2*d^2*e^2*ArcTanh[(a + b*E^(c +
 d*x))/Sqrt[a^2 + b^2]] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2
```

```
 + b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*
d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[
1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 2*d*f*(e + f*x)*PolyLog[2, (b*
E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c
 + d*x))/(a + Sqrt[a^2 + b^2]))] + 2*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + S
qrt[a^2 + b^2])] - 2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])
)]))/(b*Sqrt[a^2 + b^2]*d^3)
```

fricas [C] time = 0.54, size = 782, normalized size = 2.32

$$\frac{\left(a^2+b^2\right)d^3f^2x^3+3\left(a^2+b^2\right)d^3efx^2+3\left(a^2+b^2\right)d^3e^2x+6\,abf^2\sqrt{\frac{a^2+b^2}{b^2}}\,\mathrm{polylog}\left(3,\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cos}{b}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/3*((a^2 + b^2)*d^3*f^2*x^3 + 3*(a^2 + b^2)*d^3*e*f*x^2 + 3*(a^2 + b^2)*d^
3*e^2*x + 6*a*b*f^2*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*s
inh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b
) - 6*a*b*f^2*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*
x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*
(a*b*d*f^2*x + a*b*d*e*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*
sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) -
 b)/b + 1) + 6*(a*b*d*f^2*x + a*b*d*e*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cos
h(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2) - b)/b + 1) + 3*(a*b*d^2*e^2 - 2*a*b*c*d*e*f + a*b*c^2*f^2)*s
qrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((
a^2 + b^2)/b^2) + 2*a) - 3*(a*b*d^2*e^2 - 2*a*b*c*d*e*f + a*b*c^2*f^2)*sqrt
((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2
 + b^2)/b^2) + 2*a) - 3*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f
- a*b*c^2*f^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c
) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 3*(
a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f - a*b*c^2*f^2)*sqrt((a^2
+ b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*
sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b))/((a^2*b + b^3)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\sinh\left(dx+c\right)}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^2*sinh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \sinh(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^2\left(\frac{a\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,bd}-\frac{dx+c}{bd}\right)+\frac{f^2x^3+3\,efx^2}{3\,b}-\int \frac{2\left(af^2x^2e^c+2\,aefxe^c\right)e^{(dx)}}{b^2e^{(2\,dx+2\,c)}+2\,abe^{(dx+c)}-b^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] -e^2*(a*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sq
rt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b*d) - (d*x + c)/(b*d)) + 1/3*(f^2*x^3 + 3
*e*f*x^2)/b - integrate(2*(a*f^2*x^2*e^c + 2*a*e*f*x*e^c)*e^(d*x)/(b^2*e^(2
*d*x + 2*c) + 2*a*b*e^(d*x + c) - b^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh(c+d\,x)\,\left(e+f\,x\right)^2}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((sinh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^2 \sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*sinh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.225 $\int \frac{(e+fx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=220

$$-\frac{af\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2\sqrt{a^2+b^2}}+\frac{af\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^2\sqrt{a^2+b^2}}-\frac{a(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd\sqrt{a^2+b^2}}+\frac{a(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{bd\sqrt{a^2+b^2}}+\frac{ex}{b}+\frac{fx^2}{2b}$$

```
[Out] e*x/b+1/2*f*x^2/b-a*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d/(a^2
+b^2)^(1/2)+a*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/d/(a^2+b^2)^
(1/2)-a*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d^2/(a^2+b^2)^(1/2
)+a*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/d^2/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {5557, 3322, 2264, 2190, 2279, 2391}

$$-\frac{af\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2\sqrt{a^2+b^2}}+\frac{af\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^2\sqrt{a^2+b^2}}-\frac{a(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd\sqrt{a^2+b^2}}+\frac{a(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{bd\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e*x)/b + (f*x^2)/(2*b) - (a*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^
2 + b^2])])/(b*Sqrt[a^2 + b^2]*d) + (a*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2])])/(b*Sqrt[a^2 + b^2]*d) - (a*f*PolyLog[2, -((b*E^(c + d
*x))/(a - Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^2) + (a*f*PolyLog[2, -((
b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
```

```
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\,dx}{b} - \frac{a\int \frac{e+fx}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{(2a)\int \frac{e^{c+dx}(e+fx)}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{b}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{(2a)\int \frac{e^{c+dx}(e+fx)}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\sqrt{a^2+b^2}} + \frac{(2a)\int \frac{e^{c+dx}(e+fx)}{2a+2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\sqrt{a^2+b^2}}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{(af)\int}{}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{(af)\mathrm{S}}{}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} + \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d} - \frac{af\mathrm{Li}_2}{b\sqrt{}}$$

Mathematica [A] time = 0.63, size = 163, normalized size = 0.74

$$\frac{x(2e+fx)}{2b} - \frac{a\left(d(e+fx)\left(\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)\right)+f\mathrm{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)-f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)\right)}{bd^2\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (x*(2*e + f*x))/(2*b) - (a*(d*(e + f*x)*(Log[1 + (b*E^(c + d*x))/(a - Sqrt[
a^2 + b^2])] - Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]) + f*PolyLog[
2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - f*PolyLog[2, -((b*E^(c + d*x))
/(a + Sqrt[a^2 + b^2]))]))/(b*Sqrt[a^2 + b^2]*d^2)
```

fricas [B] time = 0.49, size = 500, normalized size = 2.27

$$\frac{\left(a^2+b^2\right)d^2fx^2 + 2\left(a^2+b^2\right)d^2ex - 2abf\sqrt{\frac{a^2+b^2}{b^2}}\,\mathrm{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}-b}{b}+1\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*((a^2 + b^2)*d^2*f*x^2 + 2*(a^2 + b^2)*d^2*e*x - 2*a*b*f*sqrt((a^2 + b^
2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sin
h(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*a*b*f*sqrt((a^2 + b^2)/b^
2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(a*b*d*e - a*b*c*f)*sqrt((a^2
+ b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2
)/b^2) + 2*a) - 2*(a*b*d*e - a*b*c*f)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*
x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(a*b*d*f*
x + a*b*c*f)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c)
+ (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(a*
b*d*f*x + a*b*c*f)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x
 + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b))/
((a^2*b + b^3)*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\sinh\left(dx+c\right)}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sinh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.12, size = 440, normalized size = 2.00

$$\frac{f\,x^{2}}{2b}+\frac{ex}{b}+\frac{2ae\,\mathrm{arctanh}\left(\frac{2b\,\mathrm{e}^{dx+c}+2a}{2\sqrt{a^{2}+b^{2}}}\right)}{db\sqrt{a^{2}+b^{2}}}-\frac{af\ln\left(\frac{-b\,\mathrm{e}^{dx+c}+\sqrt{a^{2}+b^{2}}-a}{-a+\sqrt{a^{2}+b^{2}}}\right)x}{db\sqrt{a^{2}+b^{2}}}-\frac{af\ln\left(\frac{-b\,\mathrm{e}^{dx+c}+\sqrt{a^{2}+b^{2}}-a}{-a+\sqrt{a^{2}+b^{2}}}\right)c}{d^{2}b\sqrt{a^{2}+b^{2}}}+\frac{af\ln\left(\frac{b\,\mathrm{e}^{dx+c}+\sqrt{a^{2}+b}}{a+\sqrt{a^{2}+b^{2}}}\right.}{db\sqrt{a^{2}+b^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2*f*x^2/b+e*x/b+2/d*a/b*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a
)/(a^2+b^2)^(1/2))-1/d*a/b*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1
/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a/b*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c
)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d*a/b*f/(a^2+b^2)^(1/2)*ln((
b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2*a/b*f/(a^2+b^2
)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d^2*a/
b*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(
```

```
1/2)))+1/d^2*a/b*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(
a+(a^2+b^2)^(1/2)))-2/d^2*a/b*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+
c)+2*a)/(a^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(4\,a\int\frac{xe^{(dx+c)}}{b^2e^{(2\,dx+2\,c)}+2\,abe^{(dx+c)}-b^2}\,dx-\frac{x^2}{b}\right)f-e\left(\frac{a\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,bd}-\frac{dx+c}{bd}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*(4*a*integrate(x*e^(d*x + c)/(b^2*e^(2*d*x + 2*c) + 2*a*b*e^(d*x + c)
- b^2), x) - x^2/b)*f - e*(a*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*
e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b*d) - (d*x + c)/(b*d
))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\sinh\left(c+d\,x\right)\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((sinh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.226 $\int \frac{\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=54

$$\frac{2a\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd\sqrt{a^2+b^2}}+\frac{x}{b}$$

```
[Out] x/b+2*a*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))/b/d/(a^2+b^2)^(1
/2)
```

Rubi [A] time = 0.07, antiderivative size = 54, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2735, 2660, 618, 204}

$$\frac{2a\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd\sqrt{a^2+b^2}}+\frac{x}{b}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[c + d*x]/(a + b*Sinh[c + d*x]),x]
```

```
[Out] x/b + (2*a*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(b*Sqrt[a^2
+ b^2]*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx &= \frac{x}{b}-\frac{a\int \frac{1}{a+b\sinh(c+dx)}\,dx}{b}\\
&= \frac{x}{b}+\frac{(2ia)\,\text{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(ic+idx)\right)\right)}{bd}\\
&= \frac{x}{b}-\frac{(4ia)\,\text{Subst}\left(\int \frac{1}{-4\left(a^2+b^2\right)-x^2}\,dx,x,-2ib+2a\tan\left(\frac{1}{2}(ic+idx)\right)\right)}{bd}\\
&= \frac{x}{b}+\frac{2a\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d}
\end{aligned}
$$

Mathematica [A] time = 0.11, size = 64, normalized size = 1.19

$$
\frac{-\frac{2a\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{d\sqrt{-a^2-b^2}}+\frac{c}{d}+x}{b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[c + d*x]/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (c/d + x - (2*a*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/(Sqrt[-
a^2 - b^2]*d))/b
```

fricas [B] time = 0.59, size = 186, normalized size = 3.44

$$
\frac{\left(a^2+b^2\right)dx+\sqrt{a^2+b^2}\,a\log\left(\frac{b^2\cosh(dx+c)^2+b^2\sinh(dx+c)^2+2\,ab\cosh(dx+c)+2\,a^2+b^2+2\left(b^2\cosh(dx+c)+ab\right)\sinh(dx+c)+2\,\sqrt{a^2+b^2}\,(b\,\text{co}}{b\cosh(dx+c)^2+b\sinh(dx+c)^2+2\,a\cosh(dx+c)+2\,(b\cosh(dx+c)+a)\sinh(dx+c)-b}\right.}{\left(a^2b+b^3\right)d}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((a^2 + b^2)*d*x + sqrt(a^2 + b^2)*a*log((b^2*cosh(d*x + c)^2 + b^2*sinh(d*
x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*
sinh(d*x + c) + 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x + c) + a))/
(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x
+ c) + a)*sinh(d*x + c) - b)))/((a^2*b + b^3)*d)
```

giac [A] time = 0.39, size = 84, normalized size = 1.56

$$-\frac{\frac{a\log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\,\sqrt{a^2+b^2}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\,\sqrt{a^2+b^2}\right|}\right)}{\sqrt{a^2+b^2}\,b}-\frac{dx+c}{b}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -(a*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d*x + c)
+ 2*a + 2*sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b) - (d*x + c)/b)/d
```

maple [A] time = 0.00, size = 87, normalized size = 1.61

$$-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{db}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{db}-\frac{2a\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{db\sqrt{a^2+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/d/b*ln(tanh(1/2*d*x+1/2*c)-1)+1/d/b*ln(tanh(1/2*d*x+1/2*c)+1)-2/d*a/b/(a
^2+b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))
```

maxima [A] time = 0.56, size = 85, normalized size = 1.57

$$-\frac{a\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,bd}+\frac{dx+c}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -a*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^
2 + b^2)))/(sqrt(a^2 + b^2)*b*d) + (d*x + c)/(b*d)
```

mupad [B] time = 0.82, size = 121, normalized size = 2.24

$$\frac{x}{b}-\frac{a\,\ln\left(\frac{2\,a\,\mathrm{e}^{c+d\,x}}{b^2}-\frac{2\,a\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{b^2\,\sqrt{a^2+b^2}}\right)}{b\,d\,\sqrt{a^2+b^2}}+\frac{a\,\ln\left(\frac{2\,a\,\mathrm{e}^{c+d\,x}}{b^2}+\frac{2\,a\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{b^2\,\sqrt{a^2+b^2}}\right)}{b\,d\,\sqrt{a^2+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)/(a + b*sinh(c + d*x)),x)
```

```
[Out] x/b - (a*log((2*a*exp(c + d*x))/b^2 - (2*a*(b - a*exp(c + d*x)))/(b^2*(a^2
+ b^2)^(1/2))))/(b*d*(a^2 + b^2)^(1/2)) + (a*log((2*a*exp(c + d*x))/b^2 + (
2*a*(b - a*exp(c + d*x)))/(b^2*(a^2 + b^2)^(1/2))))/(b*d*(a^2 + b^2)^(1/2))
```

sympy [A] time = 68.10, size = 350, normalized size = 6.48

$$\begin{cases} \tilde{\infty}x & \text{for}\: a=0 \wedge b=0 \wedge d=0 \\ \frac{\cosh\left(c+dx\right)}{ad} & \text{for}\: b=0 \\ \frac{bdx\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)}{b^2d\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)-ibd\sqrt{b^2}}-\frac{2b}{b^2d\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)-ibd\sqrt{b^2}}-\frac{idx\sqrt{b^2}}{b^2d\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)-ibd\sqrt{b^2}} & \text{for}\: a=-\sqrt{-b^2} \\ \frac{bdx\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)}{b^2d\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)+ibd\sqrt{b^2}}-\frac{2b}{b^2d\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)+ibd\sqrt{b^2}}+\frac{idx\sqrt{b^2}}{b^2d\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)+ibd\sqrt{b^2}} & \text{for}\: a=\sqrt{-b^2} \\ \frac{x\sinh\left(c\right)}{a+b\sinh\left(c\right)} & \text{for}\: d=0 \\ \frac{x}{b} & \text{for}\: a=0 \\ \frac{a\log\left(\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)-\frac{b}{a}-\frac{\sqrt{a^2+b^2}}{a}\right)}{bd\sqrt{a^2+b^2}}-\frac{a\log\left(\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)-\frac{b}{a}+\frac{\sqrt{a^2+b^2}}{a}\right)}{bd\sqrt{a^2+b^2}}+\frac{x}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Piecewise((zoo*x, Eq(a, 0) & Eq(b, 0) & Eq(d, 0)), (cosh(c + d*x)/(a*d), Eq
(b, 0)), (b*d*x*tanh(c/2 + d*x/2)/(b**2*d*tanh(c/2 + d*x/2) - I*b*d*sqrt(b*
*2)) - 2*b/(b**2*d*tanh(c/2 + d*x/2) - I*b*d*sqrt(b**2)) - I*d*x*sqrt(b**2)
/(b**2*d*tanh(c/2 + d*x/2) - I*b*d*sqrt(b**2)), Eq(a, -sqrt(-b**2))), (b*d*
x*tanh(c/2 + d*x/2)/(b**2*d*tanh(c/2 + d*x/2) + I*b*d*sqrt(b**2)) - 2*b/(b*
*2*d*tanh(c/2 + d*x/2) + I*b*d*sqrt(b**2)) + I*d*x*sqrt(b**2)/(b**2*d*tanh(
c/2 + d*x/2) + I*b*d*sqrt(b**2)), Eq(a, sqrt(-b**2))), (x*sinh(c)/(a + b*si
```

```
nh(c)), Eq(d, 0)), (x/b, Eq(a, 0)), (a*log(tanh(c/2 + d*x/2) - b/a - sqrt(a
**2 + b**2)/a)/(b*d*sqrt(a**2 + b**2)) - a*log(tanh(c/2 + d*x/2) - b/a + sq
rt(a**2 + b**2)/a)/(b*d*sqrt(a**2 + b**2)) + x/b, True))
```

3.227 $\int \frac{\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sinh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][Sinh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 9.09, size = 0, normalized size = 0.00

$$\int \frac{\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sinh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Integrate[Sinh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sinh(dx+c)}{afx+ae+(bfx+be)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(sinh(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sinh(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.10, size = 0, normalized size = 0.00

$$\int \frac{\sinh(dx+c)}{(fx+e)\,(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2\,a\int -\frac{e^{(dx+c)}}{b^2fx+b^2e-\left(b^2fxe^{(2\,c)}+b^2ee^{(2\,c)}\right)e^{(2\,dx)}-2\left(abfxe^{c}+abee^{c}\right)e^{(dx)}}\,dx+\frac{\log\left(fx+e\right)}{bf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*a*integrate(-e^(d*x + c)/(b^2*f*x + b^2*e - (b^2*f*x*e^(2*c) + b^2*e*e^(
2*c))*e^(2*d*x) - 2*(a*b*f*x*e^c + a*b*e*e^c)*e^(d*x)), x) + log(f*x + e)/(
b*f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sinh(c+d\,x)}{\left(e+f\,x\right)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)/((e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int(sinh(c + d*x)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.228 $\int \frac{(e+fx)^3 \sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=551

$$\frac{6a^2f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^4\sqrt{a^2+b^2}}-\frac{6a^2f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^4\sqrt{a^2+b^2}}-\frac{6a^2f^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3\sqrt{a^2+b^2}}+\frac{6a^2f^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^3\sqrt{a^2+b^2}}$$

```
[Out] -1/4*a*(f*x+e)^4/b^2/f+6*f^2*(f*x+e)*cosh(d*x+c)/b/d^3+(f*x+e)^3*cosh(d*x+c
)/b/d-6*f^3*sinh(d*x+c)/b/d^4-3*f*(f*x+e)^2*sinh(d*x+c)/b/d^2+a^2*(f*x+e)^3
*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/d/(a^2+b^2)^(1/2)-a^2*(f*x+e)^3
*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/d/(a^2+b^2)^(1/2)+3*a^2*f*(f*x+
e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/d^2/(a^2+b^2)^(1/2)-3
*a^2*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/d^2/(a^2+
b^2)^(1/2)-6*a^2*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b
^2/d^3/(a^2+b^2)^(1/2)+6*a^2*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^
2)^(1/2)))/b^2/d^3/(a^2+b^2)^(1/2)+6*a^2*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^
2+b^2)^(1/2)))/b^2/d^4/(a^2+b^2)^(1/2)-6*a^2*f^3*polylog(4,-b*exp(d*x+c)/(a
+(a^2+b^2)^(1/2)))/b^2/d^4/(a^2+b^2)^(1/2)
```

Rubi [A] time = 1.03, antiderivative size = 551, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 11, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.393, Rules used = {5557, 3296, 2637, 32, 3322, 2264, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6a^2f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3\sqrt{a^2+b^2}}+\frac{6a^2f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^2d^3\sqrt{a^2+b^2}}+\frac{3a^2f(e+fx)^2\text{PolyLog}\left(2,-\right.}{b^2d^2\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a*(e + f*x)^4)/(4*b^2*f) + (6*f^2*(e + f*x)*Cosh[c + d*x])/(b*d^3) + ((e
+ f*x)^3*Cosh[c + d*x])/(b*d) + (a^2*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a
 - Sqrt[a^2 + b^2])])/(b^2*Sqrt[a^2 + b^2]*d) - (a^2*(e + f*x)^3*Log[1 + (b
*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^2*Sqrt[a^2 + b^2]*d) + (3*a^2*f*(e
 + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*Sqrt[a
^2 + b^2]*d^2) - (3*a^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqr
t[a^2 + b^2]))])/(b^2*Sqrt[a^2 + b^2]*d^2) - (6*a^2*f^2*(e + f*x)*PolyLog[3
, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*Sqrt[a^2 + b^2]*d^3) + (6
*a^2*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b
^2*Sqrt[a^2 + b^2]*d^3) + (6*a^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt
[a^2 + b^2]))])/(b^2*Sqrt[a^2 + b^2]*d^4) - (6*a^2*f^3*PolyLog[4, -((b*E^(c
```

```
 + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*Sqrt[a^2 + b^2]*d^4) - (6*f^3*Sinh[c
 + d*x])/(b*d^4) - (3*f*(e + f*x)^2*Sinh[c + d*x])/(b*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)^3\cosh(c+dx)}{bd} - \frac{a\int (e+fx)^3\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^3}{a+b\sinh(c+dx)}\,dx}{b^2} - \frac{(3f)\int(e+f}{}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{(e+fx)^3\cosh(c+dx)}{bd} - \frac{3f(e+fx)^2\sinh(c+dx)}{bd^2} + \frac{\left(2a^2\right)\int \frac{}{-b+}}{}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} - \frac{3f(e+fx)^2}{}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{a^2(e+fx)^3}{b^2}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{a^2(e+fx)^3}{b^2}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{a^2(e+fx)^3}{b^2}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{a^2(e+fx)^3}{b^2}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{a^2(e+fx)^3}{b^2}$$

Mathematica [A] time = 2.96, size = 979, normalized size = 1.78

$$\frac{-a\sqrt{a^2+b^2}\,f^3x^4d^4 - 4a\sqrt{a^2+b^2}\,ef^2x^3d^4 - 6a\sqrt{a^2+b^2}\,e^2fx^2d^4 - 4a\sqrt{a^2+b^2}\,e^3xd^4 - 8a^2e^3\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^3}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-4*a*Sqrt[a^2 + b^2]*d^4*e^3*x - 6*a*Sqrt[a^2 + b^2]*d^4*e^2*f*x^2 - 4*a*S
qrt[a^2 + b^2]*d^4*e*f^2*x^3 - a*Sqrt[a^2 + b^2]*d^4*f^3*x^4 - 8*a^2*d^3*e^
```

```
3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 4*b*Sqrt[a^2 + b^2]*d^3*e^
3*Cosh[c + d*x] + 24*b*Sqrt[a^2 + b^2]*d*e*f^2*Cosh[c + d*x] + 12*b*Sqrt[a^
2 + b^2]*d^3*e^2*f*x*Cosh[c + d*x] + 24*b*Sqrt[a^2 + b^2]*d*f^3*x*Cosh[c +
d*x] + 12*b*Sqrt[a^2 + b^2]*d^3*e*f^2*x^2*Cosh[c + d*x] + 4*b*Sqrt[a^2 + b^
2]*d^3*f^3*x^3*Cosh[c + d*x] + 12*a^2*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2])] + 12*a^2*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - S
qrt[a^2 + b^2])] + 4*a^2*d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2
+ b^2])] - 12*a^2*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])
] - 12*a^2*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 4
*a^2*d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 12*a^2*d^
2*f*(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 12*a^2
*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2
4*a^2*d*e*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 24*a^2*d
*f^3*x*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 24*a^2*d*e*f^2*
PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 24*a^2*d*f^3*x*PolyL
og[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 24*a^2*f^3*PolyLog[4, (b*
E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 24*a^2*f^3*PolyLog[4, -((b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2]))] - 12*b*Sqrt[a^2 + b^2]*d^2*e^2*f*Sinh[c + d*x]
- 24*b*Sqrt[a^2 + b^2]*f^3*Sinh[c + d*x] - 24*b*Sqrt[a^2 + b^2]*d^2*e*f^2*x
*Sinh[c + d*x] - 12*b*Sqrt[a^2 + b^2]*d^2*f^3*x^2*Sinh[c + d*x])/(4*b^2*Sqr
t[a^2 + b^2]*d^4)
```

fricas [C] time = 0.65, size = 2612, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*(a^2*b + b^3)*d^3*f^3*x^3 + 2*(a^2*b + b^3)*d^3*e^3 + 6*(a^2*b + b^3
)*d^2*e^2*f + 12*(a^2*b + b^3)*d*e*f^2 + 12*(a^2*b + b^3)*f^3 + 6*((a^2*b +
 b^3)*d^3*e*f^2 + (a^2*b + b^3)*d^2*f^3)*x^2 + 2*((a^2*b + b^3)*d^3*f^3*x^3
 + (a^2*b + b^3)*d^3*e^3 - 3*(a^2*b + b^3)*d^2*e^2*f + 6*(a^2*b + b^3)*d*e*
f^2 - 6*(a^2*b + b^3)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^2*b + b^3)*d^2*
f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^2*b + b^3)*d^2*e*f^2 + 2*(a^2*
b + b^3)*d*f^3)*x)*cosh(d*x + c)^2 + 2*((a^2*b + b^3)*d^3*f^3*x^3 + (a^2*b
+ b^3)*d^3*e^3 - 3*(a^2*b + b^3)*d^2*e^2*f + 6*(a^2*b + b^3)*d*e*f^2 - 6*(a
^2*b + b^3)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^2*b + b^3)*d^2*f^3)*x^2 +
 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^2*b + b^3)*d^2*e*f^2 + 2*(a^2*b + b^3)*d
*f^3)*x)*sinh(d*x + c)^2 + 12*((a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x + a
^2*b*d^2*e^2*f)*cosh(d*x + c) + (a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x +
a^2*b*d^2*e^2*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c
) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2) - b)/b + 1) - 12*((a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x + a^2*b*d^2
*e^2*f)*cosh(d*x + c) + (a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x + a^2*b*d^
```

2*e^2*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 4*((a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*cosh(d*x + c) + (a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 4*((a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*cosh(d*x + c) + (a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 4*((a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*cosh(d*x + c) + (a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 4*((a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*cosh(d*x + c) + (a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 24*(a^2*b*f^3*cosh(d*x + c) + a^2*b*f^3*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 24*(a^2*b*f^3*cosh(d*x + c) + a^2*b*f^3*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 24*((a^2*b*d*f^3*x + a^2*b*d*e*f^2)*cosh(d*x + c) + (a^2*b*d*f^3*x + a^2*b*d*e*f^2)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*((a^2*b*d*f^3*x + a^2*b*d*e*f^2)*cosh(d*x + c) + (a^2*b*d*f^3*x + a^2*b*d*e*f^2)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*((a^2*b + b^3)*d^3*e^2*f + 2*(a^2*b + b^3)*d^2*e*f^2 + 2*(a^2*b + b^3)*d*f^3)*x - ((a^3 + a*b^2)*d^4*f^3*x^4 + 4*(a^3 + a*b^2)*d^4*e*f^2*x^3 + 6*(a^3 + a*b^2)*d^4*e^2*f*x^2 + 4*(a^3 + a*b^2)*d^4*e^3*x)*cosh(d*x + c) - ((a^3 + a*b^2)*d^4*f^3*x^4 + 4*(a^3 + a*b^2)*d^4*e*f^2*x^3 + 6*(a^3 + a*b^2)*d^4*e^2*f*x^2 + 4*(a^3 + a*b^2)*d^4*e^3*x - 4*((a^2*b + b^3)*d^3*f^3*x^3 + (a^2*b + b^3)*d^3*e^3 - 3*(a^2*b + b^3)*d^2*e^2*f + 6*(a^2*b + b^3)*d*e*f^2 - 6*(a^2*b + b^3)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^2*b + b^3)*d^2*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^2*b + b^3)*d^2*e*f^2 + 2*(a^2*b + b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c))/((a^2*b^2 + b^4)*d^4*cosh(d*x + c) + (a^2*b^2 + b^4)*d^4*sinh(d*x + c))

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \sinh(dx+c)^2}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^3*sinh(d*x + c)^2/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \left(\sinh^2(dx+c)\right)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}e^3\left(\frac{2a^2\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,b^2d}-\frac{2(dx+c)a}{b^2d}+\frac{e^{(dx+c)}}{bd}+\frac{e^{(-dx-c)}}{bd}\right)-\frac{\left(ad^4f^3x^4e^c+4ad^4ef^2x^3e^c+6ad^4e^2fx^2e^c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] 1/2*e^3*(2*a^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) -
 a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^2*d) - 2*(d*x + c)*a/(b^2*d) + e^
(d*x + c)/(b*d) + e^(-d*x - c)/(b*d)) - 1/4*(a*d^4*f^3*x^4*e^c + 4*a*d^4*e*
f^2*x^3*e^c + 6*a*d^4*e^2*f*x^2*e^c - 2*(b*d^3*f^3*x^3*e^(2*c) + 3*(d^3*e*f
^2 - d^2*f^3)*b*x^2*e^(2*c) + 3*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*b*x*e^(
2*c) - 3*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*b*e^(2*c))*e^(d*x) - 2*(b*d^3*f^3*
x^3 + 3*(d^3*e*f^2 + d^2*f^3)*b*x^2 + 3*(d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)
*b*x + 3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*b)*e^(-d*x))*e^(-c)/(b^2*d^4) + in
tegrate(2*(a^2*f^3*x^3*e^c + 3*a^2*e*f^2*x^2*e^c + 3*a^2*e^2*f*x*e^c)*e^(d*
x)/(b^3*e^(2*d*x + 2*c) + 2*a*b^2*e^(d*x + c) - b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh (c+d\,x)^2\,{\left(e+f\,x\right)}^3}{a+b\sinh (c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((sinh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.229 $\int \frac{(e+fx)^2 \sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=407

$$-\frac{2a^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3\sqrt{a^2+b^2}}+\frac{2a^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^3\sqrt{a^2+b^2}}+\frac{2a^2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2\sqrt{a^2+b^2}}-\frac{2a^2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^2\sqrt{a^2+b^2}}$$

```
[Out] -1/3*a*(f*x+e)^3/b^2/f+2*f^2*cosh(d*x+c)/b/d^3+(f*x+e)^2*cosh(d*x+c)/b/d-2*
f*(f*x+e)*sinh(d*x+c)/b/d^2+a^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1
/2)))/b^2/d/(a^2+b^2)^(1/2)-a^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1
/2)))/b^2/d/(a^2+b^2)^(1/2)+2*a^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2
+b^2)^(1/2)))/b^2/d^2/(a^2+b^2)^(1/2)-2*a^2*f*(f*x+e)*polylog(2,-b*exp(d*x+
c)/(a+(a^2+b^2)^(1/2)))/b^2/d^2/(a^2+b^2)^(1/2)-2*a^2*f^2*polylog(3,-b*exp(
d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/d^3/(a^2+b^2)^(1/2)+2*a^2*f^2*polylog(3,-b*
exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/d^3/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.85, antiderivative size = 407, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {5557, 3296, 2638, 32, 3322, 2264, 2190, 2531, 2282, 6589}

$$\frac{2a^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2\sqrt{a^2+b^2}}-\frac{2a^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^2d^2\sqrt{a^2+b^2}}-\frac{2a^2f^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3\sqrt{a^2+b^2}}+$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a*(e + f*x)^3)/(3*b^2*f) + (2*f^2*Cosh[c + d*x])/(b*d^3) + ((e + f*x)^2*C
osh[c + d*x])/(b*d) + (a^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^
2 + b^2])])/(b^2*Sqrt[a^2 + b^2]*d) - (a^2*(e + f*x)^2*Log[1 + (b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2])])/(b^2*Sqrt[a^2 + b^2]*d) + (2*a^2*f*(e + f*x)*Po
lyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*Sqrt[a^2 + b^2]*d^
2) - (2*a^2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
])/(b^2*Sqrt[a^2 + b^2]*d^2) - (2*a^2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a -
 Sqrt[a^2 + b^2]))])/(b^2*Sqrt[a^2 + b^2]*d^3) + (2*a^2*f^2*PolyLog[3, -((b
*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*Sqrt[a^2 + b^2]*d^3) - (2*f*(e
+ f*x)*Sinh[c + d*x])/(b*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)^2\cosh(c+dx)}{bd} - \frac{a\int (e+fx)^2\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^2}{a+b\sinh(c+dx)}\,dx}{b^2} - \frac{(2f)\int (e+f}{}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{(e+fx)^2\cosh(c+dx)}{bd} - \frac{2f(e+fx)\sinh(c+dx)}{bd^2} + \frac{\left(2a^2\right)\int \frac{e}{-b+2}}{}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cosh(c+dx)}{bd^3} + \frac{(e+fx)^2\cosh(c+dx)}{bd} - \frac{2f(e+fx)\sinh(c+}{bd^2}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cosh(c+dx)}{bd^3} + \frac{(e+fx)^2\cosh(c+dx)}{bd} + \frac{a^2(e+fx)^2\log\left(1-\right.}{b^2\sqrt{a^2+b}}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cosh(c+dx)}{bd^3} + \frac{(e+fx)^2\cosh(c+dx)}{bd} + \frac{a^2(e+fx)^2\log\left(1-\right.}{b^2\sqrt{a^2+b}}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cosh(c+dx)}{bd^3} + \frac{(e+fx)^2\cosh(c+dx)}{bd} + \frac{a^2(e+fx)^2\log\left(1-\right.}{b^2\sqrt{a^2+b}}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cosh(c+dx)}{bd^3} + \frac{(e+fx)^2\cosh(c+dx)}{bd} + \frac{a^2(e+fx)^2\log\left(1-\right.}{b^2\sqrt{a^2+b}}$$

Mathematica [A] time = 2.93, size = 453, normalized size = 1.11

$$\frac{3a^2\left(-2d^2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)+2d^2efx\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-2d^2efx\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)+d^2f^2x^2\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-d^2f^2x^2\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)+2df(e+\right.}{d^3\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-(a*x*(3*e^2 + 3*e*f*x + f^2*x^2)) + (3*a^2*(-2*d^2*e^2*ArcTanh[(a + b*E^(
c + d*x))/Sqrt[a^2 + b^2]] + 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[
a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] -
 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - d^2*f^2*x^2*L
og[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 2*d*f*(e + f*x)*PolyLog[2,
```

```
(b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*f*(e + f*x)*PolyLog[2, -((b*E
^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*f^2*PolyLog[3, (b*E^(c + d*x))/(-a
+ Sqrt[a^2 + b^2])] + 2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2]))]))/(Sqrt[a^2 + b^2]*d^3) + (3*b*Cosh[d*x]*((2*f^2 + d^2*(e + f*x)^2)*C
osh[c] - 2*d*f*(e + f*x)*Sinh[c]))/d^3 + (3*b*(-2*d*f*(e + f*x)*Cosh[c] + (
2*f^2 + d^2*(e + f*x)^2)*Sinh[c])*Sinh[d*x])/d^3)/(3*b^2)
```

fricas [C] time = 0.61, size = 1689, normalized size = 4.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/6*(3*(a^2*b + b^3)*d^2*f^2*x^2 + 3*(a^2*b + b^3)*d^2*e^2 + 6*(a^2*b + b^3
)*d*e*f + 6*(a^2*b + b^3)*f^2 + 3*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3
)*d^2*e^2 - 2*(a^2*b + b^3)*d*e*f + 2*(a^2*b + b^3)*f^2 + 2*((a^2*b + b^3)*
d^2*e*f - (a^2*b + b^3)*d*f^2)*x)*cosh(d*x + c)^2 + 3*((a^2*b + b^3)*d^2*f^
2*x^2 + (a^2*b + b^3)*d^2*e^2 - 2*(a^2*b + b^3)*d*e*f + 2*(a^2*b + b^3)*f^2
 + 2*((a^2*b + b^3)*d^2*e*f - (a^2*b + b^3)*d*f^2)*x)*sinh(d*x + c)^2 + 12*
((a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c) + (a^2*b*d*f^2*x + a^2*b*d*e*f
)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x
+ c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1
) - 12*((a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c) + (a^2*b*d*f^2*x + a^2*
b*d*e*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*si
nh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b
)/b + 1) - 6*((a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x +
c) + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2
+ b^2)/b^2) + 2*a) + 6*((a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*c
osh(d*x + c) + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sinh(d*x +
 c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*
sqrt((a^2 + b^2)/b^2) + 2*a) + 6*((a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x +
2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c) + (a^2*b*d^2*f^2*x^2 + 2*a^2
*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*sinh(d*x + c))*sqrt((a^2 +
b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*si
nh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 6*((a^2*b*d^2*f^2*x^2 + 2*a^2*
b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c) + (a^2*b*d^2*f
^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d
*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 12*(a^2*b*f^2*co
sh(d*x + c) + a^2*b*f^2*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*
cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2))/b) + 12*(a^2*b*f^2*cosh(d*x + c) + a^2*b*f^2*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b
```

```
*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*((a^2*b + b
^3)*d^2*e*f + (a^2*b + b^3)*d*f^2)*x - 2*((a^3 + a*b^2)*d^3*f^2*x^3 + 3*(a^
3 + a*b^2)*d^3*e*f*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*x)*cosh(d*x + c) - 2*((a^3
 + a*b^2)*d^3*f^2*x^3 + 3*(a^3 + a*b^2)*d^3*e*f*x^2 + 3*(a^3 + a*b^2)*d^3*e
^2*x - 3*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 - 2*(a^2*b + b^
3)*d*e*f + 2*(a^2*b + b^3)*f^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^2*b + b^3)*d
*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/((a^2*b^2 + b^4)*d^3*cosh(d*x + c) +
 (a^2*b^2 + b^4)*d^3*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\sinh\left(dx+c\right)^{2}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sinh(d*x + c)^2/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\left(\sinh^{2}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}e^{2}\left(\frac{2\,a^{2}\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{\sqrt{a^{2}+b^{2}}\,b^{2}d}-\frac{2\,(dx+c)a}{b^{2}d}+\frac{e^{(dx+c)}}{bd}+\frac{e^{(-dx-c)}}{bd}\right)-\frac{\left(2\,ad^{3}f^{2}x^{3}e^{c}+6\,ad^{3}efx^{2}e^{c}-3\left(bd^{2}f^{2}x^{2}e^{(2\,c}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*e^2*(2*a^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) -
 a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^2*d) - 2*(d*x + c)*a/(b^2*d) + e^
(d*x + c)/(b*d) + e^(-d*x - c)/(b*d)) - 1/6*(2*a*d^3*f^2*x^3*e^c + 6*a*d^3*
e*f*x^2*e^c - 3*(b*d^2*f^2*x^2*e^(2*c) + 2*(d^2*e*f - d*f^2)*b*x*e^(2*c) -
```

```
2*(d*e*f - f^2)*b*e^(2*c))*e^(d*x) - 3*(b*d^2*f^2*x^2 + 2*(d^2*e*f + d*f^2)
*b*x + 2*(d*e*f + f^2)*b)*e^(-d*x))*e^(-c)/(b^2*d^3) + integrate(2*(a^2*f^2
*x^2*e^c + 2*a^2*e*f*x*e^c)*e^(d*x)/(b^3*e^(2*d*x + 2*c) + 2*a*b^2*e^(d*x +
 c) - b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh\left(c+d\,x\right)^2\,{\left(e+f\,x\right)}^2}{a+b\,\sinh\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((sinh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.230 $\int \frac{(e+fx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=264

$$\frac{a^2f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2\sqrt{a^2+b^2}}-\frac{a^2f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^2\sqrt{a^2+b^2}}+\frac{a^2(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^2d\sqrt{a^2+b^2}}-\frac{a^2(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{b^2d\sqrt{a^2+b^2}}-\frac{aex}{b^2}-$$

```
[Out] -a*e*x/b^2-1/2*a*f*x^2/b^2+(f*x+e)*cosh(d*x+c)/b/d-f*sinh(d*x+c)/b/d^2+a^2*
(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/d/(a^2+b^2)^(1/2)-a^2*(f
*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/d/(a^2+b^2)^(1/2)+a^2*f*po
lylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/d^2/(a^2+b^2)^(1/2)-a^2*f*po
lylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/d^2/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.49, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {5557, 3296, 2637, 3322, 2264, 2190, 2279, 2391}

$$\frac{a^2f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2\sqrt{a^2+b^2}}-\frac{a^2f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^2d^2\sqrt{a^2+b^2}}+\frac{a^2(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^2d\sqrt{a^2+b^2}}-\frac{a^2(e+fx)\log\left(\frac{be^{c+\cdots}}{\sqrt{a^2+b\cdots}}\right.}{b^2d\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*e*x)/b^2) - (a*f*x^2)/(2*b^2) + ((e + f*x)*Cosh[c + d*x])/(b*d) + (a^2
*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^2*Sqrt[a^2 +
b^2]*d) - (a^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b
^2*Sqrt[a^2 + b^2]*d) + (a^2*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2]))])/(b^2*Sqrt[a^2 + b^2]*d^2) - (a^2*f*PolyLog[2, -((b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2]))])/(b^2*Sqrt[a^2 + b^2]*d^2) - (f*Sinh[c + d*x])/(b*d^
2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
```

```
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)\cosh(c+dx)}{bd} - \frac{a\int (e+fx)\,dx}{b^2} + \frac{a^2\int \frac{e+fx}{a+b\sinh(c+dx)}\,dx}{b^2} - \frac{f\int \cosh(c+dx}{bd}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} + \frac{(e+fx)\cosh(c+dx)}{bd} - \frac{f\sinh(c+dx)}{bd^2} + \frac{\left(2a^2\right)\int \frac{e^{c+dx}(e+fx)}{-b+2ae^{c+dx}+be^{2(c+}}}{b^2}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} + \frac{(e+fx)\cosh(c+dx)}{bd} - \frac{f\sinh(c+dx)}{bd^2} + \frac{\left(2a^2\right)\int \frac{e^{c+dx}(e+fx)}{2a-2\sqrt{a^2+b^2}+2be^{c}}}{b\sqrt{a^2+b^2}}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} + \frac{(e+fx)\cosh(c+dx)}{bd} + \frac{a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2\sqrt{a^2+b^2}\,d} - \frac{a^2(e+f}{}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} + \frac{(e+fx)\cosh(c+dx)}{bd} + \frac{a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2\sqrt{a^2+b^2}\,d} - \frac{a^2(e+f}{}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} + \frac{(e+fx)\cosh(c+dx)}{bd} + \frac{a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2\sqrt{a^2+b^2}\,d} - \frac{a^2(e+f}{}$$

Mathematica [A] time = 2.13, size = 299, normalized size = 1.13

$$\frac{\frac{2a^2\left(-2de\tanh^{-1}\left(\frac{a+b\sinh(c+dx)+b\cosh(c+dx)}{\sqrt{a^2+b^2}}\right)+f\text{Li}_2\left(\frac{b(\cosh(c+dx)+\sinh(c+dx))}{\sqrt{a^2+b^2}-a}\right)-f\text{Li}_2\left(-\frac{b(\cosh(c+dx)+\sinh(c+dx))}{a+\sqrt{a^2+b^2}}\right)+f(c+dx)\log\left(\frac{b(\sinh(c+dx)+\cosh(c+dx))}{a-\sqrt{a^2+b^2}}+1\right)}{\sqrt{a^2+b^2}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(c + d*x)*(c*f - d*(2*e + f*x)) + 2*b*d*(e + f*x)*Cosh[c + d*x] + (2*a^2
*(-2*d*e*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] +
 2*c*f*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] + f
*(c + d*x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2]
)] - f*(c + d*x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2
+ b^2])] + f*PolyLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2
+ b^2])] - f*PolyLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2
 + b^2]))]))/Sqrt[a^2 + b^2] - 2*b*f*Sinh[c + d*x])/(2*b^2*d^2)
```

fricas [B] time = 0.54, size = 946, normalized size = 3.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + ((a^2*b + b^3)*d*f*x + (a^2*
b + b^3)*d*e - (a^2*b + b^3)*f)*cosh(d*x + c)^2 + ((a^2*b + b^3)*d*f*x + (a
^2*b + b^3)*d*e - (a^2*b + b^3)*f)*sinh(d*x + c)^2 + 2*(a^2*b*f*cosh(d*x +
c) + a^2*b*f*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) +
a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
 - b)/b + 1) - 2*(a^2*b*f*cosh(d*x + c) + a^2*b*f*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b
*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*((a^2*b*d*e - a^2*b*c
*f)*cosh(d*x + c) + (a^2*b*d*e - a^2*b*c*f)*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2)
 + 2*a) + 2*((a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c) + (a^2*b*d*e - a^2*b*c*f
)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x
 + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*((a^2*b*d*f*x + a^2*b*c*f)*cos
h(d*x + c) + (a^2*b*d*f*x + a^2*b*c*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*((a^2*b*d*f*x + a^2*b*c*f)*cosh(d*x +
 c) + (a^2*b*d*f*x + a^2*b*c*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(
a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqr
t((a^2 + b^2)/b^2) - b)/b) + (a^2*b + b^3)*f - ((a^3 + a*b^2)*d^2*f*x^2 + 2
*(a^3 + a*b^2)*d^2*e*x)*cosh(d*x + c) - ((a^3 + a*b^2)*d^2*f*x^2 + 2*(a^3 +
 a*b^2)*d^2*e*x - 2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e - (a^2*b + b^3
)*f)*cosh(d*x + c))*sinh(d*x + c))/((a^2*b^2 + b^4)*d^2*cosh(d*x + c) + (a^
2*b^2 + b^4)*d^2*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\sinh\left(dx+c\right)^{2}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sinh(d*x + c)^2/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.14, size = 510, normalized size = 1.93

$$-\frac{af\,x^{2}}{2b^{2}}-\frac{aex}{b^{2}}+\frac{\left(dfx+de-f\right)\mathrm{e}^{dx+c}}{2d^{2}b}+\frac{\left(dfx+de+f\right)\mathrm{e}^{-dx-c}}{2d^{2}b}-\frac{2a^{2}e\,\mathrm{arctanh}\left(\frac{2b\,\mathrm{e}^{dx+c}+2a}{2\sqrt{a^{2}+b^{2}}}\right)}{d\,b^{2}\sqrt{a^{2}+b^{2}}}+\frac{a^{2}f\ln\left(\frac{-b\,\mathrm{e}^{dx+c}+\sqrt{a^{2}+b^{2}}-}{-a+\sqrt{a^{2}+b^{2}}}\right.}{d\,b^{2}\sqrt{a^{2}+b^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/2*a*f*x^2/b^2-a*e*x/b^2+1/2*(d*f*x+d*e-f)/d^2/b*exp(d*x+c)+1/2*(d*f*x+d*
e+f)/d^2/b*exp(-d*x-c)-2/d*a^2/b^2*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d
*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d*a^2/b^2*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)
+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d^2*a^2/b^2*f/(a^2+b^2)^(1/2)
*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a^2/b^2*f
/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x
-1/d^2*a^2/b^2*f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^
2+b^2)^(1/2)))*c+1/d^2*a^2/b^2*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+
b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2*a^2/b^2*f/(a^2+b^2)^(1/2)*dilog((
b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+2/d^2*a^2/b^2*f*c/(a^2
+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(4\,a^2\int\frac{xe^{(dx+c)}}{b^3e^{(2\,dx+2\,c)}+2\,ab^2e^{(dx+c)}-b^3}\,dx-\frac{\left(ad^2x^2e^c-\left(bdxe^{(2\,c)}-be^{(2\,c)}\right)e^{(dx)}-(bdx+b)e^{(-dx)}\right)e^{(-c)}}{b^2d^2}\right)f+\frac{1}{2}\,e\left(\frac{2\,a}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(4*a^2*integrate(x*e^(d*x + c)/(b^3*e^(2*d*x + 2*c) + 2*a*b^2*e^(d*x +
c) - b^3), x) - (a*d^2*x^2*e^c - (b*d*x*e^(2*c) - b*e^(2*c))*e^(d*x) - (b*d
*x + b)*e^(-d*x))*e^(-c)/(b^2*d^2))*f + 1/2*e*(2*a^2*log((b*e^(-d*x - c) -
a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^
2)*b^2*d) - 2*(d*x + c)*a/(b^2*d) + e^(d*x + c)/(b*d) + e^(-d*x - c)/(b*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\mathrm{sinh}\left(c+d\,x\right)}^2\,\left(e+f\,x\right)}{a+b\,\mathrm{sinh}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((sinh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.231 $\int \frac{\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=71

$$-\frac{2a^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^2d\sqrt{a^2+b^2}}-\frac{ax}{b^2}+\frac{\cosh(c+dx)}{bd}$$

```
[Out] -a*x/b^2+cosh(d*x+c)/b/d-2*a^2*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^
(1/2))/b^2/d/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2746, 12, 2735, 2660, 618, 204}

$$-\frac{2a^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^2d\sqrt{a^2+b^2}}-\frac{ax}{b^2}+\frac{\cosh(c+dx)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*x)/b^2) - (2*a^2*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(
b^2*Sqrt[a^2 + b^2]*d) + Cosh[c + d*x]/(b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2746

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2/((c_.) + (d_.)*sin[(e_.) + (f
_.)*(x_)]), x_Symbol] :> -Simp[(b^2*Cos[e + f*x])/(d*f), x] + Dist[1/d, Int
[Simp[a^2*d - b*(b*c - 2*a*d)*Sin[e + f*x], x]/(c + d*Sin[e + f*x]), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx &= \frac{\cosh(c+dx)}{bd}-\frac{\int \frac{a\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}\\
&= \frac{\cosh(c+dx)}{bd}-\frac{a\int \frac{\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}\\
&= -\frac{ax}{b^2}+\frac{\cosh(c+dx)}{bd}+\frac{a^2\int \frac{1}{a+b\sinh(c+dx)}\,dx}{b^2}\\
&= -\frac{ax}{b^2}+\frac{\cosh(c+dx)}{bd}-\frac{\left(2ia^2\right)\mathrm{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(ic+idx)\right)\right)}{b^2d}\\
&= -\frac{ax}{b^2}+\frac{\cosh(c+dx)}{bd}+\frac{\left(4ia^2\right)\mathrm{Subst}\left(\int \frac{1}{-4\left(a^2+b^2\right)-x^2}\,dx,x,-2ib+2a\tan\left(\frac{1}{2}(ic+idx)\right)\right)}{b^2d}\\
&= -\frac{ax}{b^2}-\frac{2a^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^2\sqrt{a^2+b^2}\,d}+\frac{\cosh(c+dx)}{bd}
\end{aligned}
$$

Mathematica [A] time = 0.29, size = 74, normalized size = 1.04

$$\frac{b\cosh(c+dx)-a\left(-\frac{2a\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{\sqrt{-a^2-b^2}}+c+dx\right)}{b^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-(a*(c + d*x - (2*a*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/Sq
rt[-a^2 - b^2])) + b*Cosh[c + d*x])/(b^2*d)
```

fricas [B] time = 0.76, size = 331, normalized size = 4.66

$$-\frac{2\left(a^3+ab^2\right)dx\cosh\left(dx+c\right)-a^2b-b^3-\left(a^2b+b^3\right)\cosh\left(dx+c\right)^2-\left(a^2b+b^3\right)\sinh\left(dx+c\right)^2-2\left(a^2\cosh\left(dx\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*(a^3 + a*b^2)*d*x*cosh(d*x + c) - a^2*b - b^3 - (a^2*b + b^3)*cosh(
d*x + c)^2 - (a^2*b + b^3)*sinh(d*x + c)^2 - 2*(a^2*cosh(d*x + c) + a^2*sin
h(d*x + c))*sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x + c)^2
+ 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x
+ c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x + c) + a))/(b*cosh(d
*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c) + a)
*sinh(d*x + c) - b)) + 2*((a^3 + a*b^2)*d*x - (a^2*b + b^3)*cosh(d*x + c))*
sinh(d*x + c))/((a^2*b^2 + b^4)*d*cosh(d*x + c) + (a^2*b^2 + b^4)*d*sinh(d*
x + c))
```

giac [A] time = 0.29, size = 111, normalized size = 1.56

$$\frac{\frac{2\,a^2\log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\,\sqrt{a^2+b^2}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\,\sqrt{a^2+b^2}\right|}\right)}{\sqrt{a^2+b^2}\,b^2}-\frac{2\,(dx+c)a}{b^2}+\frac{e^{(dx+c)}}{b}+\frac{e^{(-dx-c)}}{b}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

[Out] 1/2*(2*a^2*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d*x + c) + 2*a + 2*sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^2) - 2*(d*x + c)*a/b^2 + e^(d*x + c)/b + e^(-d*x - c)/b)/d

maple [A] time = 0.05, size = 132, normalized size = 1.86

$$-\frac{1}{db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}+\frac{a\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{d\,b^2}+\frac{1}{db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}-\frac{a\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{d\,b^2}+\frac{2a^2\,\mathrm{arc}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)

[Out] -1/d/b/(tanh(1/2*d*x+1/2*c)-1)+1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)-1)+1/d/b/(tanh(1/2*d*x+1/2*c)+1)-1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)+1)+2/d*a^2/b^2/(a^2+b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))

maxima [A] time = 0.61, size = 119, normalized size = 1.68

$$\frac{a^2\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,b^2d}-\frac{(dx+c)a}{b^2d}+\frac{e^{(dx+c)}}{2\,bd}+\frac{e^{(-dx-c)}}{2\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")

[Out] a^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^2*d) - (d*x + c)*a/(b^2*d) + 1/2*e^(d*x + c)/(b*d) + 1/2*e^(-d*x - c)/(b*d)

mupad [B] time = 0.37, size = 166, normalized size = 2.34

$$\frac{\mathrm{e}^{c+d\,x}}{2\,b\,d}+\frac{\mathrm{e}^{-c-d\,x}}{2\,b\,d}-\frac{a\,x}{b^2}-\frac{a^2\,\ln\left(-\frac{2\,a^2\,\mathrm{e}^{c+d\,x}}{b^3}-\frac{2\,a^2\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{b^3\,\sqrt{a^2+b^2}}\right)}{b^2\,d\,\sqrt{a^2+b^2}}+\frac{a^2\,\ln\left(\frac{2\,a^2\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{b^3\,\sqrt{a^2+b^2}}-\frac{2\,a^2\,\mathrm{e}^{c+d\,x}}{b^3}\right)}{b^2\,d\,\sqrt{a^2+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(sinh(c + d*x)^2/(a + b*sinh(c + d*x)),x)

[Out] exp(c + d*x)/(2*b*d) + exp(- c - d*x)/(2*b*d) - (a*x)/b^2 - (a^2*log(- (2*a^2*exp(c + d*x))/b^3 - (2*a^2*(b - a*exp(c + d*x)))/(b^3*(a^2 + b^2)^(1/2))

```
))/(b^2*d*(a^2 + b^2)^(1/2)) + (a^2*log((2*a^2*(b - a*exp(c + d*x)))/(b^3*(
a^2 + b^2)^(1/2)) - (2*a^2*exp(c + d*x))/b^3))/(b^2*d*(a^2 + b^2)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.232 $\int \frac{\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sinh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Sinh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 134.05, size = 0, normalized size = 0.00

$$\int \frac{\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sinh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Integrate[Sinh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.61, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sinh(dx+c)^2}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(sinh(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh\left(dx+c\right)^2}{\left(fx+e\right)\left(b\sinh\left(dx+c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sinh(d*x + c)^2/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{\sinh^2\left(dx+c\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$2\,a^2\int -\frac{e^{(dx+c)}}{b^3fx+b^3e-\left(b^3fxe^{(2\,c)}+b^3ee^{(2\,c)}\right)e^{(2\,dx)}-2\left(ab^2fxe^{c}+ab^2ee^{c}\right)e^{(dx)}}\,dx+\frac{e^{\left(-c+\frac{de}{f}\right)}E_1\left(\frac{(fx+e)d}{f}\right)}{2\,bf}-\frac{e^{\left(c-\frac{de}{f}\right)}E_1\left(\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 2*a^2*integrate(-e^(d*x + c)/(b^3*f*x + b^3*e - (b^3*f*x*e^(2*c) + b^3*e*e^
(2*c))*e^(2*d*x) - 2*(a*b^2*f*x*e^c + a*b^2*e*e^c)*e^(d*x)), x) + 1/2*e^(-c
 + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b*f) - 1/2*e^(c - d*e/f)*exp_in
tegral_e(1, -(f*x + e)*d/f)/(b*f) - a*log(f*x + e)/(b^2*f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\mathrm{sinh}\left(c+d\,x\right)}^2}{\left(e+f\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)^2/((e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int(sinh(c + d*x)^2/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.233 $\int \frac{(e+fx)^3 \sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=712

$$\frac{a^2(e+fx)^4}{4b^3f}-\frac{6a^3f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^4\sqrt{a^2+b^2}}+\frac{6a^3f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^4\sqrt{a^2+b^2}}+\frac{6a^3f^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3\sqrt{a^2+b^2}}-\frac{6a^3f^2(e+fx)\text{Li}_3\left(\right.}{b^3d^3\sqrt{a^2+}}$$

```
[Out] -3/4*e*f^2*x/b/d^2-3/8*f^3*x^2/b/d^2+1/4*a^2*(f*x+e)^4/b^3/f-1/8*(f*x+e)^4/
b/f-6*a*f^2*(f*x+e)*cosh(d*x+c)/b^2/d^3-a*(f*x+e)^3*cosh(d*x+c)/b^2/d+6*a*f
^3*sinh(d*x+c)/b^2/d^4+3*a*f*(f*x+e)^2*sinh(d*x+c)/b^2/d^2+3/4*f^2*(f*x+e)*
cosh(d*x+c)*sinh(d*x+c)/b/d^3+1/2*(f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)/b/d-3/8
*f^3*sinh(d*x+c)^2/b/d^4-3/4*f*(f*x+e)^2*sinh(d*x+c)^2/b/d^2-a^3*(f*x+e)^3*
ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d/(a^2+b^2)^(1/2)+a^3*(f*x+e)^3*
ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d/(a^2+b^2)^(1/2)-3*a^3*f*(f*x+e
)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^2/(a^2+b^2)^(1/2)+3*
a^3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^2/(a^2+b
^2)^(1/2)+6*a^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^
3/d^3/(a^2+b^2)^(1/2)-6*a^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2
)^(1/2)))/b^3/d^3/(a^2+b^2)^(1/2)-6*a^3*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2
+b^2)^(1/2)))/b^3/d^4/(a^2+b^2)^(1/2)+6*a^3*f^3*polylog(4,-b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))/b^3/d^4/(a^2+b^2)^(1/2)
```

Rubi [A] time = 1.23, antiderivative size = 712, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 13, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.464, Rules used = {5557, 3311, 32, 3310, 3296, 2637, 3322, 2264, 2190, 2531, 6609, 2282, 6589}

$$\frac{6a^3f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3\sqrt{a^2+b^2}}-\frac{6a^3f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^3\sqrt{a^2+b^2}}-\frac{3a^3f(e+fx)^2\text{PolyLog}\left(2,-\frac{be}{a-\sqrt{}}\right.}{b^3d^2\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-3*e*f^2*x)/(4*b*d^2) - (3*f^3*x^2)/(8*b*d^2) + (a^2*(e + f*x)^4)/(4*b^3*f
) - (e + f*x)^4/(8*b*f) - (6*a*f^2*(e + f*x)*Cosh[c + d*x])/(b^2*d^3) - (a*
(e + f*x)^3*Cosh[c + d*x])/(b^2*d) - (a^3*(e + f*x)^3*Log[1 + (b*E^(c + d*x
))/(a - Sqrt[a^2 + b^2])])/(b^3*Sqrt[a^2 + b^2]*d) + (a^3*(e + f*x)^3*Log[1
 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^3*Sqrt[a^2 + b^2]*d) - (3*a^3
*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*S
qrt[a^2 + b^2]*d^2) + (3*a^3*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2]))])/(b^3*Sqrt[a^2 + b^2]*d^2) + (6*a^3*f^2*(e + f*x)*Poly
```

```
Log[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*Sqrt[a^2 + b^2]*d^3)
 - (6*a^3*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
])/(b^3*Sqrt[a^2 + b^2]*d^3) - (6*a^3*f^3*PolyLog[4, -((b*E^(c + d*x))/(a -
 Sqrt[a^2 + b^2]))])/(b^3*Sqrt[a^2 + b^2]*d^4) + (6*a^3*f^3*PolyLog[4, -((b
*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*Sqrt[a^2 + b^2]*d^4) + (6*a*f^3
*Sinh[c + d*x])/(b^2*d^4) + (3*a*f*(e + f*x)^2*Sinh[c + d*x])/(b^2*d^2) + (
3*f^2*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(4*b*d^3) + ((e + f*x)^3*Cosh[
c + d*x]*Sinh[c + d*x])/(2*b*d) - (3*f^3*Sinh[c + d*x]^2)/(8*b*d^4) - (3*f*
(e + f*x)^2*Sinh[c + d*x]^2)/(4*b*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)^3\cosh(c+dx)\sinh(c+dx)}{2bd} - \frac{3f(e+fx)^2\sinh^2(c+dx)}{4bd^2} - \frac{a\int (e+fx)^3$$

$$= -\frac{(e+fx)^4}{8bf} - \frac{a(e+fx)^3\cosh(c+dx)}{b^2d} + \frac{3f^2(e+fx)\cosh(c+dx)\sinh(c+dx)}{4bd^3}$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} - \frac{(e+fx)^4}{8bf} - \frac{a(e+fx)^3\cosh(c+dx)}{b^2d} + \frac{3af(e$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} - \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c+dx)}{b^2d^3} - \frac{a(e$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} - \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c+dx)}{b^2d^3} - \frac{a(e$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} - \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c+dx)}{b^2d^3} - \frac{a(e$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} - \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c+dx)}{b^2d^3} - \frac{a(e$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} - \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c+dx)}{b^2d^3} - \frac{a(e$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} - \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c+dx)}{b^2d^3} - \frac{a(e$$

Mathematica [A] time = 4.54, size = 1407, normalized size = 1.98

$$\frac{4a^2\sqrt{a^2+b^2}\,f^3x^4d^4 - 2b^2\sqrt{a^2+b^2}\,f^3x^4d^4 + 16a^2\sqrt{a^2+b^2}\,ef^2x^3d^4 - 8b^2\sqrt{a^2+b^2}\,ef^2x^3d^4 + 24a^2\sqrt{a^2+b^2}\,e^2fx^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (16*a^2*Sqrt[a^2 + b^2]*d^4*e^3*x - 8*b^2*Sqrt[a^2 + b^2]*d^4*e^3*x + 24*a^
2*Sqrt[a^2 + b^2]*d^4*e^2*f*x^2 - 12*b^2*Sqrt[a^2 + b^2]*d^4*e^2*f*x^2 + 16
*a^2*Sqrt[a^2 + b^2]*d^4*e*f^2*x^3 - 8*b^2*Sqrt[a^2 + b^2]*d^4*e*f^2*x^3 +
4*a^2*Sqrt[a^2 + b^2]*d^4*f^3*x^4 - 2*b^2*Sqrt[a^2 + b^2]*d^4*f^3*x^4 + 32*
a^3*d^3*e^3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 16*a*b*Sqrt[a^2
+ b^2]*d^3*e^3*Cosh[c + d*x] - 96*a*b*Sqrt[a^2 + b^2]*d*e*f^2*Cosh[c + d*x]
 - 48*a*b*Sqrt[a^2 + b^2]*d^3*e^2*f*x*Cosh[c + d*x] - 96*a*b*Sqrt[a^2 + b^2
]*d*f^3*x*Cosh[c + d*x] - 48*a*b*Sqrt[a^2 + b^2]*d^3*e*f^2*x^2*Cosh[c + d*x
] - 16*a*b*Sqrt[a^2 + b^2]*d^3*f^3*x^3*Cosh[c + d*x] - 6*b^2*Sqrt[a^2 + b^2
]*d^2*e^2*f*Cosh[2*(c + d*x)] - 3*b^2*Sqrt[a^2 + b^2]*f^3*Cosh[2*(c + d*x)]
 - 12*b^2*Sqrt[a^2 + b^2]*d^2*e*f^2*x*Cosh[2*(c + d*x)] - 6*b^2*Sqrt[a^2 +
b^2]*d^2*f^3*x^2*Cosh[2*(c + d*x)] - 48*a^3*d^3*e^2*f*x*Log[1 + (b*E^(c + d
*x))/(a - Sqrt[a^2 + b^2])] - 48*a^3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/
(a - Sqrt[a^2 + b^2])] - 16*a^3*d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a - Sq
rt[a^2 + b^2])] + 48*a^3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2
+ b^2])] + 48*a^3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
])] + 16*a^3*d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 4
8*a^3*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
+ 48*a^3*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
]))] + 96*a^3*d*e*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] +
96*a^3*d*f^3*x*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 96*a^3*
d*e*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 96*a^3*d*f^3
*x*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 96*a^3*f^3*PolyLo
g[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 96*a^3*f^3*PolyLog[4, -((b*E
^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 48*a*b*Sqrt[a^2 + b^2]*d^2*e^2*f*Sinh
[c + d*x] + 96*a*b*Sqrt[a^2 + b^2]*f^3*Sinh[c + d*x] + 96*a*b*Sqrt[a^2 + b^
2]*d^2*e*f^2*x*Sinh[c + d*x] + 48*a*b*Sqrt[a^2 + b^2]*d^2*f^3*x^2*Sinh[c +
d*x] + 4*b^2*Sqrt[a^2 + b^2]*d^3*e^3*Sinh[2*(c + d*x)] + 6*b^2*Sqrt[a^2 + b
^2]*d*e*f^2*Sinh[2*(c + d*x)] + 12*b^2*Sqrt[a^2 + b^2]*d^3*e^2*f*x*Sinh[2*(
c + d*x)] + 6*b^2*Sqrt[a^2 + b^2]*d*f^3*x*Sinh[2*(c + d*x)] + 12*b^2*Sqrt[a
^2 + b^2]*d^3*e*f^2*x^2*Sinh[2*(c + d*x)] + 4*b^2*Sqrt[a^2 + b^2]*d^3*f^3*x
^3*Sinh[2*(c + d*x)]])/(16*b^3*Sqrt[a^2 + b^2]*d^4)
```

fricas [C] time = 0.71, size = 5191, normalized size = 7.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/32*(4*(a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(a^2*b^2 + b^4)*d^3*e^3 + 6*(a^2*b
^2 + b^4)*d^2*e^2*f + 6*(a^2*b^2 + b^4)*d*e*f^2 - (4*(a^2*b^2 + b^4)*d^3*f^
3*x^3 + 4*(a^2*b^2 + b^4)*d^3*e^3 - 6*(a^2*b^2 + b^4)*d^2*e^2*f + 6*(a^2*b^
2 + b^4)*d*e*f^2 - 3*(a^2*b^2 + b^4)*f^3 + 6*(2*(a^2*b^2 + b^4)*d^3*e*f^2 -
 (a^2*b^2 + b^4)*d^2*f^3)*x^2 + 6*(2*(a^2*b^2 + b^4)*d^3*e^2*f - 2*(a^2*b^2
```

```
 + b^4)*d^2*e*f^2 + (a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c)^4 - (4*(a^2*b^2
 + b^4)*d^3*f^3*x^3 + 4*(a^2*b^2 + b^4)*d^3*e^3 - 6*(a^2*b^2 + b^4)*d^2*e^2
*f + 6*(a^2*b^2 + b^4)*d*e*f^2 - 3*(a^2*b^2 + b^4)*f^3 + 6*(2*(a^2*b^2 + b^
4)*d^3*e*f^2 - (a^2*b^2 + b^4)*d^2*f^3)*x^2 + 6*(2*(a^2*b^2 + b^4)*d^3*e^2*
f - 2*(a^2*b^2 + b^4)*d^2*e*f^2 + (a^2*b^2 + b^4)*d*f^3)*x)*sinh(d*x + c)^4
 + 3*(a^2*b^2 + b^4)*f^3 + 16*((a^3*b + a*b^3)*d^3*f^3*x^3 + (a^3*b + a*b^3
)*d^3*e^3 - 3*(a^3*b + a*b^3)*d^2*e^2*f + 6*(a^3*b + a*b^3)*d*e*f^2 - 6*(a^
3*b + a*b^3)*f^3 + 3*((a^3*b + a*b^3)*d^3*e*f^2 - (a^3*b + a*b^3)*d^2*f^3)*
x^2 + 3*((a^3*b + a*b^3)*d^3*e^2*f - 2*(a^3*b + a*b^3)*d^2*e*f^2 + 2*(a^3*b
 + a*b^3)*d*f^3)*x)*cosh(d*x + c)^3 + 4*(4*(a^3*b + a*b^3)*d^3*f^3*x^3 + 4*
(a^3*b + a*b^3)*d^3*e^3 - 12*(a^3*b + a*b^3)*d^2*e^2*f + 24*(a^3*b + a*b^3)
*d*e*f^2 - 24*(a^3*b + a*b^3)*f^3 + 12*((a^3*b + a*b^3)*d^3*e*f^2 - (a^3*b
+ a*b^3)*d^2*f^3)*x^2 + 12*((a^3*b + a*b^3)*d^3*e^2*f - 2*(a^3*b + a*b^3)*d
^2*e*f^2 + 2*(a^3*b + a*b^3)*d*f^3)*x - (4*(a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*
(a^2*b^2 + b^4)*d^3*e^3 - 6*(a^2*b^2 + b^4)*d^2*e^2*f + 6*(a^2*b^2 + b^4)*d
*e*f^2 - 3*(a^2*b^2 + b^4)*f^3 + 6*(2*(a^2*b^2 + b^4)*d^3*e*f^2 - (a^2*b^2
+ b^4)*d^2*f^3)*x^2 + 6*(2*(a^2*b^2 + b^4)*d^3*e^2*f - 2*(a^2*b^2 + b^4)*d^
2*e*f^2 + (a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^3 + 6*(2*(
a^2*b^2 + b^4)*d^3*e*f^2 + (a^2*b^2 + b^4)*d^2*f^3)*x^2 - 4*((2*a^4 + a^2*b
^2 - b^4)*d^4*f^3*x^4 + 4*(2*a^4 + a^2*b^2 - b^4)*d^4*e*f^2*x^3 + 6*(2*a^4
+ a^2*b^2 - b^4)*d^4*e^2*f*x^2 + 4*(2*a^4 + a^2*b^2 - b^4)*d^4*e^3*x)*cosh(
d*x + c)^2 - 2*(2*(2*a^4 + a^2*b^2 - b^4)*d^4*f^3*x^4 + 8*(2*a^4 + a^2*b^2
- b^4)*d^4*e*f^2*x^3 + 12*(2*a^4 + a^2*b^2 - b^4)*d^4*e^2*f*x^2 + 8*(2*a^4
+ a^2*b^2 - b^4)*d^4*e^3*x + 3*(4*(a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(a^2*b^2
+ b^4)*d^3*e^3 - 6*(a^2*b^2 + b^4)*d^2*e^2*f + 6*(a^2*b^2 + b^4)*d*e*f^2 -
3*(a^2*b^2 + b^4)*f^3 + 6*(2*(a^2*b^2 + b^4)*d^3*e*f^2 - (a^2*b^2 + b^4)*d^
2*f^3)*x^2 + 6*(2*(a^2*b^2 + b^4)*d^3*e^2*f - 2*(a^2*b^2 + b^4)*d^2*e*f^2 +
 (a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c)^2 - 24*((a^3*b + a*b^3)*d^3*f^3*x^
3 + (a^3*b + a*b^3)*d^3*e^3 - 3*(a^3*b + a*b^3)*d^2*e^2*f + 6*(a^3*b + a*b^
3)*d*e*f^2 - 6*(a^3*b + a*b^3)*f^3 + 3*((a^3*b + a*b^3)*d^3*e*f^2 - (a^3*b
+ a*b^3)*d^2*f^3)*x^2 + 3*((a^3*b + a*b^3)*d^3*e^2*f - 2*(a^3*b + a*b^3)*d^
2*e*f^2 + 2*(a^3*b + a*b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 96*(
(a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*f)*cosh(d*x + c)^2
 + 2*(a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*f)*cosh(d*x +
 c)*sinh(d*x + c) + (a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^
2*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh
(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/
b + 1) - 96*((a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*f)*co
sh(d*x + c)^2 + 2*(a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*
f)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x +
 a^3*b*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x
+ c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^
2)/b^2) - b)/b + 1) - 32*((a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^
2*d*e*f^2 - a^3*b*c^3*f^3)*cosh(d*x + c)^2 + 2*(a^3*b*d^3*e^3 - 3*a^3*b*c*d
^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)
```

```
 + (a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f
^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh
(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 32*((a^3*b*d^3*e^3 - 3*a^3*b
*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*cosh(d*x + c)^2 + 2*(a^
3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*co
sh(d*x + c)*sinh(d*x + c) + (a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*
c^2*d*e*f^2 - a^3*b*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b
*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 32*
((a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b
*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)^2 + 2*(a^
3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d
^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)
 + (a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3
*b*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*sinh(d*x + c)^2)*sqrt
((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c
) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 32*((a^3*b*d^3*f^3*x^3
 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^
3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)^2 + 2*(a^3*b*d^3*f^3*x^3 + 3
*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*
c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d^3*f^3*x
^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*
a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*l
og(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2) - b)/b) + 192*(a^3*b*f^3*cosh(d*x + c)^2 + 2*a^3*b*
f^3*cosh(d*x + c)*sinh(d*x + c) + a^3*b*f^3*sinh(d*x + c)^2)*sqrt((a^2 + b^
2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 192*(a^3*b*f^3*cosh(d*x + c)^2
 + 2*a^3*b*f^3*cosh(d*x + c)*sinh(d*x + c) + a^3*b*f^3*sinh(d*x + c)^2)*sqr
t((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(
d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 192*((a^3*b*d*f^3*x
 + a^3*b*d*e*f^2)*cosh(d*x + c)^2 + 2*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cosh(
d*x + c)*sinh(d*x + c) + (a^3*b*d*f^3*x + a^3*b*d*e*f^2)*sinh(d*x + c)^2)*s
qrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cos
h(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 192*((a^3*b*d*f^3
*x + a^3*b*d*e*f^2)*cosh(d*x + c)^2 + 2*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cos
h(d*x + c)*sinh(d*x + c) + (a^3*b*d*f^3*x + a^3*b*d*e*f^2)*sinh(d*x + c)^2)
*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*c
osh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(2*(a^2*b^2 +
 b^4)*d^3*e^2*f + 2*(a^2*b^2 + b^4)*d^2*e*f^2 + (a^2*b^2 + b^4)*d*f^3)*x +
16*((a^3*b + a*b^3)*d^3*f^3*x^3 + (a^3*b + a*b^3)*d^3*e^3 + 3*(a^3*b + a*b^
3)*d^2*e^2*f + 6*(a^3*b + a*b^3)*d*e*f^2 + 6*(a^3*b + a*b^3)*f^3 + 3*((a^3*
b + a*b^3)*d^3*e*f^2 + (a^3*b + a*b^3)*d^2*f^3)*x^2 + 3*((a^3*b + a*b^3)*d^
3*e^2*f + 2*(a^3*b + a*b^3)*d^2*e*f^2 + 2*(a^3*b + a*b^3)*d*f^3)*x)*cosh(d*
x + c) + 4*(4*(a^3*b + a*b^3)*d^3*f^3*x^3 + 4*(a^3*b + a*b^3)*d^3*e^3 + 12*
(a^3*b + a*b^3)*d^2*e^2*f + 24*(a^3*b + a*b^3)*d*e*f^2 + 24*(a^3*b + a*b^3)
```

```
*f^3 - (4*(a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(a^2*b^2 + b^4)*d^3*e^3 - 6*(a^2*
b^2 + b^4)*d^2*e^2*f + 6*(a^2*b^2 + b^4)*d*e*f^2 - 3*(a^2*b^2 + b^4)*f^3 +
6*(2*(a^2*b^2 + b^4)*d^3*e*f^2 - (a^2*b^2 + b^4)*d^2*f^3)*x^2 + 6*(2*(a^2*b
^2 + b^4)*d^3*e^2*f - 2*(a^2*b^2 + b^4)*d^2*e*f^2 + (a^2*b^2 + b^4)*d*f^3)*
x)*cosh(d*x + c)^3 + 12*((a^3*b + a*b^3)*d^3*e*f^2 + (a^3*b + a*b^3)*d^2*f^
3)*x^2 + 12*((a^3*b + a*b^3)*d^3*f^3*x^3 + (a^3*b + a*b^3)*d^3*e^3 - 3*(a^3
*b + a*b^3)*d^2*e^2*f + 6*(a^3*b + a*b^3)*d*e*f^2 - 6*(a^3*b + a*b^3)*f^3 +
 3*((a^3*b + a*b^3)*d^3*e*f^2 - (a^3*b + a*b^3)*d^2*f^3)*x^2 + 3*((a^3*b +
a*b^3)*d^3*e^2*f - 2*(a^3*b + a*b^3)*d^2*e*f^2 + 2*(a^3*b + a*b^3)*d*f^3)*x
)*cosh(d*x + c)^2 + 12*((a^3*b + a*b^3)*d^3*e^2*f + 2*(a^3*b + a*b^3)*d^2*e
*f^2 + 2*(a^3*b + a*b^3)*d*f^3)*x - 2*((2*a^4 + a^2*b^2 - b^4)*d^4*f^3*x^4
+ 4*(2*a^4 + a^2*b^2 - b^4)*d^4*e*f^2*x^3 + 6*(2*a^4 + a^2*b^2 - b^4)*d^4*e
^2*f*x^2 + 4*(2*a^4 + a^2*b^2 - b^4)*d^4*e^3*x)*cosh(d*x + c))*sinh(d*x + c
))/((a^2*b^3 + b^5)*d^4*cosh(d*x + c)^2 + 2*(a^2*b^3 + b^5)*d^4*cosh(d*x +
c)*sinh(d*x + c) + (a^2*b^3 + b^5)*d^4*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sinh\left(dx+c\right)^{3}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^3*sinh(d*x + c)^3/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\left(\sinh^{3}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{8}e^{3}\left(\frac{8a^{3}\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{\sqrt{a^{2}+b^{2}}\,b^{3}d}+\frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{b^{2}d}-\frac{4\left(2\,a^{2}-b^{2}\right)(dx+c)}{b^{3}d}+\frac{4\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}}{b^{2}d}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] -1/8*e^3*(8*a^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c)
- a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^3*d) + (4*a*e^(-d*x - c) - b)*e^
(2*d*x + 2*c)/(b^2*d) - 4*(2*a^2 - b^2)*(d*x + c)/(b^3*d) + (4*a*e^(-d*x -
c) + b*e^(-2*d*x - 2*c))/(b^2*d)) + 1/32*(4*(2*a^2*d^4*f^3*e^(2*c) - b^2*d^
4*f^3*e^(2*c))*x^4 + 16*(2*a^2*d^4*e*f^2*e^(2*c) - b^2*d^4*e*f^2*e^(2*c))*x
^3 + 24*(2*a^2*d^4*e^2*f*e^(2*c) - b^2*d^4*e^2*f*e^(2*c))*x^2 + (4*b^2*d^3*
f^3*x^3*e^(4*c) + 6*(2*d^3*e*f^2 - d^2*f^3)*b^2*x^2*e^(4*c) + 6*(2*d^3*e^2*
f - 2*d^2*e*f^2 + d*f^3)*b^2*x*e^(4*c) - 3*(2*d^2*e^2*f - 2*d*e*f^2 + f^3)*
b^2*e^(4*c))*e^(2*d*x) - 16*(a*b*d^3*f^3*x^3*e^(3*c) + 3*(d^3*e*f^2 - d^2*f
^3)*a*b*x^2*e^(3*c) + 3*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*a*b*x*e^(3*c) -
 3*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a*b*e^(3*c))*e^(d*x) - 16*(a*b*d^3*f^3*x
^3*e^c + 3*(d^3*e*f^2 + d^2*f^3)*a*b*x^2*e^c + 3*(d^3*e^2*f + 2*d^2*e*f^2 +
 2*d*f^3)*a*b*x*e^c + 3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a*b*e^c)*e^(-d*x) -
 (4*b^2*d^3*f^3*x^3 + 6*(2*d^3*e*f^2 + d^2*f^3)*b^2*x^2 + 6*(2*d^3*e^2*f +
2*d^2*e*f^2 + d*f^3)*b^2*x + 3*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)*b^2)*e^(-2*d
*x))*e^(-2*c)/(b^3*d^4) - integrate(2*(a^3*f^3*x^3*e^c + 3*a^3*e*f^2*x^2*e^
c + 3*a^3*e^2*f*x*e^c)*e^(d*x)/(b^4*e^(2*d*x + 2*c) + 2*a*b^3*e^(d*x + c) -
 b^4), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh(c+d\,x)^3\,\left(e+f\,x\right)^3}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((sinh(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.234 $\int \frac{(e+fx)^2 \sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=522

$$\frac{a^2(e+fx)^3}{3b^3f}+\frac{2a^3f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3\sqrt{a^2+b^2}}-\frac{2a^3f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^3\sqrt{a^2+b^2}}-\frac{2a^3f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2\sqrt{a^2+b^2}}+\frac{2a^3f(e+fx)\text{Li}_2\left(-\right.}{b^3d^2\sqrt{a^2+b}}$$

```
[Out] -1/4*f^2*x/b/d^2+1/3*a^2*(f*x+e)^3/b^3/f-1/6*(f*x+e)^3/b/f-2*a*f^2*cosh(d*x
+c)/b^2/d^3-a*(f*x+e)^2*cosh(d*x+c)/b^2/d+2*a*f*(f*x+e)*sinh(d*x+c)/b^2/d^2
+1/4*f^2*cosh(d*x+c)*sinh(d*x+c)/b/d^3+1/2*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c
)/b/d-1/2*f*(f*x+e)*sinh(d*x+c)^2/b/d^2-a^3*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-
(a^2+b^2)^(1/2)))/b^3/d/(a^2+b^2)^(1/2)+a^3*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))/b^3/d/(a^2+b^2)^(1/2)-2*a^3*f*(f*x+e)*polylog(2,-b*exp(d*
x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^2/(a^2+b^2)^(1/2)+2*a^3*f*(f*x+e)*polylog(2
,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^2/(a^2+b^2)^(1/2)+2*a^3*f^2*polyl
og(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^3/(a^2+b^2)^(1/2)-2*a^3*f^2*p
olylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^3/(a^2+b^2)^(1/2)
```

Rubi [A] time = 1.04, antiderivative size = 522, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 13, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.464, Rules used = {5557, 3311, 32, 2635, 8, 3296, 2638, 3322, 2264, 2190, 2531, 2282, 6589}

$$-\frac{2a^3f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2\sqrt{a^2+b^2}}+\frac{2a^3f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^2\sqrt{a^2+b^2}}+\frac{2a^3f^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3\sqrt{a^2+b^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(f^2*x)/(4*b*d^2) + (a^2*(e + f*x)^3)/(3*b^3*f) - (e + f*x)^3/(6*b*f) - (2
*a*f^2*Cosh[c + d*x])/(b^2*d^3) - (a*(e + f*x)^2*Cosh[c + d*x])/(b^2*d) - (
a^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^3*Sqrt[a
^2 + b^2]*d) + (a^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
])])/(b^3*Sqrt[a^2 + b^2]*d) - (2*a^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*
x))/(a - Sqrt[a^2 + b^2]))])/(b^3*Sqrt[a^2 + b^2]*d^2) + (2*a^3*f*(e + f*x)
*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*Sqrt[a^2 + b^2]
*d^2) + (2*a^3*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b
^3*Sqrt[a^2 + b^2]*d^3) - (2*a^3*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2]))])/(b^3*Sqrt[a^2 + b^2]*d^3) + (2*a*f*(e + f*x)*Sinh[c + d*x])
/(b^2*d^2) + (f^2*Cosh[c + d*x]*Sinh[c + d*x])/(4*b*d^3) + ((e + f*x)^2*Cos
h[c + d*x]*Sinh[c + d*x])/(2*b*d) - (f*(e + f*x)*Sinh[c + d*x]^2)/(2*b*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
```

```
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2 \sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2 \sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)^2\cosh(c+dx)\sinh(c+dx)}{2bd} - \frac{f(e+fx)\sinh^2(c+dx)}{2bd^2} - \frac{a\int (e+fx)^2 \text{s}}{}$$

$$= -\frac{(e+fx)^3}{6bf} - \frac{a(e+fx)^2\cosh(c+dx)}{b^2d} + \frac{f^2\cosh(c+dx)\sinh(c+dx)}{4bd^3} + \frac{(e+f}{}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} - \frac{(e+fx)^3}{6bf} - \frac{a(e+fx)^2\cosh(c+dx)}{b^2d} + \frac{2af(e+fx)\sin}{b^2d^2}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} - \frac{(e+fx)^3}{6bf} - \frac{2af^2\cosh(c+dx)}{b^2d^3} - \frac{a(e+fx)^2\cosh(c+a}{b^2d}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} - \frac{(e+fx)^3}{6bf} - \frac{2af^2\cosh(c+dx)}{b^2d^3} - \frac{a(e+fx)^2\cosh(c+a}{b^2d}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} - \frac{(e+fx)^3}{6bf} - \frac{2af^2\cosh(c+dx)}{b^2d^3} - \frac{a(e+fx)^2\cosh(c+a}{b^2d}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} - \frac{(e+fx)^3}{6bf} - \frac{2af^2\cosh(c+dx)}{b^2d^3} - \frac{a(e+fx)^2\cosh(c+a}{b^2d}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} - \frac{(e+fx)^3}{6bf} - \frac{2af^2\cosh(c+dx)}{b^2d^3} - \frac{a(e+fx)^2\cosh(c+a}{b^2d}$$

Mathematica [A] time = 4.23, size = 740, normalized size = 1.42

$$\frac{24a^2e^2x + 24a^2efx^2 + 8a^2f^2x^3 + \frac{48a^3f^2\text{Li}_3\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)}{d^3\sqrt{a^2+b^2}} - \frac{48a^3f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^3\sqrt{a^2+b^2}} - \frac{48a^3f(e+fx)\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)}{d^2\sqrt{a^2+b^2}} + \frac{48a^3f(e+fx)\text{L}}{d^2\sqrt{}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (24*a^2*e^2*x - 12*b^2*e^2*x + 24*a^2*e*f*x^2 - 12*b^2*e*f*x^2 + 8*a^2*f^2*
x^3 - 4*b^2*f^2*x^3 + (48*a^3*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^
2]])/(Sqrt[a^2 + b^2]*d) - (24*a*b*e^2*Cosh[c + d*x])/d - (48*a*b*f^2*Cosh[
c + d*x])/d^3 - (48*a*b*e*f*x*Cosh[c + d*x])/d - (24*a*b*f^2*x^2*Cosh[c + d
*x])/d - (6*b^2*e*f*Cosh[2*(c + d*x)])/d^2 - (6*b^2*f^2*x*Cosh[2*(c + d*x)]
)/d^2 - (48*a^3*e*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(Sqrt
[a^2 + b^2]*d) - (24*a^3*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^
2])])/(Sqrt[a^2 + b^2]*d) + (48*a^3*e*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2])])/(Sqrt[a^2 + b^2]*d) + (24*a^3*f^2*x^2*Log[1 + (b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2])])/(Sqrt[a^2 + b^2]*d) - (48*a^3*f*(e + f*x)*PolyLog
[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])])/(Sqrt[a^2 + b^2]*d^2) + (48*a^
3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(Sqrt[a
^2 + b^2]*d^2) + (48*a^3*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^
2])])/(Sqrt[a^2 + b^2]*d^3) - (48*a^3*f^2*PolyLog[3, -((b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2]))])/(Sqrt[a^2 + b^2]*d^3) + (48*a*b*e*f*Sinh[c + d*x])/d^2
 + (48*a*b*f^2*x*Sinh[c + d*x])/d^2 + (6*b^2*e^2*Sinh[2*(c + d*x)])/d + (3*
b^2*f^2*Sinh[2*(c + d*x)])/d^3 + (12*b^2*e*f*x*Sinh[2*(c + d*x)])/d + (6*b^
2*f^2*x^2*Sinh[2*(c + d*x)])/d)/(24*b^3)
```

fricas [C] time = 0.51, size = 3247, normalized size = 6.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/48*(6*(a^2*b^2 + b^4)*d^2*f^2*x^2 + 6*(a^2*b^2 + b^4)*d^2*e^2 - 3*(2*(a^
2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^2*b^2 + b^4)*d^2*e^2 - 2*(a^2*b^2 + b^4)*d*
e*f + (a^2*b^2 + b^4)*f^2 + 2*(2*(a^2*b^2 + b^4)*d^2*e*f - (a^2*b^2 + b^4)*
d*f^2)*x)*cosh(d*x + c)^4 - 3*(2*(a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^2*b^2 +
 b^4)*d^2*e^2 - 2*(a^2*b^2 + b^4)*d*e*f + (a^2*b^2 + b^4)*f^2 + 2*(2*(a^2*b
^2 + b^4)*d^2*e*f - (a^2*b^2 + b^4)*d*f^2)*x)*sinh(d*x + c)^4 + 6*(a^2*b^2
+ b^4)*d*e*f + 24*((a^3*b + a*b^3)*d^2*f^2*x^2 + (a^3*b + a*b^3)*d^2*e^2 -
2*(a^3*b + a*b^3)*d*e*f + 2*(a^3*b + a*b^3)*f^2 + 2*((a^3*b + a*b^3)*d^2*e*
f - (a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^3 + 12*(2*(a^3*b + a*b^3)*d^2*f
^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e^2 - 4*(a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a
*b^3)*f^2 + 4*((a^3*b + a*b^3)*d^2*e*f - (a^3*b + a*b^3)*d*f^2)*x - (2*(a^2
*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^2*b^2 + b^4)*d^2*e^2 - 2*(a^2*b^2 + b^4)*d*e
*f + (a^2*b^2 + b^4)*f^2 + 2*(2*(a^2*b^2 + b^4)*d^2*e*f - (a^2*b^2 + b^4)*d
*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^3 + 3*(a^2*b^2 + b^4)*f^2 - 8*((2*a^4
 + a^2*b^2 - b^4)*d^3*f^2*x^3 + 3*(2*a^4 + a^2*b^2 - b^4)*d^3*e*f*x^2 + 3*(
2*a^4 + a^2*b^2 - b^4)*d^3*e^2*x)*cosh(d*x + c)^2 - 2*(4*(2*a^4 + a^2*b^2 -
 b^4)*d^3*f^2*x^3 + 12*(2*a^4 + a^2*b^2 - b^4)*d^3*e*f*x^2 + 12*(2*a^4 + a^
2*b^2 - b^4)*d^3*e^2*x + 9*(2*(a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^2*b^2 + b^
4)*d^2*e^2 - 2*(a^2*b^2 + b^4)*d*e*f + (a^2*b^2 + b^4)*f^2 + 2*(2*(a^2*b^2
```

+ b^4)*d^2*e*f - (a^2*b^2 + b^4)*d*f^2)*x)*cosh(d*x + c)^2 - 36*((a^3*b + a
*b^3)*d^2*f^2*x^2 + (a^3*b + a*b^3)*d^2*e^2 - 2*(a^3*b + a*b^3)*d*e*f + 2*(
a^3*b + a*b^3)*f^2 + 2*((a^3*b + a*b^3)*d^2*e*f - (a^3*b + a*b^3)*d*f^2)*x)
*cosh(d*x + c))*sinh(d*x + c)^2 + 96*((a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*
x + c)^2 + 2*(a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (a
^3*b*d*f^2*x + a^3*b*d*e*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a
*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b + 1) - 96*((a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x
+ c)^2 + 2*(a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (a^3
*b*d*f^2*x + a^3*b*d*e*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*c
osh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((
a^2 + b^2)/b^2) - b)/b + 1) - 48*((a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*
c^2*f^2)*cosh(d*x + c)^2 + 2*(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f
^2)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*
c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b
*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 48*((a^3*b*d^2*e^2 - 2*
a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^3*b*d^2*e^2 - 2*a^3*b
*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d^2*e^2 - 2*
a^3*b*c*d*e*f + a^3*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2
*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 4
8*((a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2
)*cosh(d*x + c)^2 + 2*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*
e*f - a^3*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d^2*f^2*x^2 + 2*a
^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^
2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 48*((a^3*b*d^2*f^2*x^2 + 2
*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^
3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*cosh
(d*x + c)*sinh(d*x + c) + (a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*
c*d*e*f - a^3*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cos
h(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2) - b)/b) - 96*(a^3*b*f^2*cosh(d*x + c)^2 + 2*a^3*b*f^2*cosh(d*
x + c)*sinh(d*x + c) + a^3*b*f^2*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*pol
ylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2))/b) + 96*(a^3*b*f^2*cosh(d*x + c)^2 + 2*a^3*b*f
^2*cosh(d*x + c)*sinh(d*x + c) + a^3*b*f^2*sinh(d*x + c)^2)*sqrt((a^2 + b^2
)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b
*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(2*(a^2*b^2 + b^4)*d^2*e*f +
(a^2*b^2 + b^4)*d*f^2)*x + 24*((a^3*b + a*b^3)*d^2*f^2*x^2 + (a^3*b + a*b^3
)*d^2*e^2 + 2*(a^3*b + a*b^3)*d*e*f + 2*(a^3*b + a*b^3)*f^2 + 2*((a^3*b + a
*b^3)*d^2*e*f + (a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c) + 4*(6*(a^3*b + a*b
^3)*d^2*f^2*x^2 + 6*(a^3*b + a*b^3)*d^2*e^2 + 12*(a^3*b + a*b^3)*d*e*f - 3*
(2*(a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^2*b^2 + b^4)*d^2*e^2 - 2*(a^2*b^2 + b
^4)*d*e*f + (a^2*b^2 + b^4)*f^2 + 2*(2*(a^2*b^2 + b^4)*d^2*e*f - (a^2*b^2 +
b^4)*d*f^2)*x)*cosh(d*x + c)^3 + 12*(a^3*b + a*b^3)*f^2 + 18*((a^3*b + a*b

```
^3)*d^2*f^2*x^2 + (a^3*b + a*b^3)*d^2*e^2 - 2*(a^3*b + a*b^3)*d*e*f + 2*(a^
3*b + a*b^3)*f^2 + 2*((a^3*b + a*b^3)*d^2*e*f - (a^3*b + a*b^3)*d*f^2)*x)*c
osh(d*x + c)^2 + 12*((a^3*b + a*b^3)*d^2*e*f + (a^3*b + a*b^3)*d*f^2)*x - 4
*((2*a^4 + a^2*b^2 - b^4)*d^3*f^2*x^3 + 3*(2*a^4 + a^2*b^2 - b^4)*d^3*e*f*x
^2 + 3*(2*a^4 + a^2*b^2 - b^4)*d^3*e^2*x)*cosh(d*x + c))*sinh(d*x + c))/((a
^2*b^3 + b^5)*d^3*cosh(d*x + c)^2 + 2*(a^2*b^3 + b^5)*d^3*cosh(d*x + c)*sin
h(d*x + c) + (a^2*b^3 + b^5)*d^3*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \sinh(dx+c)^3}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sinh(d*x + c)^3/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \left(\sinh^3(dx+c)\right)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{8}e^2\left(\frac{8\,a^3\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,b^3d}+\frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{b^2d}-\frac{4\left(2\,a^2-b^2\right)(dx+c)}{b^3d}+\frac{4\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}}{b^2d}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/8*e^2*(8*a^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c)
- a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^3*d) + (4*a*e^(-d*x - c) - b)*e^
(2*d*x + 2*c)/(b^2*d) - 4*(2*a^2 - b^2)*(d*x + c)/(b^3*d) + (4*a*e^(-d*x -
c) + b*e^(-2*d*x - 2*c))/(b^2*d)) + 1/48*(8*(2*a^2*d^3*f^2*e^(2*c) - b^2*d^
3*f^2*e^(2*c))*x^3 + 24*(2*a^2*d^3*e*f*e^(2*c) - b^2*d^3*e*f*e^(2*c))*x^2 +
```

```
 3*(2*b^2*d^2*f^2*x^2*e^(4*c) + 2*(2*d^2*e*f - d*f^2)*b^2*x*e^(4*c) - (2*d*
e*f - f^2)*b^2*e^(4*c))*e^(2*d*x) - 24*(a*b*d^2*f^2*x^2*e^(3*c) + 2*(d^2*e*
f - d*f^2)*a*b*x*e^(3*c) - 2*(d*e*f - f^2)*a*b*e^(3*c))*e^(d*x) - 24*(a*b*d
^2*f^2*x^2*e^c + 2*(d^2*e*f + d*f^2)*a*b*x*e^c + 2*(d*e*f + f^2)*a*b*e^c)*e
^(-d*x) - 3*(2*b^2*d^2*f^2*x^2 + 2*(2*d^2*e*f + d*f^2)*b^2*x + (2*d*e*f + f
^2)*b^2)*e^(-2*d*x))*e^(-2*c)/(b^3*d^3) - integrate(2*(a^3*f^2*x^2*e^c + 2*
a^3*e*f*x*e^c)*e^(d*x)/(b^4*e^(2*d*x + 2*c) + 2*a*b^3*e^(d*x + c) - b^4), x
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh(c+dx)^3\,\left(e+fx\right)^2}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((sinh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.235 $\int \frac{(e+fx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=335

$$\frac{a^2ex}{b^3}+\frac{a^2fx^2}{2b^3}-\frac{a^3f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2\sqrt{a^2+b^2}}+\frac{a^3f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^2\sqrt{a^2+b^2}}-\frac{a^3(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^3d\sqrt{a^2+b^2}}+\frac{a^3(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+\ldots}\right.}{b^3d\sqrt{a^2+b^2}}$$

```
[Out] a^2*e*x/b^3-1/2*e*x/b+1/2*a^2*f*x^2/b^3-1/4*f*x^2/b-a*(f*x+e)*cosh(d*x+c)/b
^2/d+a*f*sinh(d*x+c)/b^2/d^2+1/2*(f*x+e)*cosh(d*x+c)*sinh(d*x+c)/b/d-1/4*f*
sinh(d*x+c)^2/b/d^2-a^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/
d/(a^2+b^2)^(1/2)+a^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d/
(a^2+b^2)^(1/2)-a^3*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^2/
(a^2+b^2)^(1/2)+a^3*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^2/
(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 335, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {5557, 3310, 3296, 2637, 3322, 2264, 2190, 2279, 2391}

$$-\frac{a^3f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2\sqrt{a^2+b^2}}+\frac{a^3f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^2\sqrt{a^2+b^2}}-\frac{a^3(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^3d\sqrt{a^2+b^2}}+\frac{a^3(e+fx)\log\left(\frac{be^{\ldots}}{\sqrt{a^2\ldots}}\right.}{b^3d\sqrt{a^2+b\ldots}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*e*x)/b^3 - (e*x)/(2*b) + (a^2*f*x^2)/(2*b^3) - (f*x^2)/(4*b) - (a*(e +
 f*x)*Cosh[c + d*x])/(b^2*d) - (a^3*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a -
Sqrt[a^2 + b^2])])/(b^3*Sqrt[a^2 + b^2]*d) + (a^3*(e + f*x)*Log[1 + (b*E^(c
 + d*x))/(a + Sqrt[a^2 + b^2])])/(b^3*Sqrt[a^2 + b^2]*d) - (a^3*f*PolyLog[2
, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*Sqrt[a^2 + b^2]*d^2) + (a
^3*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*Sqrt[a^2 +
b^2]*d^2) + (a*f*Sinh[c + d*x])/(b^2*d^2) + ((e + f*x)*Cosh[c + d*x]*Sinh[c
 + d*x])/(2*b*d) - (f*Sinh[c + d*x]^2)/(4*b*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5557

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sinh[c
 + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)\cosh(c+dx)\sinh(c+dx)}{2bd} - \frac{f\sinh^2(c+dx)}{4bd^2} - \frac{a\int (e+fx)\sinh(c+dx)}{b^2}$$

$$= -\frac{ex}{2b} - \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} + \frac{(e+fx)\cosh(c+dx)\sinh(c+dx)}{2bd} - \frac{f\,\mathrm{si}}{}$$

$$= \frac{a^2ex}{b^3} - \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} - \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} + \frac{af\sinh(c+dx)}{b^2d^2} + \frac{(e+fx}{}$$

$$= \frac{a^2ex}{b^3} - \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} - \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} + \frac{af\sinh(c+dx)}{b^2d^2} + \frac{(e+fx}{}$$

$$= \frac{a^2ex}{b^3} - \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} - \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} - \frac{a^3(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+}}\right.}{b^3\sqrt{a^2+b^2}\,d}$$

$$= \frac{a^2ex}{b^3} - \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} - \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} - \frac{a^3(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+}}\right.}{b^3\sqrt{a^2+b^2}\,d}$$

$$= \frac{a^2ex}{b^3} - \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} - \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} - \frac{a^3(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+}}\right.}{b^3\sqrt{a^2+b^2}\,d}$$

Mathematica [A] time = 2.56, size = 307, normalized size = 0.92

$$\frac{-2\left(2a^2-b^2\right)(c+dx)(cf-d(2e+fx)) + \frac{8a^3\left(2de\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)-f\mathrm{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)-f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)\right.}{\sqrt{a^2+b^2}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*(2*a^2 - b^2)*(c + d*x)*(c*f - d*(2*e + f*x)) - 8*a*b*d*(e + f*x)*Cosh[
c + d*x] - b^2*f*Cosh[2*(c + d*x)] + (8*a^3*(2*d*e*ArcTanh[(a + b*E^(c + d*
x))/Sqrt[a^2 + b^2]] - 2*c*f*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] -
 f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*L
og[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - f*PolyLog[2, (b*E^(c + d*x)
)/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2]))]))/Sqrt[a^2 + b^2] + 8*a*b*f*Sinh[c + d*x] + 2*b^2*d*(e + f*x)*Sinh[
2*(c + d*x)])/(8*b^3*d^2)
```

fricas [B] time = 0.79, size = 1727, normalized size = 5.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/16*((2*(a^2*b^2 + b^4)*d*f*x + 2*(a^2*b^2 + b^4)*d*e - (a^2*b^2 + b^4)*f)
*cosh(d*x + c)^4 + (2*(a^2*b^2 + b^4)*d*f*x + 2*(a^2*b^2 + b^4)*d*e - (a^2*
b^2 + b^4)*f)*sinh(d*x + c)^4 - 2*(a^2*b^2 + b^4)*d*f*x - 8*((a^3*b + a*b^3
)*d*f*x + (a^3*b + a*b^3)*d*e - (a^3*b + a*b^3)*f)*cosh(d*x + c)^3 - 4*(2*(
a^3*b + a*b^3)*d*f*x + 2*(a^3*b + a*b^3)*d*e - 2*(a^3*b + a*b^3)*f - (2*(a^
2*b^2 + b^4)*d*f*x + 2*(a^2*b^2 + b^4)*d*e - (a^2*b^2 + b^4)*f)*cosh(d*x +
c))*sinh(d*x + c)^3 - 2*(a^2*b^2 + b^4)*d*e + 4*((2*a^4 + a^2*b^2 - b^4)*d^
2*f*x^2 + 2*(2*a^4 + a^2*b^2 - b^4)*d^2*e*x)*cosh(d*x + c)^2 + 2*(2*(2*a^4
+ a^2*b^2 - b^4)*d^2*f*x^2 + 4*(2*a^4 + a^2*b^2 - b^4)*d^2*e*x + 3*(2*(a^2*
b^2 + b^4)*d*f*x + 2*(a^2*b^2 + b^4)*d*e - (a^2*b^2 + b^4)*f)*cosh(d*x + c)
^2 - 12*((a^3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e - (a^3*b + a*b^3)*f)*c
osh(d*x + c))*sinh(d*x + c)^2 - 16*(a^3*b*f*cosh(d*x + c)^2 + 2*a^3*b*f*cos
h(d*x + c)*sinh(d*x + c) + a^3*b*f*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*d
ilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 16*(a^3*b*f*cosh(d*x + c)^2 + 2*a^3*
b*f*cosh(d*x + c)*sinh(d*x + c) + a^3*b*f*sinh(d*x + c)^2)*sqrt((a^2 + b^2)
/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(
d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 16*((a^3*b*d*e - a^3*b*c*f)*c
osh(d*x + c)^2 + 2*(a^3*b*d*e - a^3*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a
^3*b*d*e - a^3*b*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d
*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 16*((a^3*b
*d*e - a^3*b*c*f)*cosh(d*x + c)^2 + 2*(a^3*b*d*e - a^3*b*c*f)*cosh(d*x + c)
*sinh(d*x + c) + (a^3*b*d*e - a^3*b*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/
b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2)
+ 2*a) - 16*((a^3*b*d*f*x + a^3*b*c*f)*cosh(d*x + c)^2 + 2*(a^3*b*d*f*x + a
^3*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d*f*x + a^3*b*c*f)*sinh(d*x
+ c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*
```

```
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 16*((a^3*b
*d*f*x + a^3*b*c*f)*cosh(d*x + c)^2 + 2*(a^3*b*d*f*x + a^3*b*c*f)*cosh(d*x
+ c)*sinh(d*x + c) + (a^3*b*d*f*x + a^3*b*c*f)*sinh(d*x + c)^2)*sqrt((a^2 +
 b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*s
inh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (a^2*b^2 + b^4)*f - 8*((a^3*b
 + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e + (a^3*b + a*b^3)*f)*cosh(d*x + c) -
4*(2*(a^3*b + a*b^3)*d*f*x - (2*(a^2*b^2 + b^4)*d*f*x + 2*(a^2*b^2 + b^4)*d
*e - (a^2*b^2 + b^4)*f)*cosh(d*x + c)^3 + 2*(a^3*b + a*b^3)*d*e + 6*((a^3*b
 + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e - (a^3*b + a*b^3)*f)*cosh(d*x + c)^2
+ 2*(a^3*b + a*b^3)*f - 2*((2*a^4 + a^2*b^2 - b^4)*d^2*f*x^2 + 2*(2*a^4 + a
^2*b^2 - b^4)*d^2*e*x)*cosh(d*x + c))*sinh(d*x + c))/((a^2*b^3 + b^5)*d^2*c
osh(d*x + c)^2 + 2*(a^2*b^3 + b^5)*d^2*cosh(d*x + c)*sinh(d*x + c) + (a^2*b
^3 + b^5)*d^2*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\sinh\left(dx+c\right)^{3}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sinh(d*x + c)^3/(b*sinh(d*x + c) + a), x)
```

maple [A] time = 0.12, size = 589, normalized size = 1.76

$$\frac{a^{2}f\,x^{2}}{2b^{3}}-\frac{f\,x^{2}}{4b}+\frac{a^{2}ex}{b^{3}}-\frac{ex}{2b}+\frac{\left(2dfx+2de-f\right)\mathrm{e}^{2dx+2c}}{16d^{2}b}-\frac{a\left(dfx+de-f\right)\mathrm{e}^{dx+c}}{2b^{2}d^{2}}-\frac{a\left(dfx+de+f\right)\mathrm{e}^{-dx-c}}{2b^{2}d^{2}}-\frac{\left(2dfx+2d\right.}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2*a^2*f*x^2/b^3-1/4*f*x^2/b+a^2*e*x/b^3-1/2*e*x/b+1/16*(2*d*f*x+2*d*e-f)/
d^2/b*exp(2*d*x+2*c)-1/2*a*(d*f*x+d*e-f)/b^2/d^2*exp(d*x+c)-1/2*a*(d*f*x+d*
e+f)/b^2/d^2*exp(-d*x-c)-1/16*(2*d*f*x+2*d*e+f)/d^2/b*exp(-2*d*x-2*c)+2/d*a
^3/b^3*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-
1/d*a^3/b^3*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2
+b^2)^(1/2)))*x-1/d^2*a^3/b^3*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)
^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d*a^3/b^3*f/(a^2+b^2)^(1/2)*ln((b*exp(d
*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2*a^3/b^3*f/(a^2+b^2)^(
1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d^2*a^3/b
^3*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^
(1/2)))+1/d^2*a^3/b^3*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)
```

```
+a)/(a+(a^2+b^2)^(1/2)))-2/d^2*a^3/b^3*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b
*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{16}\left(32\,a^3\int\frac{xe^{(dx+c)}}{b^4e^{(2\,dx+2\,c)}+2\,ab^3e^{(dx+c)}-b^4}\,dx-\frac{\left(4\left(2\,a^2d^2e^{(2\,c)}-b^2d^2e^{(2\,c)}\right)x^2+\left(2\,b^2dxe^{(4\,c)}-b^2e^{(4\,c)}\right)e^{(2\,dx)}-8\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/16*(32*a^3*integrate(x*e^(d*x + c)/(b^4*e^(2*d*x + 2*c) + 2*a*b^3*e^(d*x
 + c) - b^4), x) - (4*(2*a^2*d^2*e^(2*c) - b^2*d^2*e^(2*c))*x^2 + (2*b^2*d*
x*e^(4*c) - b^2*e^(4*c))*e^(2*d*x) - 8*(a*b*d*x*e^(3*c) - a*b*e^(3*c))*e^(d
*x) - 8*(a*b*d*x*e^c + a*b*e^c)*e^(-d*x) - (2*b^2*d*x + b^2)*e^(-2*d*x))*e^
(-2*c)/(b^3*d^2))*f - 1/8*e*(8*a^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2
))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^3*d) + (4*a*e
^(-d*x - c) - b)*e^(2*d*x + 2*c)/(b^2*d) - 4*(2*a^2 - b^2)*(d*x + c)/(b^3*d
) + (4*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c))/(b^2*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\sinh\left(c+d\,x\right)}^3\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((sinh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.236 $\int \frac{\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=107

$$\frac{x(2a^2-b^2)}{2b^3}+\frac{2a^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^3d\sqrt{a^2+b^2}}-\frac{a\cosh(c+dx)}{b^2d}+\frac{\sinh(c+dx)\cosh(c+dx)}{2bd}$$

```
[Out] 1/2*(2*a^2-b^2)*x/b^3-a*cosh(d*x+c)/b^2/d+1/2*cosh(d*x+c)*sinh(d*x+c)/b/d+2
*a^3*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))/b^3/d/(a^2+b^2)^(1/
2)
```

Rubi [A] time = 0.22, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2793, 3023, 2735, 2660, 618, 204}

$$\frac{2a^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^3d\sqrt{a^2+b^2}}+\frac{x(2a^2-b^2)}{2b^3}-\frac{a\cosh(c+dx)}{b^2d}+\frac{\sinh(c+dx)\cosh(c+dx)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[Sinh[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((2*a^2 - b^2)*x)/(2*b^3) + (2*a^3*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a
^2 + b^2]])/(b^3*Sqrt[a^2 + b^2]*d) - (a*Cosh[c + d*x])/(b^2*d) + (Cosh[c +
 d*x]*Sinh[c + d*x])/(2*b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
```

```
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2793

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b^2*Cos[e + f*x]*(a + b*Sin[e + f*x
])^(m - 2)*(c + d*Sin[e + f*x])^(n + 1))/(d*f*(m + n)), x] + Dist[1/(d*(m +
 n)), Int[(a + b*Sin[e + f*x])^(m - 3)*(c + d*Sin[e + f*x])^n*Simp[a^3*d*(m
 + n) + b^2*(b*c*(m - 2) + a*d*(n + 1)) - b*(a*b*c - b^2*d*(m + n - 1) - 3*
a^2*d*(m + n))*Sin[e + f*x] - b^2*(b*c*(m - 1) - a*d*(3*m + 2*n - 2))*Sin[e
 + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d,
0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 2] && (IntegerQ[m] |
| IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 2] && ( !IntegerQ[m] || (EqQ[a, 0] &&
NeQ[c, 0])))
```

Rule 3023

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*sin[(e_.)
+ (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[(C*Cos
[e + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b*f*(m + 2)), x] + Dist[1/(b*(m +
2)), Int[(a + b*Sin[e + f*x])^m*Simp[A*b*(m + 2) + b*C*(m + 1) + (b*B*(m +
2) - a*C)*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
  !LtQ[m, -1]
```

Rubi steps

$$\int \frac{\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\cosh(c+dx)\sinh(c+dx)}{2bd} - \frac{\int \frac{a+b\sinh(c+dx)+2a\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{2b}$$
$$= -\frac{a\cosh(c+dx)}{b^2d} + \frac{\cosh(c+dx)\sinh(c+dx)}{2bd} - \frac{i\int \frac{-iab+i(2a^2-b^2)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx}{2b^2}$$
$$= \frac{(2a^2-b^2)\,x}{2b^3} - \frac{a\cosh(c+dx)}{b^2d} + \frac{\cosh(c+dx)\sinh(c+dx)}{2bd} - \frac{a^3\int \frac{1}{a+b\sinh(c+dx)}\,dx}{b^3}$$
$$= \frac{(2a^2-b^2)\,x}{2b^3} - \frac{a\cosh(c+dx)}{b^2d} + \frac{\cosh(c+dx)\sinh(c+dx)}{2bd} + \frac{(2ia^3)\,\mathrm{Subst}\left(\int \frac{1}{a-2ibx+\ldots}\right.}{}$$
$$= \frac{(2a^2-b^2)\,x}{2b^3} - \frac{a\cosh(c+dx)}{b^2d} + \frac{\cosh(c+dx)\sinh(c+dx)}{2bd} - \frac{(4ia^3)\,\mathrm{Subst}\left(\int \frac{1}{-4(a^2+b\ldots}\right.}{}$$
$$= \frac{(2a^2-b^2)\,x}{2b^3} + \frac{2a^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^3\sqrt{a^2+b^2}\,d} - \frac{a\cosh(c+dx)}{b^2d} + \frac{\cosh(c+dx)\sinh(c\ldots}{2bd}$$

Mathematica [**A**] time = 0.31, size = 101, normalized size = 0.94

$$\frac{-2\left(b^2-2a^2\right)(c+dx) - \frac{8a^3\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{\sqrt{-a^2-b^2}} - 4ab\cosh(c+dx) + b^2\sinh(2(c+dx))}{4b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sinh[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*(-2*a^2 + b^2)*(c + d*x) - (8*a^3*ArcTan[(b - a*Tanh[(c + d*x)/2]])/Sqrt
[-a^2 - b^2]])/Sqrt[-a^2 - b^2] - 4*a*b*Cosh[c + d*x] + b^2*Sinh[2*(c + d*x
)])/(4*b^3*d)
```

fricas [**B**] time = 0.52, size = 601, normalized size = 5.62

$$\frac{4\left(2a^4+a^2b^2-b^4\right)dx\cosh(dx+c)^2 + \left(a^2b^2+b^4\right)\cosh(dx+c)^4 + \left(a^2b^2+b^4\right)\sinh(dx+c)^4 - a^2b^2 - b^4 - 4\left(a\ldots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")

[Out] 1/8*(4*(2*a^4 + a^2*b^2 - b^4)*d*x*cosh(d*x + c)^2 + (a^2*b^2 + b^4)*cosh(d*x + c)^4 + (a^2*b^2 + b^4)*sinh(d*x + c)^4 - a^2*b^2 - b^4 - 4*(a^3*b + a*b^3)*cosh(d*x + c)^3 - 4*(a^3*b + a*b^3 - (a^2*b^2 + b^4)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*(2*(2*a^4 + a^2*b^2 - b^4)*d*x + 3*(a^2*b^2 + b^4)*cosh(d*x + c)^2 - 6*(a^3*b + a*b^3)*cosh(d*x + c))*sinh(d*x + c)^2 + 8*(a^3*cosh(d*x + c)^2 + 2*a^3*cosh(d*x + c)*sinh(d*x + c) + a^3*sinh(d*x + c)^2)*sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x + c) + 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) - 4*(a^3*b + a*b^3)*cosh(d*x + c) - 4*(a^3*b + a*b^3 - 2*(2*a^4 + a^2*b^2 - b^4)*d*x*cosh(d*x + c) - (a^2*b^2 + b^4)*cosh(d*x + c)^3 + 3*(a^3*b + a*b^3)*cosh(d*x + c)^2)*sinh(d*x + c))/((a^2*b^3 + b^5)*d*cosh(d*x + c)^2 + 2*(a^2*b^3 + b^5)*d*cosh(d*x + c)*sinh(d*x + c) + (a^2*b^3 + b^5)*d*sinh(d*x + c)^2)

giac [A] time = 0.36, size = 151, normalized size = 1.41

$$-\frac{\frac{8\,a^3\log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\,\sqrt{a^2+b^2}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\,\sqrt{a^2+b^2}\right|}\right)}{\sqrt{a^2+b^2}\,b^3}-\frac{4\left(2\,a^2-b^2\right)(dx+c)}{b^3}-\frac{be^{(2\,dx+2\,c)}-4\,ae^{(dx+c)}}{b^2}+\frac{\left(4\,abe^{(dx+c)}+b^2\right)e^{(-2\,dx-2\,c)}}{b^3}}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")

[Out] -1/8*(8*a^3*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d*x + c) + 2*a + 2*sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^3) - 4*(2*a^2 - b^2)*(d*x + c)/b^3 - (b*e^(2*d*x + 2*c) - 4*a*e^(d*x + c))/b^2 + (4*a*b*e^(d*x + c) + b^2)*e^(-2*d*x - 2*c)/b^3)/d

maple [B] time = 0.05, size = 262, normalized size = 2.45

$$\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2}+\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}+\frac{a}{d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)a^2}{d\,b^3}+\frac{\ln\left(\mathrm{t}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)

[Out] 1/2/d/b/(tanh(1/2*d*x+1/2*c)-1)^2+1/2/d/b/(tanh(1/2*d*x+1/2*c)-1)+1/d/b^2/(tanh(1/2*d*x+1/2*c)-1)*a-1/d/b^3*ln(tanh(1/2*d*x+1/2*c)-1)*a^2+1/2/d/b*ln(t

```
anh(1/2*d*x+1/2*c)-1)-1/2/d/b/(tanh(1/2*d*x+1/2*c)+1)^2+1/2/d/b/(tanh(1/2*d
*x+1/2*c)+1)-1/d/b^2/(tanh(1/2*d*x+1/2*c)+1)*a+1/d/b^3*ln(tanh(1/2*d*x+1/2*
c)+1)*a^2-1/2/d/b*ln(tanh(1/2*d*x+1/2*c)+1)-2/d*a^3/b^3/(a^2+b^2)^(1/2)*arc
tanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))
```

maxima [A] time = 0.50, size = 164, normalized size = 1.53

$$-\frac{a^3\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,b^3d}-\frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{8\,b^2d}+\frac{\left(2\,a^2-b^2\right)(dx+c)}{2\,b^3d}-\frac{4\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}}{8\,b^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -a^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(
a^2 + b^2)))/(sqrt(a^2 + b^2)*b^3*d) - 1/8*(4*a*e^(-d*x - c) - b)*e^(2*d*x
+ 2*c)/(b^2*d) + 1/2*(2*a^2 - b^2)*(d*x + c)/(b^3*d) - 1/8*(4*a*e^(-d*x - c
) + b*e^(-2*d*x - 2*c))/(b^2*d)
```

mupad [B] time = 0.44, size = 212, normalized size = 1.98

$$\frac{x\,\left(2\,a^2-b^2\right)}{2\,b^3}-\frac{\mathrm{e}^{-2\,c-2\,d\,x}}{8\,b\,d}+\frac{\mathrm{e}^{2\,c+2\,d\,x}}{8\,b\,d}-\frac{a\,\mathrm{e}^{-c-d\,x}}{2\,b^2\,d}-\frac{a\,\mathrm{e}^{c+d\,x}}{2\,b^2\,d}-\frac{a^3\,\ln\left(\frac{2\,a^3\,\mathrm{e}^{c+d\,x}}{b^4}-\frac{2\,a^3\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{b^4\,\sqrt{a^2+b^2}}\right)}{b^3\,d\,\sqrt{a^2+b^2}}+\frac{a^3\,\ln\left(\frac{2\,a^3\,\mathrm{e}^{c+d\,x}}{b^4}+\frac{2\,a^3\,\left(b-a\right.}{b^4\,\sqrt{a^2}}\right.}{b^3\,d\,\sqrt{a^2+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)^3/(a + b*sinh(c + d*x)),x)
```

```
[Out] (x*(2*a^2 - b^2))/(2*b^3) - exp(- 2*c - 2*d*x)/(8*b*d) + exp(2*c + 2*d*x)/(
8*b*d) - (a*exp(- c - d*x))/(2*b^2*d) - (a*exp(c + d*x))/(2*b^2*d) - (a^3*l
og((2*a^3*exp(c + d*x))/b^4 - (2*a^3*(b - a*exp(c + d*x)))/(b^4*(a^2 + b^2)
^(1/2))))/(b^3*d*(a^2 + b^2)^(1/2)) + (a^3*log((2*a^3*exp(c + d*x))/b^4 + (
2*a^3*(b - a*exp(c + d*x)))/(b^4*(a^2 + b^2)^(1/2))))/(b^3*d*(a^2 + b^2)^(1
/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.237 $\int \frac{\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sinh[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][Sinh[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Sinh[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] $Aborted
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sinh(dx+c)^3}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(sinh(d*x + c)^3/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] sage0*x
```

maple [A] time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{\sinh^3(dx+c)}{\left(fx+e\right)\left(a+b\sinh(dx+c)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] int(sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2\,a^3\int -\frac{e^{(dx+c)}}{b^4fx+b^4e-\left(b^4fxe^{(2\,c)}+b^4ee^{(2\,c)}\right)e^{(2\,dx)}-2\left(ab^3fxe^{c}+ab^3ee^{c}\right)e^{(dx)}}\,dx-\frac{e^{\left(-2\,c+\frac{2\,de}{f}\right)}E_1\left(\frac{2\left(fx+e\right)d}{f}\right)}{4\,bf}-\frac{ae^{\left(-c+\right.}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] -2*a^3*integrate(-e^(d*x + c)/(b^4*f*x + b^4*e - (b^4*f*x*e^(2*c) + b^4*e*e
^(2*c))*e^(2*d*x) - 2*(a*b^3*f*x*e^c + a*b^3*e*e^c)*e^(d*x)), x) - 1/4*e^(-
2*c + 2*d*e/f)*exp_integral_e(1, 2*(f*x + e)*d/f)/(b*f) - 1/2*a*e^(-c + d*e
/f)*exp_integral_e(1, (f*x + e)*d/f)/(b^2*f) + 1/2*a*e^(c - d*e/f)*exp_inte
gral_e(1, -(f*x + e)*d/f)/(b^2*f) - 1/4*e^(2*c - 2*d*e/f)*exp_integral_e(1,
 -2*(f*x + e)*d/f)/(b*f) + 1/2*(2*a^2 - b^2)*log(f*x + e)/(b^3*f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\sinh\left(c+d\,x\right)}^3}{\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(c + d*x)^3/((e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int(sinh(c + d*x)^3/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.238 $\int \frac{(e+fx)^3 \operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=605

$$-\frac{6bf^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^4\sqrt{a^2+b^2}}+\frac{6bf^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^4\sqrt{a^2+b^2}}+\frac{6bf^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^3\sqrt{a^2+b^2}}-\frac{6bf^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^3\sqrt{a^2+b^2}}-\frac{3b}{}$$

```
[Out] -2*(f*x+e)^3*arctanh(exp(d*x+c))/a/d-3*f*(f*x+e)^2*polylog(2,-exp(d*x+c))/a
/d^2+3*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a/d^2+6*f^2*(f*x+e)*polylog(3,-exp
(d*x+c))/a/d^3-6*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a/d^3-6*f^3*polylog(4,-e
xp(d*x+c))/a/d^4+6*f^3*polylog(4,exp(d*x+c))/a/d^4-b*(f*x+e)^3*ln(1+b*exp(d
*x+c)/(a-(a^2+b^2)^(1/2)))/a/d/(a^2+b^2)^(1/2)+b*(f*x+e)^3*ln(1+b*exp(d*x+c
)/(a+(a^2+b^2)^(1/2)))/a/d/(a^2+b^2)^(1/2)-3*b*f*(f*x+e)^2*polylog(2,-b*exp
(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/d^2/(a^2+b^2)^(1/2)+3*b*f*(f*x+e)^2*polylog(
2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d^2/(a^2+b^2)^(1/2)+6*b*f^2*(f*x+e)*
polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/d^3/(a^2+b^2)^(1/2)-6*b*f^2*
(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d^3/(a^2+b^2)^(1/2)-
6*b*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/d^4/(a^2+b^2)^(1/2)+
6*b*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d^4/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.96, antiderivative size = 605, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$, Rules used = {5575, 4182, 2531, 6609, 2282, 6589, 3322, 2264, 2190}

$$\frac{6bf^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^3\sqrt{a^2+b^2}}-\frac{6bf^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ad^3\sqrt{a^2+b^2}}-\frac{3bf(e+fx)^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+}}\right)}{ad^2\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)^3*ArcTanh[E^(c + d*x)])/(a*d) - (b*(e + f*x)^3*Log[1 + (b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*Sqrt[a^2 + b^2]*d) + (b*(e + f*x)^3*Lo
g[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*Sqrt[a^2 + b^2]*d) - (3*f*
(e + f*x)^2*PolyLog[2, -E^(c + d*x)])/(a*d^2) + (3*f*(e + f*x)^2*PolyLog[2,
 E^(c + d*x)])/(a*d^2) - (3*b*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a
 - Sqrt[a^2 + b^2]))])/(a*Sqrt[a^2 + b^2]*d^2) + (3*b*f*(e + f*x)^2*PolyLog
[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*Sqrt[a^2 + b^2]*d^2) + (6
*f^2*(e + f*x)*PolyLog[3, -E^(c + d*x)])/(a*d^3) - (6*f^2*(e + f*x)*PolyLog
[3, E^(c + d*x)])/(a*d^3) + (6*b*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))
/(a - Sqrt[a^2 + b^2]))])/(a*Sqrt[a^2 + b^2]*d^3) - (6*b*f^2*(e + f*x)*Poly
Log[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*Sqrt[a^2 + b^2]*d^3) -
```

```
(6*f^3*PolyLog[4, -E^(c + d*x)])/(a*d^4) + (6*f^3*PolyLog[4, E^(c + d*x)])
/(a*d^4) - (6*b*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(
a*Sqrt[a^2 + b^2]*d^4) + (6*b*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2]))])/(a*Sqrt[a^2 + b^2]*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\operatorname{csch}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{(2b)\int \frac{e^{c+dx}(e+fx)^3}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{a} - \frac{(3f)\int (e+fx)^2\log\left(\right.}{ad}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{3f(e+fx)^2\operatorname{Li}_2\left(-e^{c+dx}\right)}{ad^2} + \frac{3f(e+fx)^2\operatorname{Li}_2\left(e^{c+dx}\right)}{ad^2}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)^3\log\left(1\right.}{a\sqrt{a^2+b}}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)^3\log\left(1\right.}{a\sqrt{a^2+b}}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)^3\log\left(1\right.}{a\sqrt{a^2+b}}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)^3\log\left(1\right.}{a\sqrt{a^2+b}}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)^3\log\left(1\right.}{a\sqrt{a^2+b}}$$

Mathematica [A] time = 2.90, size = 757, normalized size = 1.25

$$\frac{b\left(2d^3e^3\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)-3d^3e^2fx\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+3d^3e^2fx\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)-3d^3ef^2x^2\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+3d^3ef^2x^2\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)-d^3\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*d^3*(e + f*x)^3*ArcTanh[Cosh[c + d*x] + Sinh[c + d*x]] + (b*(2*d^3*e^3*
ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 3*d^3*e^2*f*x*Log[1 + (b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2])] - 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/
(a - Sqrt[a^2 + b^2])] - d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2
+ b^2])] + 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 3
```

```
*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^3*f^3*x^3
*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 3*d^2*f*(e + f*x)^2*PolyL
og[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 3*d^2*f*(e + f*x)^2*PolyLog
[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 6*d*e*f^2*PolyLog[3, (b*E^(
c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*d*f^3*x*PolyLog[3, (b*E^(c + d*x))/(-
a + Sqrt[a^2 + b^2])] - 6*d*e*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2]))] - 6*d*f^3*x*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
] - 6*f^3*PolyLog[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*f^3*PolyLo
g[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/Sqrt[a^2 + b^2] - 3*f*(d^2
*(e + f*x)^2*PolyLog[2, -Cosh[c + d*x] - Sinh[c + d*x]] - 2*d*f*(e + f*x)*P
olyLog[3, -Cosh[c + d*x] - Sinh[c + d*x]] + 2*f^2*PolyLog[4, -Cosh[c + d*x]
 - Sinh[c + d*x]]) + 3*f*(d^2*(e + f*x)^2*PolyLog[2, Cosh[c + d*x] + Sinh[c
 + d*x]] - 2*d*f*(e + f*x)*PolyLog[3, Cosh[c + d*x] + Sinh[c + d*x]] + 2*f^
2*PolyLog[4, Cosh[c + d*x] + Sinh[c + d*x]]))/(a*d^4)
```

fricas [C] time = 0.57, size = 1645, normalized size = 2.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(6*b^2*f^3*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x
+ c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*b^
2*f^3*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) -
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*(a^2 + b
^2)*f^3*polylog(4, cosh(d*x + c) + sinh(d*x + c)) + 6*(a^2 + b^2)*f^3*polyl
og(4, -cosh(d*x + c) - sinh(d*x + c)) + 3*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^
2*x + b^2*d^2*e^2*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(
d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b
 + 1) - 3*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*sqrt((a^2 +
 b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*
sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^2*d^3*e^3 - 3*b^2*c*d
^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*sqrt((a^2 + b^2)/b^2)*log(2*b*c
osh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^2*
d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*sqrt((a^2 +
b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/
b^2) + 2*a) + (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x +
3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*sqrt((a^2 + b^2)/b^2)*
log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 +
 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*s
qrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 6*(b^2*d*f^3*x + b^
2*d*e*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x +
```

```
 c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(b^
2*d*f^3*x + b^2*d*e*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c)
+ a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2))/b) - 3*((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^
2)*d^2*e^2*f)*dilog(cosh(d*x + c) + sinh(d*x + c)) + 3*((a^2 + b^2)*d^2*f^3
*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*dilog(-cosh(d*x +
 c) - sinh(d*x + c)) + ((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x
^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + (a^2 + b^2)*d^3*e^3)*log(cosh(d*x + c) + s
inh(d*x + c) + 1) - ((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a
^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*log(cosh(d*x + c) + sinh(d*x +
 c) - 1) - ((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2
+ b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2
+ (a^2 + b^2)*c^3*f^3)*log(-cosh(d*x + c) - sinh(d*x + c) + 1) + 6*((a^2 +
b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*polylog(3, cosh(d*x + c) + sinh(d*x + c
)) - 6*((a^2 + b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*polylog(3, -cosh(d*x + c
) - sinh(d*x + c)))/((a^3 + a*b^2)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 0.68, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{csch}\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^3*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^{3}\left(\frac{b\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{\sqrt{a^{2}+b^{2}}\,ad}+\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}\right)-\frac{3\left(dx\log\left(e^{(dx+c)}+1\right)+\mathrm{Li}_{2}\left(-e^{(dx+c)}\right)\right)e}{ad^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e^3*(b*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sq
rt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a*d) + log(e^(-d*x - c) + 1)/(a*d) - log(e
^(-d*x - c) - 1)/(a*d)) - 3*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c))
)*e^2*f/(a*d^2) + 3*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))*e^2*f/
(a*d^2) - 3*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*p
olylog(3, -e^(d*x + c)))*e*f^2/(a*d^3) + 3*(d^2*x^2*log(-e^(d*x + c) + 1) +
 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*e*f^2/(a*d^3) - (d^3
*x^3*log(e^(d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3
, -e^(d*x + c)) + 6*polylog(4, -e^(d*x + c)))*f^3/(a*d^4) + (d^3*x^3*log(-e
^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(d*x +
c)) + 6*polylog(4, e^(d*x + c)))*f^3/(a*d^4) - integrate(2*(b*f^3*x^3*e^c +
 3*b*e*f^2*x^2*e^c + 3*b*e^2*f*x*e^c)*e^(d*x)/(a*b*e^(2*d*x + 2*c) + 2*a^2*
e^(d*x + c) - a*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{\mathrm{sinh}\left(c+d\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)^3/(sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{3}\operatorname{csch}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*csch(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.239 $\int \frac{(e+fx)^2\mathbf{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=433

$$\frac{2bf^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^3\sqrt{a^2+b^2}}-\frac{2bf^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^3\sqrt{a^2+b^2}}-\frac{2bf(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2\sqrt{a^2+b^2}}+\frac{2bf(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^2\sqrt{a^2+b^2}}-\frac{b(e+}{}$$

```
[Out] -2*(f*x+e)^2*arctanh(exp(d*x+c))/a/d-2*f*(f*x+e)*polylog(2,-exp(d*x+c))/a/d
^2+2*f*(f*x+e)*polylog(2,exp(d*x+c))/a/d^2+2*f^2*polylog(3,-exp(d*x+c))/a/d
^3-2*f^2*polylog(3,exp(d*x+c))/a/d^3-b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+
b^2)^(1/2)))/a/d/(a^2+b^2)^(1/2)+b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)
^(1/2)))/a/d/(a^2+b^2)^(1/2)-2*b*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+
b^2)^(1/2)))/a/d^2/(a^2+b^2)^(1/2)+2*b*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a
+(a^2+b^2)^(1/2)))/a/d^2/(a^2+b^2)^(1/2)+2*b*f^2*polylog(3,-b*exp(d*x+c)/(a
-(a^2+b^2)^(1/2)))/a/d^3/(a^2+b^2)^(1/2)-2*b*f^2*polylog(3,-b*exp(d*x+c)/(a
+(a^2+b^2)^(1/2)))/a/d^3/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.81, antiderivative size = 433, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {5575, 4182, 2531, 2282, 6589, 3322, 2264, 2190}

$$-\frac{2bf(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2\sqrt{a^2+b^2}}+\frac{2bf(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ad^2\sqrt{a^2+b^2}}+\frac{2bf^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^3\sqrt{a^2+b^2}}-\frac{2b}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d) - (b*(e + f*x)^2*Log[1 + (b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*Sqrt[a^2 + b^2]*d) + (b*(e + f*x)^2*Lo
g[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*Sqrt[a^2 + b^2]*d) - (2*f*
(e + f*x)*PolyLog[2, -E^(c + d*x)])/(a*d^2) + (2*f*(e + f*x)*PolyLog[2, E^(
c + d*x)])/(a*d^2) - (2*b*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqr
t[a^2 + b^2]))])/(a*Sqrt[a^2 + b^2]*d^2) + (2*b*f*(e + f*x)*PolyLog[2, -((b
*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*Sqrt[a^2 + b^2]*d^2) + (2*f^2*Pol
yLog[3, -E^(c + d*x)])/(a*d^3) - (2*f^2*PolyLog[3, E^(c + d*x)])/(a*d^3) +
(2*b*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*Sqrt[a^2
+ b^2]*d^3) - (2*b*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]
)/(a*Sqrt[a^2 + b^2]*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\operatorname{csch}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{(2b)\int \frac{e^{c+dx}(e+fx)^2}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{a} - \frac{(2f)\int (e+fx)\log\left(1\right.}{ad}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2f(e+fx)\text{Li}_2\left(-e^{c+dx}\right)}{ad^2} + \frac{2f(e+fx)\text{Li}_2\left(e^{c+dx}\right)}{ad^2} -$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)^2\log\left(1\right.}{a\sqrt{a^2+b}}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)^2\log\left(1\right.}{a\sqrt{a^2+b}}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)^2\log\left(1\right.}{a\sqrt{a^2+b}}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)^2\log\left(1\right.}{a\sqrt{a^2+b}}$$

Mathematica [A] time = 1.90, size = 454, normalized size = 1.05

$$\frac{b\left(2d^2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)-2d^2efx\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+2d^2efx\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)-d^2f^2x^2\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+d^2f^2x^2\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)-2df(e+f\right.}{\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (d^2*(e + f*x)^2*Log[1 - E^(c + d*x)] - d^2*(e + f*x)^2*Log[1 + E^(c + d*x)
] - 2*d*f*(e + f*x)*PolyLog[2, -E^(c + d*x)] + 2*d*f*(e + f*x)*PolyLog[2, E
^(c + d*x)] + 2*f^2*PolyLog[3, -E^(c + d*x)] - 2*f^2*PolyLog[3, E^(c + d*x)
] + (b*(2*d^2*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 2*d^2*e*f*
x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d^2*f^2*x^2*Log[1 + (b*E
^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2])] - 2*d*f*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
 + 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 2
*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*f^2*PolyLog[3,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/Sqrt[a^2 + b^2])/(a*d^3)
```

fricas [C] time = 0.58, size = 1096, normalized size = 2.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*b^2*f^2*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x +
 c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2*b^2
*f^2*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) -
(b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2*(a^2 + b^
2)*f^2*polylog(3, cosh(d*x + c) + sinh(d*x + c)) + 2*(a^2 + b^2)*f^2*polylo
g(3, -cosh(d*x + c) - sinh(d*x + c)) - 2*(b^2*d*f^2*x + b^2*d*e*f)*sqrt((a^
2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
 b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(b^2*d*f^2*x + b^2*
d*e*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (b^2*d
^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*
x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b^2*d^2*e^
2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c
) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b^2*d^2*f^2*x^2
 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*sqrt((a^2 + b^2)/b^2)*log
(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*
sqrt((a^2 + b^2)/b^2) - b)/b) + (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*
c*d*e*f - b^2*c^2*f^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh
(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/
b) + 2*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*dilog(cosh(d*x + c) + sinh
(d*x + c)) - 2*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*dilog(-cosh(d*x +
c) - sinh(d*x + c)) - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x +
```

```
(a^2 + b^2)*d^2*e^2)*log(cosh(d*x + c) + sinh(d*x + c) + 1) + ((a^2 + b^2)*
d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*log(cosh(d*x + c) +
sinh(d*x + c) - 1) + ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2
*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*log(-cosh(d*x + c) - sinh(d*x +
 c) + 1))/((a^3 + a*b^2)*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{csch}\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^{2}\left(\frac{b\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{\sqrt{a^{2}+b^{2}}\,ad}+\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}\right)-\frac{2\left(dx\log\left(e^{(dx+c)}+1\right)+\operatorname{Li}_2\left(-e^{(dx+c)}\right)\right)e}{ad^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e^2*(b*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sq
rt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a*d) + log(e^(-d*x - c) + 1)/(a*d) - log(e
^(-d*x - c) - 1)/(a*d)) - 2*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c))
)*e*f/(a*d^2) + 2*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))*e*f/(a*d
^2) - (d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog
(3, -e^(d*x + c)))*f^2/(a*d^3) + (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dil
og(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*f^2/(a*d^3) - integrate(2*(b*f
^2*x^2*e^c + 2*b*e*f*x*e^c)*e^(d*x)/(a*b*e^(2*d*x + 2*c) + 2*a^2*e^(d*x + c
) - a*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e + f\,x)^2}{\sinh(c + d\,x)\,\left(a + b\sinh(c + d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^2/(sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e + fx)^2 \operatorname{csch}(c + dx)}{a + b\sinh(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**2*csch(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.240 $\int \frac{(e+fx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=261

$$-\frac{bf\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2\sqrt{a^2+b^2}}+\frac{bf\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^2\sqrt{a^2+b^2}}-\frac{b(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{ad\sqrt{a^2+b^2}}+\frac{b(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{ad\sqrt{a^2+b^2}}-\frac{f\text{Li}_2(-}{ad}$$

```
[Out] -2*(f*x+e)*arctanh(exp(d*x+c))/a/d-f*polylog(2,-exp(d*x+c))/a/d^2+f*polylog
(2,exp(d*x+c))/a/d^2-b*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/d/(
a^2+b^2)^(1/2)+b*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d/(a^2+b^
2)^(1/2)-b*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/d^2/(a^2+b^2)^(
1/2)+b*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d^2/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.46, antiderivative size = 261, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {5575, 4182, 2279, 2391, 3322, 2264, 2190}

$$-\frac{bf\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2\sqrt{a^2+b^2}}+\frac{bf\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ad^2\sqrt{a^2+b^2}}-\frac{f\text{PolyLog}\left(2,-e^{c+dx}\right)}{ad^2}+\frac{f\text{PolyLog}\left(2,e^{c+dx}\right)}{ad^2}-\frac{b(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)*ArcTanh[E^(c + d*x)])/(a*d) - (b*(e + f*x)*Log[1 + (b*E^(c +
d*x))/(a - Sqrt[a^2 + b^2])])/(a*Sqrt[a^2 + b^2]*d) + (b*(e + f*x)*Log[1 +
(b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*Sqrt[a^2 + b^2]*d) - (f*PolyLog[
2, -E^(c + d*x)])/(a*d^2) + (f*PolyLog[2, E^(c + d*x)])/(a*d^2) - (b*f*Poly
Log[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*Sqrt[a^2 + b^2]*d^2) +
 (b*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*Sqrt[a^2 + b
^2]*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
```

```
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\operatorname{csch}(c+dx)\,dx}{a} - \frac{b\int \frac{e+fx}{a+b\sinh(c+dx)}\,dx}{a}$$
$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{(2b)\int \frac{e^{c+dx}(e+fx)}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{a} - \frac{f\int \log\left(1-e^{c+dx}\right)\,dx}{ad}$$
$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\left(2b^2\right)\int \frac{e^{c+dx}(e+fx)}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{a\sqrt{a^2+b^2}} + \frac{\left(2b^2\right)\int \frac{e^{c+dx}(e+fx)}{2a+2\sqrt{a^2+b^2}+2}}{a\sqrt{a^2+b^2}}$$
$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)\log\left(1+\frac{}{a+}\right)}{a\sqrt{a^2+b^2}\,d}$$
$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)\log\left(1+\frac{}{a+}\right)}{a\sqrt{a^2+b^2}\,d}$$
$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{b(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d} + \frac{b(e+fx)\log\left(1+\frac{}{a+}\right)}{a\sqrt{a^2+b^2}\,d}$$

Mathematica [A] time = 1.82, size = 306, normalized size = 1.17

$$\frac{b\left(2de\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)-f\operatorname{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+f\operatorname{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)-f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)-2cf\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)\right)}{\sqrt{a^2+b^2}} +$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (d*e*Log[Tanh[(c + d*x)/2]] - c*f*Log[Tanh[(c + d*x)/2]] + f*((c + d*x)*(Lo
g[1 - E^(-c - d*x)] - Log[1 + E^(-c - d*x)]) + PolyLog[2, -E^(-c - d*x)] -
PolyLog[2, E^(-c - d*x)]) + (b*(2*d*e*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2
+ b^2]] - 2*c*f*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - f*(c + d*x)*
Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(
c + d*x))/(a + Sqrt[a^2 + b^2])] - f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[
a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/Sqr
t[a^2 + b^2])/(a*d^2)
```

fricas [B] time = 0.51, size = 649, normalized size = 2.49

$$-\frac{b^2 f\sqrt{\frac{a^2+b^2}{b^2}}\,\mathrm{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}-b}{b}+1\right)-b^2 f\sqrt{\frac{a^2+b^2}{b^2}}\,\mathrm{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+\cdots}{\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(b^2*f*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b
*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - b^2*f
*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d
*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (a^2 + b^2)*
f*dilog(cosh(d*x + c) + sinh(d*x + c)) + (a^2 + b^2)*f*dilog(-cosh(d*x + c)
 - sinh(d*x + c)) - (b^2*d*e - b^2*c*f)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(
d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^2*d*e
- b^2*c*f)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c)
- 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^2*d*f*x + b^2*c*f)*sqrt((a^2 + b^2)
/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b^2*d*f*x + b^2*c*f)*sqrt((a^2 +
b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*si
nh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + ((a^2 + b^2)*d*f*x + (a^2 + b^
2)*d*e)*log(cosh(d*x + c) + sinh(d*x + c) + 1) - ((a^2 + b^2)*d*e - (a^2 +
b^2)*c*f)*log(cosh(d*x + c) + sinh(d*x + c) - 1) - ((a^2 + b^2)*d*f*x + (a^
2 + b^2)*c*f)*log(-cosh(d*x + c) - sinh(d*x + c) + 1))/((a^3 + a*b^2)*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.18, size = 532, normalized size = 2.04

$$-\frac{e\ln\left(\mathrm{e}^{dx+c}+1\right)}{ad}+\frac{2eb\,\mathrm{arctanh}\left(\frac{2b\,\mathrm{e}^{dx+c}+2a}{2\sqrt{a^2+b^2}}\right)}{da\sqrt{a^2+b^2}}+\frac{e\ln\left(\mathrm{e}^{dx+c}-1\right)}{ad}-\frac{\ln\left(\mathrm{e}^{dx+c}+1\right)fx}{ad}-\frac{f\,\mathrm{dilog}\left(\mathrm{e}^{dx+c}+1\right)}{d^2a}-\frac{fb\ln\left(\frac{-b\,\mathrm{e}^{d\cdots}}{-\cdots}\right.}{da\sqrt{\cdots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/a/d*e*ln(exp(d*x+c)+1)+2/d*e*b/a/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*
x+c)+2*a)/(a^2+b^2)^(1/2))+1/a/d*e*ln(exp(d*x+c)-1)-1/a/d*ln(exp(d*x+c)+1)*
f*x-1/d^2*f/a*dilog(exp(d*x+c)+1)-1/d*f*b/a/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+
c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*f*b/a/(a^2+b^2)^(1/2)*l
n((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d*f*b/a/(a^2+
b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2
*f*b/a/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/
2)))*c-1/d^2*f*b/a/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/
(-a+(a^2+b^2)^(1/2)))+1/d^2*f*b/a/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+
b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/d^2*f*dilog(exp(d*x+c))/a-2/d^2*f*c*b/
a/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/a/d^2
*f*c*ln(exp(d*x+c)-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e\left(\frac{b\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,ad}+\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}\right)+2\,f\int\frac{2\,x}{\left(b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right)\left(e^{(dx+c)}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e*(b*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt
(a^2 + b^2)))/(sqrt(a^2 + b^2)*a*d) + log(e^(-d*x - c) + 1)/(a*d) - log(e^(
-d*x - c) - 1)/(a*d)) + 2*f*integrate(2*x/((b*(e^(d*x + c) - e^(-d*x - c))
+ 2*a)*(e^(d*x + c) - e^(-d*x - c))), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{\mathrm{sinh}\left(c+d\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\operatorname{csch}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*csch(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.241 $\int \frac{\text{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=64

$$\frac{2b\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{ad\sqrt{a^2+b^2}}-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}$$

```
[Out] -arctanh(cosh(d*x+c))/a/d+2*b*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(
1/2))/a/d/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {2747, 3770, 2660, 618, 204}

$$\frac{2b\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{ad\sqrt{a^2+b^2}}-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[Csch[c + d*x]/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(ArcTanh[Cosh[c + d*x]]/(a*d)) + (2*b*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sq
rt[a^2 + b^2]])/(a*Sqrt[a^2 + b^2]*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
```

```
a^2 - b^2, 0]
```

Rule 2747

```
Int[1/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (
f_.)*(x_)])), x_Symbol] :> Dist[b/(b*c - a*d), Int[1/(a + b*Sin[e + f*x]),
x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*Sin[e + f*x]), x], x] /; FreeQ[{a
, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx &= \frac{\int \operatorname{csch}(c+dx)\,dx}{a}-\frac{b\int \frac{1}{a+b\sinh(c+dx)}\,dx}{a}\\ &= -\frac{\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{(2ib)\operatorname{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(ic+idx)\right)\right)}{ad}\\ &= -\frac{\tanh^{-1}(\cosh(c+dx))}{ad}-\frac{(4ib)\operatorname{Subst}\left(\int \frac{1}{-4\left(a^2+b^2\right)-x^2}\,dx,x,-2ib+2a\tan\left(\frac{1}{2}(ic+idx)\right)\right)}{ad}\\ &= -\frac{\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{2b\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a\sqrt{a^2+b^2}\,d}\end{aligned}$$

Mathematica [A] time = 0.08, size = 69, normalized size = 1.08

$$\frac{\log\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)-\frac{2b\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{\sqrt{-a^2-b^2}}}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csch[c + d*x]/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((-2*b*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2 - b^2]
 + Log[Tanh[(c + d*x)/2]])/(a*d)
```

fricas [B] time = 0.55, size = 223, normalized size = 3.48

$$\frac{\sqrt{a^2+b^2}\,b\log\left(\frac{b^2\cosh(dx+c)^2+b^2\sinh(dx+c)^2+2\,ab\cosh(dx+c)+2\,a^2+b^2+2\left(b^2\cosh(dx+c)+ab\right)\sinh(dx+c)+2\,\sqrt{a^2+b^2}\,(b\cosh(dx+c)+b\sinh}{b\cosh(dx+c)^2+b\sinh(dx+c)^2+2\,a\cosh(dx+c)+2\,(b\cosh(dx+c)+a)\sinh(dx+c)-b}\right.}{\left(a^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (sqrt(a^2 + b^2)*b*log((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*c
osh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x + c) + 2*
sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2
 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x
 + c) - b)) - (a^2 + b^2)*log(cosh(d*x + c) + sinh(d*x + c) + 1) + (a^2 + b
^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1))/((a^3 + a*b^2)*d)
```

giac [A] time = 0.36, size = 102, normalized size = 1.59

$$-\frac{\frac{b\log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\,\sqrt{a^2+b^2}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\,\sqrt{a^2+b^2}\right|}\right)}{\sqrt{a^2+b^2}\,a}+\frac{\log\left(e^{(dx+c)}+1\right)}{a}-\frac{\log\left(\left|e^{(dx+c)}-1\right|\right)}{a}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -(b*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d*x + c)
+ 2*a + 2*sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a) + log(e^(d*x + c) + 1)/a -
log(abs(e^(d*x + c) - 1))/a)/d
```

maple [A] time = 0.00, size = 65, normalized size = 1.02

$$-\frac{2b\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{da\sqrt{a^2+b^2}}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -2/d*b/a/(a^2+b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2
)^(1/2))+1/d/a*ln(tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.43, size = 112, normalized size = 1.75

$$-\frac{b\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,ad}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}+\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -b*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^
2 + b^2)))/(sqrt(a^2 + b^2)*a*d) - log(e^(-d*x - c) + 1)/(a*d) + log(e^(-d*
x - c) - 1)/(a*d)
```

mupad [B] time = 0.46, size = 347, normalized size = 5.42

$$\frac{\ln\left(32\,a-32\,a\,\mathrm{e}^{d\,x}\,\mathrm{e}^{c}\right)}{a\,d}-\frac{\ln\left(32\,a+32\,a\,\mathrm{e}^{d\,x}\,\mathrm{e}^{c}\right)}{a\,d}+\frac{b\,\ln\Big(128\,a^5\,\mathrm{e}^{d\,x}\,\mathrm{e}^{c}-64\,a^2\,b^3-64\,a^4\,b+32\,a\,b^3\,\sqrt{a^2+b^2}+64\,a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] log(32*a - 32*a*exp(d*x)*exp(c))/(a*d) - log(32*a + 32*a*exp(d*x)*exp(c))/(
a*d) + (b*log(128*a^5*exp(d*x)*exp(c) - 64*a^2*b^3 - 64*a^4*b + 32*a*b^3*(a
^2 + b^2)^(1/2) + 64*a^3*b*(a^2 + b^2)^(1/2) + 160*a^3*b^2*exp(d*x)*exp(c)
- 128*a^4*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2) + 32*a*b^4*exp(d*x)*exp(c) - 96
*a^2*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2))*(a^2 + b^2)^(1/2))/(a^3*d + a*b
^2*d) - (b*log(64*a^4*b + 64*a^2*b^3 - 128*a^5*exp(d*x)*exp(c) + 32*a*b^3*(
a^2 + b^2)^(1/2) + 64*a^3*b*(a^2 + b^2)^(1/2) - 160*a^3*b^2*exp(d*x)*exp(c)
 - 128*a^4*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2) - 32*a*b^4*exp(d*x)*exp(c) - 9
6*a^2*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2))*(a^2 + b^2)^(1/2))/(a^3*d + a*
b^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(csch(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.242 $\int \frac{\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=29

$$\operatorname{Int}\left(\frac{\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csch[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][Csch[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 5.75, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csch[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Integrate[Csch[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(csch(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [A] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(dx+c\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] int(csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(dx+c\right)}{\left(fx+e\right)\left(b\sinh\left(dx+c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] integrate(csch(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sinh\left(c+d\,x\right)\,\left(e+f\,x\right)\,\left(a+b\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(csch(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.243 $\int \frac{(e+fx)^3\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=745

$$\frac{6b^2f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^4\sqrt{a^2+b^2}}-\frac{6b^2f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^4\sqrt{a^2+b^2}}-\frac{6b^2f^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3\sqrt{a^2+b^2}}+\frac{6b^2f^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^3\sqrt{a^2+b^2}}+$$

```
[Out] -(f*x+e)^3/a/d+2*b*(f*x+e)^3*arctanh(exp(d*x+c))/a^2/d-(f*x+e)^3*coth(d*x+c
)/a/d+3*f*(f*x+e)^2*ln(1-exp(2*d*x+2*c))/a/d^2+3*b*f*(f*x+e)^2*polylog(2,-e
xp(d*x+c))/a^2/d^2-3*b*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a^2/d^2+3*f^2*(f*x
+e)*polylog(2,exp(2*d*x+2*c))/a/d^3-6*b*f^2*(f*x+e)*polylog(3,-exp(d*x+c))/
a^2/d^3+6*b*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a^2/d^3-3/2*f^3*polylog(3,exp
(2*d*x+2*c))/a/d^4+6*b*f^3*polylog(4,-exp(d*x+c))/a^2/d^4-6*b*f^3*polylog(4
,exp(d*x+c))/a^2/d^4+b^2*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a
^2/d/(a^2+b^2)^(1/2)-b^2*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a
^2/d/(a^2+b^2)^(1/2)+3*b^2*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))/a^2/d^2/(a^2+b^2)^(1/2)-3*b^2*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/
(a+(a^2+b^2)^(1/2)))/a^2/d^2/(a^2+b^2)^(1/2)-6*b^2*f^2*(f*x+e)*polylog(3,-b
*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/d^3/(a^2+b^2)^(1/2)+6*b^2*f^2*(f*x+e)*
polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/d^3/(a^2+b^2)^(1/2)+6*b^2*
f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/d^4/(a^2+b^2)^(1/2)-6*
b^2*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/d^4/(a^2+b^2)^(1/2
)
```

Rubi [A] time = 1.31, antiderivative size = 745, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 11, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.393, Rules used = {5575, 4184, 3716, 2190, 2531, 2282, 6589, 4182, 6609, 3322, 2264}

$$-\frac{6b^2f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3\sqrt{a^2+b^2}}+\frac{6b^2f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^3\sqrt{a^2+b^2}}+\frac{3b^2f(e+fx)^2\text{PolyLog}\left(2,-\frac{}{a-}\right.}{a^2d^2\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((e + f*x)^3/(a*d)) + (2*b*(e + f*x)^3*ArcTanh[E^(c + d*x)])/(a^2*d) - ((e
 + f*x)^3*Coth[c + d*x])/(a*d) + (b^2*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2])])/(a^2*Sqrt[a^2 + b^2]*d) - (b^2*(e + f*x)^3*Log[1 + (
b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^2*Sqrt[a^2 + b^2]*d) + (3*f*(e +
f*x)^2*Log[1 - E^(2*(c + d*x))])/(a*d^2) + (3*b*f*(e + f*x)^2*PolyLog[2, -E
^(c + d*x)])/(a^2*d^2) - (3*b*f*(e + f*x)^2*PolyLog[2, E^(c + d*x)])/(a^2*d
```

```
^2) + (3*b^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
]))])/(a^2*Sqrt[a^2 + b^2]*d^2) - (3*b^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c
 + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*Sqrt[a^2 + b^2]*d^2) + (3*f^2*(e + f
*x)*PolyLog[2, E^(2*(c + d*x))])/(a*d^3) - (6*b*f^2*(e + f*x)*PolyLog[3, -E
^(c + d*x)])/(a^2*d^3) + (6*b*f^2*(e + f*x)*PolyLog[3, E^(c + d*x)])/(a^2*d
^3) - (6*b^2*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
]))])/(a^2*Sqrt[a^2 + b^2]*d^3) + (6*b^2*f^2*(e + f*x)*PolyLog[3, -((b*E^(c
 + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*Sqrt[a^2 + b^2]*d^3) - (3*f^3*PolyLo
g[3, E^(2*(c + d*x))])/(2*a*d^4) + (6*b*f^3*PolyLog[4, -E^(c + d*x)])/(a^2*
d^4) - (6*b*f^3*PolyLog[4, E^(c + d*x)])/(a^2*d^4) + (6*b^2*f^3*PolyLog[4,
-((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*Sqrt[a^2 + b^2]*d^4) - (6*b
^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*Sqrt[a^2
+ b^2]*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\text{csch}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\text{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^3\coth(c+dx)}{ad} - \frac{b\int (e+fx)^3\text{csch}(c+dx)\,dx}{a^2} + \frac{b^2\int \frac{(e+fx)^3}{a+b\sinh(c+dx)}\,dx}{a^2}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{\left(2b^2\right)\int \frac{}{-b}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{3f(e+fx)}{}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{b^2(e+fx)}{a}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{b^2(e+fx)}{a}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{b^2(e+fx)}{a}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{b^2(e+fx)}{a}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{b^2(e+fx)}{a}$$

Mathematica [A] time = 17.57, size = 1353, normalized size = 1.82

$$\left(-2e^3\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^3 + f^3x^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3 + 3ef^2x^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3 + 3e^2fx\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b^2*(-2*d^3*e^3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 3*d^3*e^2*f
*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 3*d^3*e*f^2*x^2*Log[1 +
 (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + d^3*f^3*x^3*Log[1 + (b*E^(c + d*x
))/(a - Sqrt[a^2 + b^2])] - 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2])] - 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
])] - d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 3*d^2*f*
(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 3*d^2*f*(e
 + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 6*d*e*f^2*
PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 6*d*f^3*x*PolyLog[3, (
b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*d*e*f^2*PolyLog[3, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))] + 6*d*f^3*x*PolyLog[3, -((b*E^(c + d*x))/(a +
Sqrt[a^2 + b^2]))] + 6*f^3*PolyLog[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2]
)] - 6*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(a^2*Sqrt
[a^2 + b^2]*d^4) - (a*d^3*(e + f*x)^3*(-1 + Coth[c]) - d^2*e^2*(b*d*e - 3*a
*f)*(d*x - Log[1 - Cosh[c + d*x] - Sinh[c + d*x]]) - 3*d^2*e*f*(b*d*e + 2*a
*f)*x*Log[1 + Cosh[c + d*x] - Sinh[c + d*x]] - 3*d^2*f^2*(b*d*e + a*f)*x^2*
Log[1 + Cosh[c + d*x] - Sinh[c + d*x]] - b*d^3*f^3*x^3*Log[1 + Cosh[c + d*x
] - Sinh[c + d*x]] + 3*d^2*e*f*(b*d*e - 2*a*f)*x*Log[1 - Cosh[c + d*x] + Si
nh[c + d*x]] + 3*d^2*f^2*(b*d*e - a*f)*x^2*Log[1 - Cosh[c + d*x] + Sinh[c +
 d*x]] + b*d^3*f^3*x^3*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]] + d^2*e^2*(b*
d*e + 3*a*f)*(d*x - Log[1 + Cosh[c + d*x] + Sinh[c + d*x]]) - 3*d*e*f*(b*d*
e - 2*a*f)*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + 3*d*e*f*(b*d*e + 2*a
*f)*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + 6*f^2*(-(b*d*e) + a*f)*(d*
x*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + PolyLog[3, Cosh[c + d*x] - Si
nh[c + d*x]]) + 6*f^2*(b*d*e + a*f)*(d*x*PolyLog[2, -Cosh[c + d*x] + Sinh[c
 + d*x]] + PolyLog[3, -Cosh[c + d*x] + Sinh[c + d*x]]) - 3*b*f^3*(d^2*x^2*P
olyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + 2*(d*x*PolyLog[3, Cosh[c + d*x]
- Sinh[c + d*x]] + PolyLog[4, Cosh[c + d*x] - Sinh[c + d*x]])) + 3*b*f^3*(d
^2*x^2*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + 2*(d*x*PolyLog[3, -Cosh
[c + d*x] + Sinh[c + d*x]] + PolyLog[4, -Cosh[c + d*x] + Sinh[c + d*x]])))/
(a^2*d^4) + (Sech[c/2]*Sech[c/2 + (d*x)/2]*(-(e^3*Sinh[(d*x)/2]) - 3*e^2*f*
x*Sinh[(d*x)/2] - 3*e*f^2*x^2*Sinh[(d*x)/2] - f^3*x^3*Sinh[(d*x)/2]))/(2*a*
d) + (Csch[c/2]*Csch[c/2 + (d*x)/2]*(e^3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(d*
x)/2] + 3*e*f^2*x^2*Sinh[(d*x)/2] + f^3*x^3*Sinh[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 1.39, size = 6416, normalized size = 8.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*(a^3 + a*b^2)*d^3*e^3 - 6*(a^3 + a*b^2)*c*d^2*e^2*f + 6*(a^3 + a*b^2)*c
^2*d*e*f^2 - 2*(a^3 + a*b^2)*c^3*f^3 + 2*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^
3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*
d^2*e^2*f - 3*(a^3 + a*b^2)*c^2*d*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*cosh(d*x +
 c)^2 + 4*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a
^3 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 + a*b^2)*c^2
*d*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + 2*((a^3 + a
*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2
*f*x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 + a*b^2)*c^2*d*e*f^2 + (a^3 + a
*b^2)*c^3*f^3)*sinh(d*x + c)^2 + 3*(b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b
^3*d^2*e^2*f - (b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*cosh(d
*x + c)^2 - 2*(b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*cosh(d*
x + c)*sinh(d*x + c) - (b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f
)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*
x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b +
 1) - 3*(b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f - (b^3*d^2*f^3
*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*cosh(d*x + c)^2 - 2*(b^3*d^2*f^3*
x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) - (b^3
*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^
2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) +
 b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^3*d^3*e^3 - 3*b^3*
c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3 - (b^3*d^3*e^3 - 3*b^3*c*d^2*
e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^3*d^3*e^3 -
 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*cosh(d*x + c)*sinh(d*
x + c) - (b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3
)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d
*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^3*d^3*e^3 - 3*b^3*c*d^2*e^2
*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3 - (b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3
*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^3*d^3*e^3 - 3*b^3*c*
d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) -
(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*sinh(d*
x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) -
 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2
+ 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3 -
 (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e
^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^3*d^3*f^3*x^
3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2
*d*e*f^2 + b^3*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d^3*f^3*x^3 + 3*
b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f
^2 + b^3*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x +
 c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2
)/b^2) - b)/b) - (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x
 + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3 - (b^3*d^3*f^3*x^3 +
 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*
e*f^2 + b^3*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2
```

*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*
f^3)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 +
3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*s
inh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x +
c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 6*
(b^3*f^3*cosh(d*x + c)^2 + 2*b^3*f^3*cosh(d*x + c)*sinh(d*x + c) + b^3*f^3*
sinh(d*x + c)^2 - b^3*f^3)*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c
) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2))/b) + 6*(b^3*f^3*cosh(d*x + c)^2 + 2*b^3*f^3*cosh(d*x + c)*sinh(d*x +
c) + b^3*f^3*sinh(d*x + c)^2 - b^3*f^3)*sqrt((a^2 + b^2)/b^2)*polylog(4, (a
*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2))/b) - 6*(b^3*d*f^3*x + b^3*d*e*f^2 - (b^3*d*f^3*x + b^3*d
*e*f^2)*cosh(d*x + c)^2 - 2*(b^3*d*f^3*x + b^3*d*e*f^2)*cosh(d*x + c)*sinh(
d*x + c) - (b^3*d*f^3*x + b^3*d*e*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^
2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sin
h(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(b^3*d*f^3*x + b^3*d*e*f^2 - (b^3
*d*f^3*x + b^3*d*e*f^2)*cosh(d*x + c)^2 - 2*(b^3*d*f^3*x + b^3*d*e*f^2)*cos
h(d*x + c)*sinh(d*x + c) - (b^3*d*f^3*x + b^3*d*e*f^2)*sinh(d*x + c)^2)*sqr
t((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(
d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 3*((a^2*b + b^3)*d^
2*f^3*x^2 + (a^2*b + b^3)*d^2*e^2*f - 2*(a^3 + a*b^2)*d*e*f^2 - ((a^2*b + b
^3)*d^2*f^3*x^2 + (a^2*b + b^3)*d^2*e^2*f - 2*(a^3 + a*b^2)*d*e*f^2 + 2*((a
^2*b + b^3)*d^2*e*f^2 - (a^3 + a*b^2)*d*f^3)*x)*cosh(d*x + c)^2 - 2*((a^2*b
+ b^3)*d^2*f^3*x^2 + (a^2*b + b^3)*d^2*e^2*f - 2*(a^3 + a*b^2)*d*e*f^2 + 2
*((a^2*b + b^3)*d^2*e*f^2 - (a^3 + a*b^2)*d*f^3)*x)*cosh(d*x + c)*sinh(d*x
+ c) - ((a^2*b + b^3)*d^2*f^3*x^2 + (a^2*b + b^3)*d^2*e^2*f - 2*(a^3 + a*b^
2)*d*e*f^2 + 2*((a^2*b + b^3)*d^2*e*f^2 - (a^3 + a*b^2)*d*f^3)*x)*sinh(d*x
+ c)^2 + 2*((a^2*b + b^3)*d^2*e*f^2 - (a^3 + a*b^2)*d*f^3)*x)*dilog(cosh(d*
x + c) + sinh(d*x + c)) + 3*((a^2*b + b^3)*d^2*f^3*x^2 + (a^2*b + b^3)*d^2*
e^2*f + 2*(a^3 + a*b^2)*d*e*f^2 - ((a^2*b + b^3)*d^2*f^3*x^2 + (a^2*b + b^3
)*d^2*e^2*f + 2*(a^3 + a*b^2)*d*e*f^2 + 2*((a^2*b + b^3)*d^2*e*f^2 + (a^3 +
a*b^2)*d*f^3)*x)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^2*f^3*x^2 + (a^2*b +
b^3)*d^2*e^2*f + 2*(a^3 + a*b^2)*d*e*f^2 + 2*((a^2*b + b^3)*d^2*e*f^2 + (a
^3 + a*b^2)*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d^2*f^3*
x^2 + (a^2*b + b^3)*d^2*e^2*f + 2*(a^3 + a*b^2)*d*e*f^2 + 2*((a^2*b + b^3)*
d^2*e*f^2 + (a^3 + a*b^2)*d*f^3)*x)*sinh(d*x + c)^2 + 2*((a^2*b + b^3)*d^2*
e*f^2 + (a^3 + a*b^2)*d*f^3)*x)*dilog(-cosh(d*x + c) - sinh(d*x + c)) + ((a
^2*b + b^3)*d^3*f^3*x^3 + (a^2*b + b^3)*d^3*e^3 + 3*(a^3 + a*b^2)*d^2*e^2*f
+ 3*((a^2*b + b^3)*d^3*e*f^2 + (a^3 + a*b^2)*d^2*f^3)*x^2 - ((a^2*b + b^3)
*d^3*f^3*x^3 + (a^2*b + b^3)*d^3*e^3 + 3*(a^3 + a*b^2)*d^2*e^2*f + 3*((a^2*
b + b^3)*d^3*e*f^2 + (a^3 + a*b^2)*d^2*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*
f + 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^3*f^
3*x^3 + (a^2*b + b^3)*d^3*e^3 + 3*(a^3 + a*b^2)*d^2*e^2*f + 3*((a^2*b + b^3
)*d^3*e*f^2 + (a^3 + a*b^2)*d^2*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f + 2*(
a^3 + a*b^2)*d^2*e*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d^3

*f^3*x^3 + (a^2*b + b^3)*d^3*e^3 + 3*(a^3 + a*b^2)*d^2*e^2*f + 3*((a^2*b + b^3)*d^3*e*f^2 + (a^3 + a*b^2)*d^2*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f + 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*sinh(d*x + c)^2 + 3*((a^2*b + b^3)*d^3*e^2*f + 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*log(cosh(d*x + c) + sinh(d*x + c) + 1) - ((a^2*b + b^3)*d^3*e^3 - 3*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d^2*e^2*f + 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 - ((a^2*b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3 - ((a^2*b + b^3)*d^3*e^3 - 3*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d^2*e^2*f + 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 - ((a^2*b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^3*e^3 - 3*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d^2*e^2*f + 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 - ((a^2*b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d^3*e^3 - 3*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d^2*e^2*f + 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 - ((a^2*b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1) - ((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*c*d^2*e^2*f - 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 + ((a^2*b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^3 + a*b^2)*d^2*f^3)*x^2 - ((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*c*d^2*e^2*f - 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 + ((a^2*b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^3 + a*b^2)*d^2*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*c*d^2*e^2*f - 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 + ((a^2*b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^3 + a*b^2)*d^2*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*c*d^2*e^2*f - 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 + ((a^2*b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^3 + a*b^2)*d^2*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*sinh(d*x + c)^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*log(-cosh(d*x + c) - sinh(d*x + c) + 1) + 6*((a^2*b + b^3)*f^3*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f^3*cosh(d*x + c)*sinh(d*x + c) + (a^2*b + b^3)*f^3*sinh(d*x + c)^2 - (a^2*b + b^3)*f^3)*polylog(4, cosh(d*x + c) + sinh(d*x + c)) - 6*((a^2*b + b^3)*f^3*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f^3*cosh(d*x + c)*sinh(d*x + c) + (a^2*b + b^3)*f^3*sinh(d*x + c)^2 - (a^2*b + b^3)*f^3)*polylog(4, -cosh(d*x + c) - sinh(d*x + c)) + 6*((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 - (a^3 + a*b^2)*f^3 - ((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 - (a^3 + a*b^2)*f^3)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 - (a^3 + a*b^2)*f^3)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 - (a^3 + a*b^2)*f^3)*sinh(d*x + c)^2)*polylog(3, cosh(d*x + c) + sinh(d*x + c)) - 6*((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 + (a^3 + a*b^2)*f^3 - ((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 + (a^3 + a*b^2)*f^3)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 + (a^3 + a*b^2)*f^3)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 + (a^3

```
+ a*b^2)*f^3)*sinh(d*x + c)^2)*polylog(3, -cosh(d*x + c) - sinh(d*x + c)))/
((a^4 + a^2*b^2)*d^4*cosh(d*x + c)^2 + 2*(a^4 + a^2*b^2)*d^4*cosh(d*x + c)*
sinh(d*x + c) + (a^4 + a^2*b^2)*d^4*sinh(d*x + c)^2 - (a^4 + a^2*b^2)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 1.48, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{csch}\left(dx+c\right)^{2}}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^3*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\frac{b^{2}\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{\sqrt{a^{2}+b^{2}}\,a^{2}d}+\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^{2}d}-\frac{b\log\left(e^{(-dx-c)}-1\right)}{a^{2}d}+\frac{2}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}\right)-\frac{6\,e^{2}fx}{ad}+\frac{3\,e^{2}f\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] e^3*(b^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + s
qrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a^2*d) + b*log(e^(-d*x - c) + 1)/(a^2*d)
- b*log(e^(-d*x - c) - 1)/(a^2*d) + 2/((a*e^(-2*d*x - 2*c) - a)*d)) - 6*e^2
*f*x/(a*d) + 3*e^2*f*log(e^(d*x + c) + 1)/(a*d^2) + 3*e^2*f*log(e^(d*x + c)
 - 1)/(a*d^2) - 2*(f^3*x^3 + 3*e*f^2*x^2 + 3*e^2*f*x)/(a*d*e^(2*d*x + 2*c)
- a*d) + (d^3*x^3*log(e^(d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*
d*x*polylog(3, -e^(d*x + c)) + 6*polylog(4, -e^(d*x + c)))*b*f^3/(a^2*d^4)
- (d^3*x^3*log(-e^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*pol
ylog(3, e^(d*x + c)) + 6*polylog(4, e^(d*x + c)))*b*f^3/(a^2*d^4) + 3*(b*d*
e^2*f + 2*a*e*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^2*d^
```

```
3) - 3*(b*d*e^2*f - 2*a*e*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x +
c)))/(a^2*d^3) + 3*(b*d*e*f^2 + a*f^3)*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*
x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))/(a^2*d^4) - 3*(b*d*e*f^
2 - a*f^3)*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*po
lylog(3, e^(d*x + c)))/(a^2*d^4) - 1/4*(b*d^4*f^3*x^4 + 4*(b*d*e*f^2 + a*f^
3)*d^3*x^3 + 6*(b*d^2*e^2*f + 2*a*d*e*f^2)*d^2*x^2)/(a^2*d^4) + 1/4*(b*d^4*
f^3*x^4 + 4*(b*d*e*f^2 - a*f^3)*d^3*x^3 + 6*(b*d^2*e^2*f - 2*a*d*e*f^2)*d^2
*x^2)/(a^2*d^4) + integrate(2*(b^2*f^3*x^3*e^c + 3*b^2*e*f^2*x^2*e^c + 3*b^
2*e^2*f*x*e^c)*e^(d*x)/(a^2*b*e^(2*d*x + 2*c) + 2*a^3*e^(d*x + c) - a^2*b),
 x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{{\mathrm{sinh}\left(c+d\,x\right)}^2\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^3/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csch(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.244 $\int \frac{(e+fx)^2\mathbf{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=535

$$-\frac{2b^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3\sqrt{a^2+b^2}}+\frac{2b^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^3\sqrt{a^2+b^2}}+\frac{2b^2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2\sqrt{a^2+b^2}}-\frac{2b^2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^2\sqrt{a^2+b^2}}+\cdots$$

```
[Out] -(f*x+e)^2/a/d+2*b*(f*x+e)^2*arctanh(exp(d*x+c))/a^2/d-(f*x+e)^2*coth(d*x+c
)/a/d+2*f*(f*x+e)*ln(1-exp(2*d*x+2*c))/a/d^2+2*b*f*(f*x+e)*polylog(2,-exp(d
*x+c))/a^2/d^2-2*b*f*(f*x+e)*polylog(2,exp(d*x+c))/a^2/d^2+f^2*polylog(2,ex
p(2*d*x+2*c))/a/d^3-2*b*f^2*polylog(3,-exp(d*x+c))/a^2/d^3+2*b*f^2*polylog(
3,exp(d*x+c))/a^2/d^3+b^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/
a^2/d/(a^2+b^2)^(1/2)-b^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/
a^2/d/(a^2+b^2)^(1/2)+2*b^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^
(1/2)))/a^2/d^2/(a^2+b^2)^(1/2)-2*b^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))/a^2/d^2/(a^2+b^2)^(1/2)-2*b^2*f^2*polylog(3,-b*exp(d*x+c)
/(a-(a^2+b^2)^(1/2)))/a^2/d^3/(a^2+b^2)^(1/2)+2*b^2*f^2*polylog(3,-b*exp(d*
x+c)/(a+(a^2+b^2)^(1/2)))/a^2/d^3/(a^2+b^2)^(1/2)
```

Rubi [A] time = 1.08, antiderivative size = 535, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 12, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {5575, 4184, 3716, 2190, 2279, 2391, 4182, 2531, 2282, 6589, 3322, 2264}

$$\frac{2b^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2\sqrt{a^2+b^2}}-\frac{2b^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^2\sqrt{a^2+b^2}}-\frac{2b^2f^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3\sqrt{a^2+b^2}}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((e + f*x)^2/(a*d)) + (2*b*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a^2*d) - ((e
 + f*x)^2*Coth[c + d*x])/(a*d) + (b^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2])])/(a^2*Sqrt[a^2 + b^2]*d) - (b^2*(e + f*x)^2*Log[1 + (
b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^2*Sqrt[a^2 + b^2]*d) + (2*f*(e +
f*x)*Log[1 - E^(2*(c + d*x))])/(a*d^2) + (2*b*f*(e + f*x)*PolyLog[2, -E^(c
+ d*x)])/(a^2*d^2) - (2*b*f*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a^2*d^2) +
(2*b^2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a
^2*Sqrt[a^2 + b^2]*d^2) - (2*b^2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2]))])/(a^2*Sqrt[a^2 + b^2]*d^2) + (f^2*PolyLog[2, E^(2*(c
 + d*x))])/(a*d^3) - (2*b*f^2*PolyLog[3, -E^(c + d*x)])/(a^2*d^3) + (2*b*f^
2*PolyLog[3, E^(c + d*x)])/(a^2*d^3) - (2*b^2*f^2*PolyLog[3, -((b*E^(c + d*
```

```
x))/(a - Sqrt[a^2 + b^2]))])/(a^2*Sqrt[a^2 + b^2]*d^3) + (2*b^2*f^2*PolyLog
[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*Sqrt[a^2 + b^2]*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{csch}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\text{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^2\coth(c+dx)}{ad} - \frac{b\int (e+fx)^2\text{csch}(c+dx)\,dx}{a^2} + \frac{b^2\int \frac{(e+fx)^2}{a+b\sinh(c+dx)}\,dx}{a^2}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{\left(2b^2\right)\int \frac{}{-b}}{}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{2f(e+fx}{}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{b^2(e+fx)}{a}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{b^2(e+fx)}{a}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{b^2(e+fx)}{a}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{b^2(e+fx)}{a}$$

Mathematica [A] time = 15.62, size = 795, normalized size = 1.49

$$\left(-2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^2 + f^2x^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^2 + 2efx\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^2 - f^2x^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((((2*a*d^2*(e + f*x)^2)/(-1 + E^(2*c)) + 2*d*f*(b*d*e - a*f)*x*Log[1 - E^(
-c - d*x)] + b*d^2*f^2*x^2*Log[1 - E^(-c - d*x)] - 2*d*f*(b*d*e + a*f)*x*Lo
g[1 + E^(-c - d*x)] - b*d^2*f^2*x^2*Log[1 + E^(-c - d*x)] - d*e*(b*d*e - 2*
a*f)*(d*x - Log[1 - E^(c + d*x)]) + d*e*(b*d*e + 2*a*f)*(d*x - Log[1 + E^(c
 + d*x)]) + 2*f*(b*d*e + a*f)*PolyLog[2, -E^(-c - d*x)] + 2*f*(-(b*d*e) + a
*f)*PolyLog[2, E^(-c - d*x)] + 2*b*f^2*(d*x*PolyLog[2, -E^(-c - d*x)] + Pol
```

```
yLog[3, -E^(-c - d*x)]) - 2*b*f^2*(d*x*PolyLog[2, E^(-c - d*x)] + PolyLog[3
, E^(-c - d*x)]))/(a^2*d^3)) + (b^2*(-2*d^2*e^2*ArcTanh[(a + b*E^(c + d*x))
/Sqrt[a^2 + b^2]] + 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
])] + d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 2*d^2*e*
f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - d^2*f^2*x^2*Log[1 + (b
*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 2*d*f*(e + f*x)*PolyLog[2, (b*E^(c +
 d*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2]))] - 2*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^
2 + b^2])] + 2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(
a^2*Sqrt[a^2 + b^2]*d^3) + (Sech[c/2]*Sech[c/2 + (d*x)/2]*(-(e^2*Sinh[(d*x)
/2]) - 2*e*f*x*Sinh[(d*x)/2] - f^2*x^2*Sinh[(d*x)/2]))/(2*a*d) + (Csch[c/2]
*Csch[c/2 + (d*x)/2]*(e^2*Sinh[(d*x)/2] + 2*e*f*x*Sinh[(d*x)/2] + f^2*x^2*S
inh[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 1.03, size = 3805, normalized size = 7.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*(a^3 + a*b^2)*d^2*e^2 - 4*(a^3 + a*b^2)*c*d*e*f + 2*(a^3 + a*b^2)*c^2*f
^2 + 2*((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 + a*
b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c)^2 + 4*((a^3 + a*b^2)*d^
2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3 + a*
b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + 2*((a^3 + a*b^2)*d^2*f^2*x^2 +
2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2
)*sinh(d*x + c)^2 + 2*(b^3*d*f^2*x + b^3*d*e*f - (b^3*d*f^2*x + b^3*d*e*f)*
cosh(d*x + c)^2 - 2*(b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)*sinh(d*x + c) -
 (b^3*d*f^2*x + b^3*d*e*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*
cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2) - b)/b + 1) - 2*(b^3*d*f^2*x + b^3*d*e*f - (b^3*d*f^2*x +
b^3*d*e*f)*cosh(d*x + c)^2 - 2*(b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)*sinh
(d*x + c) - (b^3*d*f^2*x + b^3*d*e*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2
)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^
3*c^2*f^2 - (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)^2 - 2
*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) -
(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^
2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^
2) + 2*a) + (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2 - (b^3*d^2*e^2 - 2*b
^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f
+ b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d^2*e^2 - 2*b^3*c*d*e*f +
 b^3*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c)
+ 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^3*d^2*f^2*x^2 +
```

2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2 - (b^3*d^2*f^2*x^2 + 2*b^3*d
^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^3*d^2*f^2*x^
2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x +
 c) - (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sin
h(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c)
 + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b^3
*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2 - (b^3*d^2*f^2
*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)^2 - 2*(
b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x +
 c)*sinh(d*x + c) - (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^
3*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b) + 2*(b^3*f^2*cosh(d*x + c)^2 + 2*b^3*f^2*cosh(d*x + c)*sinh(d*x + c
) + b^3*f^2*sinh(d*x + c)^2 - b^3*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*
cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2))/b) - 2*(b^3*f^2*cosh(d*x + c)^2 + 2*b^3*f^2*cosh(d*x + c)
*sinh(d*x + c) + b^3*f^2*sinh(d*x + c)^2 - b^3*f^2)*sqrt((a^2 + b^2)/b^2)*p
olylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*
x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3
)*d*e*f - (a^3 + a*b^2)*f^2 - ((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*d*e*f
- (a^3 + a*b^2)*f^2)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d*f^2*x + (a^2*b +
b^3)*d*e*f - (a^3 + a*b^2)*f^2)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3
)*d*f^2*x + (a^2*b + b^3)*d*e*f - (a^3 + a*b^2)*f^2)*sinh(d*x + c)^2)*dilog
(cosh(d*x + c) + sinh(d*x + c)) + 2*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*
d*e*f + (a^3 + a*b^2)*f^2 - ((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*d*e*f +
(a^3 + a*b^2)*f^2)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^
3)*d*e*f + (a^3 + a*b^2)*f^2)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*
d*f^2*x + (a^2*b + b^3)*d*e*f + (a^3 + a*b^2)*f^2)*sinh(d*x + c)^2)*dilog(-
cosh(d*x + c) - sinh(d*x + c)) + ((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)
*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f - ((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^
3)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f + (a^3 + a*b^
2)*d*f^2)*x)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)
*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f + (a^3 + a*b^2)
*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*
b + b^3)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f + (a^3
+ a*b^2)*d*f^2)*x)*sinh(d*x + c)^2 + 2*((a^2*b + b^3)*d^2*e*f + (a^3 + a*b^
2)*d*f^2)*x)*log(cosh(d*x + c) + sinh(d*x + c) + 1) - ((a^2*b + b^3)*d^2*e^
2 - 2*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d*e*f + ((a^2*b + b^3)*c^2 + 2*(a^3 +
 a*b^2)*c)*f^2 - ((a^2*b + b^3)*d^2*e^2 - 2*(a^3 + a*b^2 + (a^2*b + b^3)*c)
*d*e*f + ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2)*cosh(d*x + c)^2 - 2*(
(a^2*b + b^3)*d^2*e^2 - 2*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d*e*f + ((a^2*b +
 b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b +
 b^3)*d^2*e^2 - 2*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d*e*f + ((a^2*b + b^3)*c^
2 + 2*(a^3 + a*b^2)*c)*f^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x +
 c) - 1) - ((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*c*d*e*f - ((a^2*b +

```
b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2 - ((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b
+ b^3)*c*d*e*f - ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2 + 2*((a^2*b +
b^3)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d
^2*f^2*x^2 + 2*(a^2*b + b^3)*c*d*e*f - ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)
*c)*f^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c)*
sinh(d*x + c) - ((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*c*d*e*f - ((a^
2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^3 +
 a*b^2)*d*f^2)*x)*sinh(d*x + c)^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^3 + a*b^2
)*d*f^2)*x)*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 2*((a^2*b + b^3)*f^2*
cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f^2*cosh(d*x + c)*sinh(d*x + c) + (a^2*b
+ b^3)*f^2*sinh(d*x + c)^2 - (a^2*b + b^3)*f^2)*polylog(3, cosh(d*x + c) +
sinh(d*x + c)) + 2*((a^2*b + b^3)*f^2*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f^2
*cosh(d*x + c)*sinh(d*x + c) + (a^2*b + b^3)*f^2*sinh(d*x + c)^2 - (a^2*b +
 b^3)*f^2)*polylog(3, -cosh(d*x + c) - sinh(d*x + c)))/((a^4 + a^2*b^2)*d^3
*cosh(d*x + c)^2 + 2*(a^4 + a^2*b^2)*d^3*cosh(d*x + c)*sinh(d*x + c) + (a^4
 + a^2*b^2)*d^3*sinh(d*x + c)^2 - (a^4 + a^2*b^2)*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 1.23, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{csch}\left(dx+c\right)^{2}}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^2*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\frac{b^{2}\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{\sqrt{a^{2}+b^{2}}\,a^{2}d}+\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^{2}d}-\frac{b\log\left(e^{(-dx-c)}-1\right)}{a^{2}d}+\frac{2}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}\right)-\frac{4\,efx}{ad}-\frac{2\left(f^{2}x^{2}+\right.}{ade^{(2\,dx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] e^2*(b^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + s
qrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a^2*d) + b*log(e^(-d*x - c) + 1)/(a^2*d)
- b*log(e^(-d*x - c) - 1)/(a^2*d) + 2/((a*e^(-2*d*x - 2*c) - a)*d)) - 4*e*f
*x/(a*d) - 2*(f^2*x^2 + 2*e*f*x)/(a*d*e^(2*d*x + 2*c) - a*d) + 2*e*f*log(e^
(d*x + c) + 1)/(a*d^2) + 2*e*f*log(e^(d*x + c) - 1)/(a*d^2) + (d^2*x^2*log(
e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*
b*f^2/(a^2*d^3) - (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c))
 - 2*polylog(3, e^(d*x + c)))*b*f^2/(a^2*d^3) + 2*(b*d*e*f + a*f^2)*(d*x*lo
g(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^2*d^3) - 2*(b*d*e*f - a*f^2)*(
d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^2*d^3) - 1/3*(b*d^3*f^2*
x^3 + 3*(b*d*e*f + a*f^2)*d^2*x^2)/(a^2*d^3) + 1/3*(b*d^3*f^2*x^3 + 3*(b*d*
e*f - a*f^2)*d^2*x^2)/(a^2*d^3) + integrate(2*(b^2*f^2*x^2*e^c + 2*b^2*e*f*
x*e^c)*e^(d*x)/(a^2*b*e^(2*d*x + 2*c) + 2*a^3*e^(d*x + c) - a^2*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^2}{{\mathrm{sinh}\left(c+d\,x\right)}^2\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)^2/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + f x\right)^{2} \operatorname{csch}^{2}{\left(c + d x \right)}}{a + b \sinh{\left(c + d x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*csch(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.245 $\int \frac{(e+fx)\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=306

$$\frac{b^2 f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2\sqrt{a^2+b^2}}-\frac{b^2 f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^2\sqrt{a^2+b^2}}+\frac{b^2(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{a^2d\sqrt{a^2+b^2}}-\frac{b^2(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{a^2d\sqrt{a^2+b^2}}+\frac{bf\text{Li}_2 \cdots}{\cdots}$$

```
[Out] 2*b*(f*x+e)*arctanh(exp(d*x+c))/a^2/d-(f*x+e)*coth(d*x+c)/a/d+f*ln(sinh(d*x
+c))/a/d^2+b*f*polylog(2,-exp(d*x+c))/a^2/d^2-b*f*polylog(2,exp(d*x+c))/a^2
/d^2+b^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/d/(a^2+b^2)^(1/
2)-b^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/d/(a^2+b^2)^(1/2)
+b^2*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/d^2/(a^2+b^2)^(1/2)
-b^2*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/d^2/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.57, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {5575, 4184, 3475, 4182, 2279, 2391, 3322, 2264, 2190}

$$\frac{b^2 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2\sqrt{a^2+b^2}}-\frac{b^2 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^2\sqrt{a^2+b^2}}+\frac{bf\text{PolyLog}\left(2,-e^{c+dx}\right)}{a^2d^2}-\frac{bf\text{PolyLog}\left(2,e^{c+dx}\right)}{a^2d^2}+\frac{b^2(e \cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*b*(e + f*x)*ArcTanh[E^(c + d*x)])/(a^2*d) - ((e + f*x)*Coth[c + d*x])/(a
*d) + (b^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^2*S
qrt[a^2 + b^2]*d) - (b^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2])])/(a^2*Sqrt[a^2 + b^2]*d) + (f*Log[Sinh[c + d*x]])/(a*d^2) + (b*f*Pol
yLog[2, -E^(c + d*x)])/(a^2*d^2) - (b*f*PolyLog[2, E^(c + d*x)])/(a^2*d^2)
 + (b^2*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*Sqrt[a^
2 + b^2]*d^2) - (b^2*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]
)/(a^2*Sqrt[a^2 + b^2]*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{csch}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\text{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)\coth(c+dx)}{ad} - \frac{b\int (e+fx)\text{csch}(c+dx)\,dx}{a^2} + \frac{b^2\int \frac{e+fx}{a+b\sinh(c+dx)}\,dx}{a^2} + \frac{f}{}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{f\log(\sinh(c+dx))}{ad^2} + \frac{\left(2b^2\right)}{}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{f\log(\sinh(c+dx))}{ad^2} + \frac{\left(2b^3\right)}{}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{b^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2\sqrt{a^2+b^2}\,d}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{b^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2\sqrt{a^2+b^2}\,d}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{b^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2\sqrt{a^2+b^2}\,d}$$

Mathematica [A] time = 5.20, size = 405, normalized size = 1.32

$$\frac{2b^2\left(-2de\tanh^{-1}\left(\frac{a+b\sinh(c+dx)+b\cosh(c+dx)}{\sqrt{a^2+b^2}}\right)+f\text{Li}_2\left(\frac{b(\cosh(c+dx)+\sinh(c+dx))}{\sqrt{a^2+b^2}-a}\right)-f\text{Li}_2\left(-\frac{b(\cosh(c+dx)+\sinh(c+dx))}{a+\sqrt{a^2+b^2}}\right)+f(c+dx)\log\left(\frac{b(\sinh(c+dx)+\cosh(c+dx))}{a-\sqrt{a^2+b^2}}+1\right)\right.}{\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-(a*d*(e + f*x)*Coth[(c + d*x)/2]) + 2*a*f*Log[Sinh[c + d*x]] - 2*b*d*e*Lo
g[Tanh[(c + d*x)/2]] + 2*b*c*f*Log[Tanh[(c + d*x)/2]] + 2*b*f*(-((c + d*x)*
```

```
(Log[1 - E^(-c - d*x)] - Log[1 + E^(-c - d*x)])) - PolyLog[2, -E^(-c - d*x)
] + PolyLog[2, E^(-c - d*x)]) + (2*b^2*(-2*d*e*ArcTanh[(a + b*Cosh[c + d*x]
 + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] + 2*c*f*ArcTanh[(a + b*Cosh[c + d*x] +
 b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] + f*(c + d*x)*Log[1 + (b*(Cosh[c + d*x]
+ Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - f*(c + d*x)*Log[1 + (b*(Cosh[c +
 d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + f*PolyLog[2, (b*(Cosh[c +
d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - f*PolyLog[2, -((b*(Cosh[c
+ d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))]))/Sqrt[a^2 + b^2] - a*d*(e
 + f*x)*Tanh[(c + d*x)/2])/(2*a^2*d^2)
```

fricas [B] time = 1.00, size = 1830, normalized size = 5.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*(a^3 + a*b^2)*d*e - 2*(a^3 + a*b^2)*c*f + 2*((a^3 + a*b^2)*d*f*x + (a^3
 + a*b^2)*c*f)*cosh(d*x + c)^2 + 4*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*c*f
)*cosh(d*x + c)*sinh(d*x + c) + 2*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*c*f)
*sinh(d*x + c)^2 - (b^3*f*cosh(d*x + c)^2 + 2*b^3*f*cosh(d*x + c)*sinh(d*x
+ c) + b^3*f*sinh(d*x + c)^2 - b^3*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d
*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
 b^2)/b^2) - b)/b + 1) + (b^3*f*cosh(d*x + c)^2 + 2*b^3*f*cosh(d*x + c)*sin
h(d*x + c) + b^3*f*sinh(d*x + c)^2 - b^3*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*
cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2) - b)/b + 1) - (b^3*d*e - b^3*c*f - (b^3*d*e - b^3*c*f)*cos
h(d*x + c)^2 - 2*(b^3*d*e - b^3*c*f)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d*e
 - b^3*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) +
2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^3*d*e - b^3*c*f -
 (b^3*d*e - b^3*c*f)*cosh(d*x + c)^2 - 2*(b^3*d*e - b^3*c*f)*cosh(d*x + c)*
sinh(d*x + c) - (b^3*d*e - b^3*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*
log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a
) + (b^3*d*f*x + b^3*c*f - (b^3*d*f*x + b^3*c*f)*cosh(d*x + c)^2 - 2*(b^3*d
*f*x + b^3*c*f)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d*f*x + b^3*c*f)*sinh(d*
x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (
b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b^3*d*f
*x + b^3*c*f - (b^3*d*f*x + b^3*c*f)*cosh(d*x + c)^2 - 2*(b^3*d*f*x + b^3*c
*f)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d*f*x + b^3*c*f)*sinh(d*x + c)^2)*sq
rt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + ((a^2*b + b^3)*f*cos
h(d*x + c)^2 + 2*(a^2*b + b^3)*f*cosh(d*x + c)*sinh(d*x + c) + (a^2*b + b^3
)*f*sinh(d*x + c)^2 - (a^2*b + b^3)*f)*dilog(cosh(d*x + c) + sinh(d*x + c))
 - ((a^2*b + b^3)*f*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f*cosh(d*x + c)*sinh(
d*x + c) + (a^2*b + b^3)*f*sinh(d*x + c)^2 - (a^2*b + b^3)*f)*dilog(-cosh(d
```

```
*x + c) - sinh(d*x + c)) + ((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e - ((a^2
*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^3 + a*b^2)*f)*cosh(d*x + c)^2 - 2*
((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^3 + a*b^2)*f)*cosh(d*x + c)*s
inh(d*x + c) - ((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^3 + a*b^2)*f)*
sinh(d*x + c)^2 + (a^3 + a*b^2)*f)*log(cosh(d*x + c) + sinh(d*x + c) + 1) -
 ((a^2*b + b^3)*d*e - ((a^2*b + b^3)*d*e - (a^3 + a*b^2 + (a^2*b + b^3)*c)*
f)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d*e - (a^3 + a*b^2 + (a^2*b + b^3)*c)
*f)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d*e - (a^3 + a*b^2 + (a^2*
b + b^3)*c)*f)*sinh(d*x + c)^2 - (a^3 + a*b^2 + (a^2*b + b^3)*c)*f)*log(cos
h(d*x + c) + sinh(d*x + c) - 1) - ((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*c*f
- ((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*c*f)*cosh(d*x + c)^2 - 2*((a^2*b + b
^3)*d*f*x + (a^2*b + b^3)*c*f)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)
*d*f*x + (a^2*b + b^3)*c*f)*sinh(d*x + c)^2)*log(-cosh(d*x + c) - sinh(d*x
+ c) + 1))/((a^4 + a^2*b^2)*d^2*cosh(d*x + c)^2 + 2*(a^4 + a^2*b^2)*d^2*cos
h(d*x + c)*sinh(d*x + c) + (a^4 + a^2*b^2)*d^2*sinh(d*x + c)^2 - (a^4 + a^2
*b^2)*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.22, size = 626, normalized size = 2.05

$$-\frac{2\left(fx+e\right)}{da\left(e^{2dx+2c}-1\right)}-\frac{2f\ln\left(e^{dx+c}\right)}{d^{2}a}+\frac{f\ln\left(e^{dx+c}+1\right)}{d^{2}a}+\frac{f\ln\left(e^{dx+c}-1\right)}{d^{2}a}+\frac{be\ln\left(e^{dx+c}+1\right)}{d\,a^{2}}-\frac{2b^{2}e\,\mathrm{arctanh}\left(\frac{2b\,e^{dx+c}+2a}{2\sqrt{a^{2}+b^{2}}}\right)}{d\,a^{2}\sqrt{a^{2}+b^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -2/d*(f*x+e)/a/(exp(2*d*x+2*c)-1)-2/d^2/a*f*ln(exp(d*x+c))+1/d^2/a*f*ln(exp
(d*x+c)+1)+1/d^2/a*f*ln(exp(d*x+c)-1)+1/d/a^2*b*e*ln(exp(d*x+c)+1)-2/d/a^2*
b^2*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d
/a^2*b*e*ln(exp(d*x+c)-1)+2/d^2/a^2*b^2*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*
b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d^2/a^2*b*f*c*ln(exp(d*x+c)-1)+1/d/a^2
*b*f*ln(exp(d*x+c)+1)*x+1/d^2/a^2*b*f*dilog(exp(d*x+c)+1)+1/d/a^2*b^2*f/(a^
2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1
/d^2/a^2*b^2*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^
2+b^2)^(1/2)))*c-1/d/a^2*b^2*f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(
```

```
1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2/a^2*b^2*f/(a^2+b^2)^(1/2)*ln((b*exp(d*
x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/d^2/a^2*b^2*f/(a^2+b^2)^(1
/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2/a^2
*b^2*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^
(1/2)))+1/d^2/a^2*b*f*dilog(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(4\,b^2\int \frac{xe^{(dx+c)}}{2\left(a^2be^{(2\,dx+2\,c)}+2\,a^3e^{(dx+c)}-a^2b\right)}\,dx-4\,bd\int \frac{x}{4\left(a^2de^{(dx+c)}+a^2d\right)}\,dx-4\,bd\int \frac{x}{4\left(a^2de^{(dx+c)}-a^2d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] (4*b^2*integrate(1/2*x*e^(d*x + c)/(a^2*b*e^(2*d*x + 2*c) + 2*a^3*e^(d*x +
c) - a^2*b), x) - 4*b*d*integrate(1/4*x/(a^2*d*e^(d*x + c) + a^2*d), x) - 4
*b*d*integrate(1/4*x/(a^2*d*e^(d*x + c) - a^2*d), x) - a*((d*x + c)/(a^2*d^
2) - log(e^(d*x + c) + 1)/(a^2*d^2)) - a*((d*x + c)/(a^2*d^2) - log(e^(d*x
+ c) - 1)/(a^2*d^2)) - 2*x/(a*d*e^(2*d*x + 2*c) - a*d))*f + e*(b^2*log((b*e
^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/
(sqrt(a^2 + b^2)*a^2*d) + b*log(e^(-d*x - c) + 1)/(a^2*d) - b*log(e^(-d*x -
 c) - 1)/(a^2*d) + 2/((a*e^(-2*d*x - 2*c) - a)*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{{\mathrm{sinh}\left(c+d\,x\right)}^2\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\operatorname{csch}^2\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*csch(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.246 $\int \frac{\operatorname{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=80

$$-\frac{2b^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^2d\sqrt{a^2+b^2}}+\frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d}-\frac{\coth(c+dx)}{ad}$$

```
[Out] b*arctanh(cosh(d*x+c))/a^2/d-coth(d*x+c)/a/d-2*b^2*arctanh((b-a*tanh(1/2*d*
x+1/2*c))/(a^2+b^2)^(1/2))/a^2/d/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2802, 12, 2747, 3770, 2660, 618, 204}

$$-\frac{2b^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^2d\sqrt{a^2+b^2}}+\frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d}-\frac{\coth(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[Csch[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*ArcTanh[Cosh[c + d*x]])/(a^2*d) - (2*b^2*ArcTanh[(b - a*Tanh[(c + d*x)/2
])/Sqrt[a^2 + b^2]])/(a^2*Sqrt[a^2 + b^2]*d) - Coth[c + d*x]/(a*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2747

```
Int[1/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (
f_.)*(x_)])), x_Symbol] :> Dist[b/(b*c - a*d), Int[1/(a + b*Sin[e + f*x]),
x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*Sin[e + f*x]), x], x] /; FreeQ[{a
, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2802

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b^2*Cos[e + f*x]*(a + b*Sin[e + f*x
])^(m + 1)*(c + d*Sin[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 - b^2)
), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^
(m + 1)*(c + d*Sin[e + f*x])^n*Simp[a*(b*c - a*d)*(m + 1) + b^2*d*(m + n +
2) - (b^2*c + b*(b*c - a*d)*(m + 1))*Sin[e + f*x] - b^2*d*(m + n + 3)*Sin[e
 + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d,
0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && LtQ[m, -1] && IntegersQ[2*m
, 2*n] && ((EqQ[a, 0] && IntegerQ[m] &&  !IntegerQ[n]) ||  !(IntegerQ[2*n]
&& LtQ[n, -1] && ((IntegerQ[n] &&  !IntegerQ[m]) || EqQ[a, 0])))
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\coth(c+dx)}{ad} - \frac{\int \frac{b\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$
$$= -\frac{\coth(c+dx)}{ad} - \frac{b\int \frac{\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$
$$= -\frac{\coth(c+dx)}{ad} - \frac{b\int \operatorname{csch}(c+dx)\,dx}{a^2} + \frac{b^2\int \frac{1}{a+b\sinh(c+dx)}\,dx}{a^2}$$
$$= \frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{\coth(c+dx)}{ad} - \frac{(2ib^2)\operatorname{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx, x, \tan\left(\frac{1}{2}(ic+\right.\right.}{a^2d}$$
$$= \frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{\coth(c+dx)}{ad} + \frac{(4ib^2)\operatorname{Subst}\left(\int \frac{1}{-4(a^2+b^2)-x^2}\,dx, x, -2ib+2\right.}{a^2d}$$
$$= \frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{2b^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^2\sqrt{a^2+b^2}\,d} - \frac{\coth(c+dx)}{ad}$$

Mathematica [A] time = 0.74, size = 100, normalized size = 1.25

$$-\frac{2b\left(\log\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right) - \frac{2b\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{\sqrt{-a^2-b^2}}\right) + a\tanh\left(\frac{1}{2}(c+dx)\right) + a\coth\left(\frac{1}{2}(c+dx)\right)}{2a^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csch[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(a*Coth[(c + d*x)/2] + 2*b*((-2*b*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqr
t[-a^2 - b^2]])/Sqrt[-a^2 - b^2] + Log[Tanh[(c + d*x)/2]]) + a*Tanh[(c + d*
x)/2])/(a^2*d)
```

fricas [B] time = 0.62, size = 479, normalized size = 5.99

$$-\frac{2a^3 + 2ab^2 - \left(b^2\cosh(dx+c)^2 + 2b^2\cosh(dx+c)\sinh(dx+c) + b^2\sinh(dx+c)^2 - b^2\right)\sqrt{a^2+b^2}\log\left(\frac{b^2\cos\ldots}{\ldots}\right.}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*a^3 + 2*a*b^2 - (b^2*cosh(d*x + c)^2 + 2*b^2*cosh(d*x + c)*sinh(d*x + c
) + b^2*sinh(d*x + c)^2 - b^2)*sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 + b
^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x +
c) + a*b)*sinh(d*x + c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x +
 c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b
*cosh(d*x + c) + a)*sinh(d*x + c) - b)) + (a^2*b + b^3 - (a^2*b + b^3)*cosh
(d*x + c)^2 - 2*(a^2*b + b^3)*cosh(d*x + c)*sinh(d*x + c) - (a^2*b + b^3)*s
inh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) + 1) - (a^2*b + b^3 - (a^
2*b + b^3)*cosh(d*x + c)^2 - 2*(a^2*b + b^3)*cosh(d*x + c)*sinh(d*x + c) -
(a^2*b + b^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1))/((a^
4 + a^2*b^2)*d*cosh(d*x + c)^2 + 2*(a^4 + a^2*b^2)*d*cosh(d*x + c)*sinh(d*x
 + c) + (a^4 + a^2*b^2)*d*sinh(d*x + c)^2 - (a^4 + a^2*b^2)*d)
```

giac [A] time = 0.41, size = 123, normalized size = 1.54

$$\frac{\frac{b^2 \log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\,\sqrt{a^2+b^2}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\,\sqrt{a^2+b^2}\right|}\right)}{\sqrt{a^2+b^2}\,a^2} + \frac{b\log\left(e^{(dx+c)}+1\right)}{a^2} - \frac{b\log\left(\left|e^{(dx+c)}-1\right|\right)}{a^2} - \frac{2}{a\left(e^{(2\,dx+2\,c)}-1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (b^2*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d*x + c)
 + 2*a + 2*sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a^2) + b*log(e^(d*x + c) + 1)
/a^2 - b*log(abs(e^(d*x + c) - 1))/a^2 - 2/(a*(e^(2*d*x + 2*c) - 1)))/d
```

maple [A] time = 0.00, size = 105, normalized size = 1.31

$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da} + \frac{2b^2 \operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{d\,a^2\sqrt{a^2+b^2}} - \frac{1}{2da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)} - \frac{b\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/2/d/a*tanh(1/2*d*x+1/2*c)+2/d/a^2*b^2/(a^2+b^2)^(1/2)*arctanh(1/2*(2*a*t
anh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))-1/2/d/a/tanh(1/2*d*x+1/2*c)-1/d/a^
2*b*ln(tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.52, size = 137, normalized size = 1.71

$$\frac{b^2 \log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,a^2d} + \frac{b\log\left(e^{(-dx-c)}+1\right)}{a^2d} - \frac{b\log\left(e^{(-dx-c)}-1\right)}{a^2d} + \frac{2}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] b^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a
^2 + b^2)))/(sqrt(a^2 + b^2)*a^2*d) + b*log(e^(-d*x - c) + 1)/(a^2*d) - b*l
og(e^(-d*x - c) - 1)/(a^2*d) + 2/((a*e^(-2*d*x - 2*c) - a)*d)
```

mupad [B] time = 0.39, size = 360, normalized size = 4.50

$$\frac{2}{a\,d-a\,d\,\mathrm{e}^{2\,c+2\,d\,x}}+\frac{b^2\,\ln\Big(128\,a^4\,\mathrm{e}^{d\,x}\,\mathrm{e}^c-64\,a\,b^3-64\,a^3\,b-32\,b^3\,\sqrt{a^2+b^2}\,+32\,b^4\,\mathrm{e}^{d\,x}\,\mathrm{e}^c-64\,a^2\,b\,\sqrt{a^2+b^2}\,+16}{d\,a^4+d\,a^2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] 2/(a*d - a*d*exp(2*c + 2*d*x)) + (b^2*log(128*a^4*exp(d*x)*exp(c) - 64*a*b^
3 - 64*a^3*b - 32*b^3*(a^2 + b^2)^(1/2) + 32*b^4*exp(d*x)*exp(c) - 64*a^2*b
*(a^2 + b^2)^(1/2) + 160*a^2*b^2*exp(d*x)*exp(c) + 128*a^3*exp(d*x)*exp(c)*
(a^2 + b^2)^(1/2) + 96*a*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2))*(a^2 + b^2)
^(1/2))/(a^4*d + a^2*b^2*d) - (b^2*log(32*b^3*(a^2 + b^2)^(1/2) - 64*a*b^3
- 64*a^3*b + 128*a^4*exp(d*x)*exp(c) + 32*b^4*exp(d*x)*exp(c) + 64*a^2*b*(a
^2 + b^2)^(1/2) + 160*a^2*b^2*exp(d*x)*exp(c) - 128*a^3*exp(d*x)*exp(c)*(a^
2 + b^2)^(1/2) - 96*a*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2))*(a^2 + b^2)^(1
/2))/(a^4*d + a^2*b^2*d) - (b*log(32*exp(d*x)*exp(c) - 32))/(a^2*d) + (b*lo
g(32*exp(d*x)*exp(c) + 32))/(a^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(csch(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.247 $\int \frac{\text{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))} \, dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\text{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[Csch[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][Csch[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\text{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))} \, dx = \int \frac{\text{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))} \, dx$$

Mathematica [A] time = 114.24, size = 0, normalized size = 0.00

$$\int \frac{\text{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csch[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Integrate[Csch[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{csch}(dx+c)^2}{afx+ae+(bfx+be)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(csch(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 1.42, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx+c)^2}{\left(fx+e\right)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$4\,b^2\int -\frac{e^{(dx+c)}}{2\left(a^2bfx+a^2be-\left(a^2bfxe^{(2\,c)}+a^2bee^{(2\,c)}\right)e^{(2\,dx)}-2\left(a^3fxe^{c}+a^3ee^{c}\right)e^{(dx)}\right)}\,dx+\frac{2}{adfx+ade-\left(adfxe^{(2\,c)}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 4*b^2*integrate(-1/2*e^(d*x + c)/(a^2*b*f*x + a^2*b*e - (a^2*b*f*x*e^(2*c)
+ a^2*b*e*e^(2*c))*e^(2*d*x) - 2*(a^3*f*x*e^c + a^3*e*e^c)*e^(d*x)), x) + 2
/(a*d*f*x + a*d*e - (a*d*f*x*e^(2*c) + a*d*e*e^(2*c))*e^(2*d*x)) - 4*integr
ate(-1/4*(b*d*f*x + b*d*e + a*f)/(a^2*d*f^2*x^2 + 2*a^2*d*e*f*x + a^2*d*e^2
 - (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f*x*e^c + a^2*d*e^2*e^c)*e^(d*x)), x) - 4
*integrate(1/4*(b*d*f*x + b*d*e - a*f)/(a^2*d*f^2*x^2 + 2*a^2*d*e*f*x + a^2
*d*e^2 + (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f*x*e^c + a^2*d*e^2*e^c)*e^(d*x)),
x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\sinh\left(c+d\,x\right)}^2\,\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int(1/(sinh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}^2(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(csch(c + d*x)**2/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.248 $\int \frac{(e+fx)^3 \text{csch}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1053

$$-\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{a^3\sqrt{a^2+b^2}\,d}+\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{a^3\sqrt{a^2+b^2}\,d}-\frac{3f(e+fx)^2\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b^3}{a^3\sqrt{a^2+b^2}\,d^2}+\frac{3f(e+fx)^2\text{I}}{a^3\sqrt{}}$$

```
[Out] 6*b^3*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/d^4/(a^2+b^2)^(1
/2)-3*b*f*(f*x+e)^2*ln(1-exp(2*d*x+2*c))/a^2/d^2-b^3*(f*x+e)^3*ln(1+b*exp(d
*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d/(a^2+b^2)^(1/2)+b^3*(f*x+e)^3*ln(1+b*exp(d
*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/d/(a^2+b^2)^(1/2)-6*b^3*f^3*polylog(4,-b*exp
(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d^4/(a^2+b^2)^(1/2)-3*b^3*f*(f*x+e)^2*poly
log(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d^2/(a^2+b^2)^(1/2)+3*b^3*f*(f
*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/d^2/(a^2+b^2)^(1/2
)+6*b^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d^3/(a
^2+b^2)^(1/2)-6*b^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2))
)/a^3/d^3/(a^2+b^2)^(1/2)-2*b^2*(f*x+e)^3*arctanh(exp(d*x+c))/a^3/d+3/2*b*f
^3*polylog(3,exp(2*d*x+2*c))/a^2/d^4-6*b^2*f^3*polylog(4,-exp(d*x+c))/a^3/d
^4+6*b^2*f^3*polylog(4,exp(d*x+c))/a^3/d^4-3*b^2*f*(f*x+e)^2*polylog(2,-exp
(d*x+c))/a^3/d^2+3*b^2*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a^3/d^2-3*b*f^2*(f
*x+e)*polylog(2,exp(2*d*x+2*c))/a^2/d^3+6*b^2*f^2*(f*x+e)*polylog(3,-exp(d*
x+c))/a^3/d^3-6*b^2*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a^3/d^3-6*f^2*(f*x+e)
*arctanh(exp(d*x+c))/a/d^3-3/2*f*(f*x+e)^2*csch(d*x+c)/a/d^2-1/2*(f*x+e)^3*
coth(d*x+c)*csch(d*x+c)/a/d+3/2*f*(f*x+e)^2*polylog(2,-exp(d*x+c))/a/d^2-3/
2*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a/d^2-3*f^2*(f*x+e)*polylog(3,-exp(d*x+
c))/a/d^3+3*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a/d^3-3*f^3*polylog(2,-exp(d*
x+c))/a/d^4+3*f^3*polylog(2,exp(d*x+c))/a/d^4+(f*x+e)^3*arctanh(exp(d*x+c))
/a/d+3*f^3*polylog(4,-exp(d*x+c))/a/d^4-3*f^3*polylog(4,exp(d*x+c))/a/d^4+b
*(f*x+e)^3/a^2/d+b*(f*x+e)^3*coth(d*x+c)/a^2/d
```

Rubi [A] time = 1.75, antiderivative size = 1053, normalized size of antiderivative = 1.00, number of steps used = 45, number of rules used = 14, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5575, 4186, 4182, 2279, 2391, 2531, 6609, 2282, 6589, 4184, 3716, 2190, 3322, 2264}

$$-\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{a^3\sqrt{a^2+b^2}\,d}+\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{a^3\sqrt{a^2+b^2}\,d}-\frac{3f(e+fx)^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b^3}{a^3\sqrt{a^2+b^2}\,d^2}+\frac{3f(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csch[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(e + f*x)^3)/(a^2*d) - (6*f^2*(e + f*x)*ArcTanh[E^(c + d*x)])/(a*d^3) +
((e + f*x)^3*ArcTanh[E^(c + d*x)])/(a*d) - (2*b^2*(e + f*x)^3*ArcTanh[E^(c
+ d*x)])/(a^3*d) + (b*(e + f*x)^3*Coth[c + d*x])/(a^2*d) - (3*f*(e + f*x)^2
*Csch[c + d*x])/(2*a*d^2) - ((e + f*x)^3*Coth[c + d*x]*Csch[c + d*x])/(2*a*
d) - (b^3*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*
Sqrt[a^2 + b^2]*d) + (b^3*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2
 + b^2])])/(a^3*Sqrt[a^2 + b^2]*d) - (3*b*f*(e + f*x)^2*Log[1 - E^(2*(c + d
*x))])/(a^2*d^2) - (3*f^3*PolyLog[2, -E^(c + d*x)])/(a*d^4) + (3*f*(e + f*x
)^2*PolyLog[2, -E^(c + d*x)])/(2*a*d^2) - (3*b^2*f*(e + f*x)^2*PolyLog[2, -
E^(c + d*x)])/(a^3*d^2) + (3*f^3*PolyLog[2, E^(c + d*x)])/(a*d^4) - (3*f*(e
 + f*x)^2*PolyLog[2, E^(c + d*x)])/(2*a*d^2) + (3*b^2*f*(e + f*x)^2*PolyLog
[2, E^(c + d*x)])/(a^3*d^2) - (3*b^3*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d
*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*Sqrt[a^2 + b^2]*d^2) + (3*b^3*f*(e + f*x
)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*Sqrt[a^2 + b
^2]*d^2) - (3*b*f^2*(e + f*x)*PolyLog[2, E^(2*(c + d*x))])/(a^2*d^3) - (3*f
^2*(e + f*x)*PolyLog[3, -E^(c + d*x)])/(a*d^3) + (6*b^2*f^2*(e + f*x)*PolyL
og[3, -E^(c + d*x)])/(a^3*d^3) + (3*f^2*(e + f*x)*PolyLog[3, E^(c + d*x)])/
(a*d^3) - (6*b^2*f^2*(e + f*x)*PolyLog[3, E^(c + d*x)])/(a^3*d^3) + (6*b^3*
f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*Sq
rt[a^2 + b^2]*d^3) - (6*b^3*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2]))])/(a^3*Sqrt[a^2 + b^2]*d^3) + (3*b*f^3*PolyLog[3, E^(2*(
c + d*x))])/(2*a^2*d^4) + (3*f^3*PolyLog[4, -E^(c + d*x)])/(a*d^4) - (6*b^2
*f^3*PolyLog[4, -E^(c + d*x)])/(a^3*d^4) - (3*f^3*PolyLog[4, E^(c + d*x)])/
(a*d^4) + (6*b^2*f^3*PolyLog[4, E^(c + d*x)])/(a^3*d^4) - (6*b^3*f^3*PolyLo
g[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*Sqrt[a^2 + b^2]*d^4) +
 (6*b^3*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*Sqrt
[a^2 + b^2]*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
```

```
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{csch}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\text{csch}^3(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{3f(e+fx)^2\text{csch}(c+dx)}{2ad^2} - \frac{(e+fx)^3\coth(c+dx)\text{csch}(c+dx)}{2ad} - \frac{\int (e+fx)^3\text{cs}}{2}$$

$$= -\frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} + \frac{b(e+fx)^3\coth(c+dx}{a^2d}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx}{}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx}{}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx}{}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx}{}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx}{}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx}{}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx}{}$$

Mathematica [B] time = 41.53, size = 2800, normalized size = 2.66

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csch[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (12*a*b*d^3*e^2*E^(2*c)*f*x + 12*a*b*d^3*e*E^(2*c)*f^2*x^2 + 4*a*b*d^3*E^(2
*c)*f^3*x^3 - 2*a^2*d^3*e^3*ArcTanh[E^(c + d*x)] + 4*b^2*d^3*e^3*ArcTanh[E^
```

(c + d*x)] + 2*a^2*d^3*e^3*E^(2*c)*ArcTanh[E^(c + d*x)] - 4*b^2*d^3*e^3*E^(2*c)*ArcTanh[E^(c + d*x)] + 12*a^2*d*e*f^2*ArcTanh[E^(c + d*x)] - 12*a^2*d*e*E^(2*c)*f^2*ArcTanh[E^(c + d*x)] + 3*a^2*d^3*e^2*f*x*Log[1 - E^(c + d*x)] - 6*b^2*d^3*e^2*f*x*Log[1 - E^(c + d*x)] - 3*a^2*d^3*e^2*E^(2*c)*f*x*Log[1 - E^(c + d*x)] + 6*b^2*d^3*e^2*E^(2*c)*f*x*Log[1 - E^(c + d*x)] - 6*a^2*d*f^3*x*Log[1 - E^(c + d*x)] + 6*a^2*d*E^(2*c)*f^3*x*Log[1 - E^(c + d*x)] + 3*a^2*d^3*e*f^2*x^2*Log[1 - E^(c + d*x)] - 6*b^2*d^3*e*f^2*x^2*Log[1 - E^(c + d*x)] - 3*a^2*d^3*e*E^(2*c)*f^2*x^2*Log[1 - E^(c + d*x)] + 6*b^2*d^3*e*E^(2*c)*f^2*x^2*Log[1 - E^(c + d*x)] + a^2*d^3*f^3*x^3*Log[1 - E^(c + d*x)] - 2*b^2*d^3*f^3*x^3*Log[1 - E^(c + d*x)] - a^2*d^3*E^(2*c)*f^3*x^3*Log[1 - E^(c + d*x)] + 2*b^2*d^3*E^(2*c)*f^3*x^3*Log[1 - E^(c + d*x)] - 3*a^2*d^3*e^2*f*x*Log[1 + E^(c + d*x)] + 6*b^2*d^3*e^2*f*x*Log[1 + E^(c + d*x)] + 3*a^2*d^3*e^2*E^(2*c)*f*x*Log[1 + E^(c + d*x)] - 6*b^2*d^3*e^2*E^(2*c)*f*x*Log[1 + E^(c + d*x)] + 6*a^2*d*f^3*x*Log[1 + E^(c + d*x)] - 6*a^2*d*E^(2*c)*f^3*x*Log[1 + E^(c + d*x)] - 3*a^2*d^3*e*f^2*x^2*Log[1 + E^(c + d*x)] + 6*b^2*d^3*e*f^2*x^2*Log[1 + E^(c + d*x)] + 3*a^2*d^3*e*E^(2*c)*f^2*x^2*Log[1 + E^(c + d*x)] - 6*b^2*d^3*e*E^(2*c)*f^2*x^2*Log[1 + E^(c + d*x)] - a^2*d^3*f^3*x^3*Log[1 + E^(c + d*x)] + 2*b^2*d^3*f^3*x^3*Log[1 + E^(c + d*x)] + a^2*d^3*E^(2*c)*f^3*x^3*Log[1 + E^(c + d*x)] - 2*b^2*d^3*E^(2*c)*f^3*x^3*Log[1 + E^(c + d*x)] + 6*a*b*d^2*e^2*f*Log[1 - E^(2*(c + d*x))] - 6*a*b*d^2*e^2*E^(2*c)*f*Log[1 - E^(2*(c + d*x))] + 12*a*b*d^2*e*f^2*x*Log[1 - E^(2*(c + d*x))] - 12*a*b*d^2*e*E^(2*c)*f^2*x*Log[1 - E^(2*(c + d*x))] + 6*a*b*d^2*f^3*x^2*Log[1 - E^(2*(c + d*x))] - 6*a*b*d^2*E^(2*c)*f^3*x^2*Log[1 - E^(2*(c + d*x))] + 3*(-1 + E^(2*c))*f*(-2*b^2*d^2*(e + f*x)^2 + a^2*(-2*f^2 + d^2*(e + f*x)^2))*PolyLog[2, -E^(c + d*x)] - 3*(-1 + E^(2*c))*f*(-2*b^2*d^2*(e + f*x)^2 + a^2*(-2*f^2 + d^2*(e + f*x)^2))*PolyLog[2, E^(c + d*x)] + 6*a*b*d*e*f^2*PolyLog[2, E^(2*(c + d*x))] - 6*a*b*d*e*E^(2*c)*f^2*PolyLog[2, E^(2*(c + d*x))] + 6*a*b*d*f^3*x*PolyLog[2, E^(2*(c + d*x))] - 6*a*b*d*E^(2*c)*f^3*x*PolyLog[2, E^(2*(c + d*x))] + 6*a^2*d*e*f^2*PolyLog[3, -E^(c + d*x)] - 12*b^2*d*e*f^2*PolyLog[3, -E^(c + d*x)] - 6*a^2*d*e*E^(2*c)*f^2*PolyLog[3, -E^(c + d*x)] + 12*b^2*d*e*E^(2*c)*f^2*PolyLog[3, -E^(c + d*x)] + 6*a^2*d*f^3*x*PolyLog[3, -E^(c + d*x)] - 12*b^2*d*f^3*x*PolyLog[3, -E^(c + d*x)] - 6*a^2*d*E^(2*c)*f^3*x*PolyLog[3, -E^(c + d*x)] + 12*b^2*d*E^(2*c)*f^3*x*PolyLog[3, -E^(c + d*x)] - 6*a^2*d*e*f^2*PolyLog[3, E^(c + d*x)] + 12*b^2*d*e*f^2*PolyLog[3, E^(c + d*x)] + 6*a^2*d*e*E^(2*c)*f^2*PolyLog[3, E^(c + d*x)] - 12*b^2*d*e*E^(2*c)*f^2*PolyLog[3, E^(c + d*x)] - 6*a^2*d*f^3*x*PolyLog[3, E^(c + d*x)] + 12*b^2*d*f^3*x*PolyLog[3, E^(c + d*x)] + 6*a^2*d*E^(2*c)*f^3*x*PolyLog[3, E^(c + d*x)] - 12*b^2*d*E^(2*c)*f^3*x*PolyLog[3, E^(c + d*x)] - 3*a*b*f^3*PolyLog[3, E^(2*(c + d*x))] + 3*a*b*E^(2*c)*f^3*PolyLog[3, E^(2*(c + d*x))] - 6*a^2*f^3*PolyLog[4, -E^(c + d*x)] + 12*b^2*f^3*PolyLog[4, -E^(c + d*x)] + 6*a^2*E^(2*c)*f^3*PolyLog[4, -E^(c + d*x)] - 12*b^2*E^(2*c)*f^3*PolyLog[4, -E^(c + d*x)] + 6*a^2*f^3*PolyLog[4, E^(c + d*x)] - 12*b^2*f^3*PolyLog[4, E^(c + d*x)] - 6*a^2*E^(2*c)*f^3*PolyLog[4, E^(c + d*x)] + 12*b^2*E^(2*c)*f^3*PolyLog[4, E^(c + d*x)])/(2*a^3*d^4*(-1 + E^(2*c))) + (b^3*(2*d^3*e^3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 3*d^3*e^2*f*x*Log[

```
1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 3*d^3*e*f^2*x^2*Log[1 + (b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2])] - d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a -
 Sqrt[a^2 + b^2])] + 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2])] + 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d
^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 3*d^2*f*(e + f*
x)^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 3*d^2*f*(e + f*x)
^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 6*d*e*f^2*PolyLog
[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*d*f^3*x*PolyLog[3, (b*E^(c
+ d*x))/(-a + Sqrt[a^2 + b^2])] - 6*d*e*f^2*PolyLog[3, -((b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2]))] - 6*d*f^3*x*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2]))] - 6*f^3*PolyLog[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*
f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]]))/(a^3*Sqrt[a^2 +
b^2]*d^4) + (Csch[c]*Csch[c + d*x]^2*(2*b*d*e^3*Cosh[c] + 6*b*d*e^2*f*x*Cos
h[c] + 6*b*d*e*f^2*x^2*Cosh[c] + 2*b*d*f^3*x^3*Cosh[c] + 3*a*e^2*f*Cosh[d*x
] + 6*a*e*f^2*x*Cosh[d*x] + 3*a*f^3*x^2*Cosh[d*x] - 3*a*e^2*f*Cosh[2*c + d*
x] - 6*a*e*f^2*x*Cosh[2*c + d*x] - 3*a*f^3*x^2*Cosh[2*c + d*x] - 2*b*d*e^3*
Cosh[c + 2*d*x] - 6*b*d*e^2*f*x*Cosh[c + 2*d*x] - 6*b*d*e*f^2*x^2*Cosh[c +
2*d*x] - 2*b*d*f^3*x^3*Cosh[c + 2*d*x] + a*d*e^3*Sinh[d*x] + 3*a*d*e^2*f*x*
Sinh[d*x] + 3*a*d*e*f^2*x^2*Sinh[d*x] + a*d*f^3*x^3*Sinh[d*x] - a*d*e^3*Sin
h[2*c + d*x] - 3*a*d*e^2*f*x*Sinh[2*c + d*x] - 3*a*d*e*f^2*x^2*Sinh[2*c + d
*x] - a*d*f^3*x^3*Sinh[2*c + d*x]))/(4*a^2*d^2)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 2.68, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{csch}\left(dx+c\right)^{3}}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f*x+e)^3*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x)

[Out] int((f*x+e)^3*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^3*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")

[Out] -1/2*e^3*(2*b^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a^3*d) - 2*(a*e^(-d*x - c) + 2*b*e^(-2*d*x - 2*c) + a*e^(-3*d*x - 3*c) - 2*b)/((2*a^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) - (a^2 - 2*b^2)*log(e^(-d*x - c) + 1)/(a^3*d) + (a^2 - 2*b^2)*log(e^(-d*x - c) - 1)/(a^3*d)) - (2*b*d*f^3*x^3 + 6*b*d*e*f^2*x^2 + 6*b*d*e^2*f*x + (a*d*f^3*x^3*e^(3*c) + 3*a*e^2*f*e^(3*c) + 3*(d*e*f^2 + f^3)*a*x^2*e^(3*c) + 3*(d*e^2*f + 2*e*f^2)*a*x*e^(3*c))*e^(3*d*x) - 2*(b*d*f^3*x^3*e^(2*c) + 3*b*d*e*f^2*x^2*e^(2*c) + 3*b*d*e^2*f*x*e^(2*c))*e^(2*d*x) + (a*d*f^3*x^3*e^c - 3*a*e^2*f*e^c + 3*(d*e*f^2 - f^3)*a*x^2*e^c + 3*(d*e^2*f - 2*e*f^2)*a*x*e^c)*e^(d*x))/(a^2*d^2*e^(4*d*x + 4*c) - 2*a^2*d^2*e^(2*d*x + 2*c) + a^2*d^2) + 3*(b*d*e^2*f + a*e*f^2)*x/(a^2*d^2) + 3*(b*d*e^2*f - a*e*f^2)*x/(a^2*d^2) - 3*(b*d*e^2*f + a*e*f^2)*log(e^(d*x + c) + 1)/(a^2*d^3) - 3*(b*d*e^2*f - a*e*f^2)*log(e^(d*x + c) - 1)/(a^2*d^3) + 1/2*(d^3*x^3*log(e^(d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x + c)) + 6*polylog(4, -e^(d*x + c)))*(a^2*f^3 - 2*b^2*f^3)/(a^3*d^4) - 1/2*(d^3*x^3*log(-e^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*polylog(4, e^(d*x + c)))*(a^2*f^3 - 2*b^2*f^3)/(a^3*d^4) + 3/2*(a^2*d*e*f^2 - 2*b^2*d*e*f^2 - 2*a*b*f^3)*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))/(a^3*d^4) - 3/2*(a^2*d*e*f^2 - 2*b^2*d*e*f^2 + 2*a*b*f^3)*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))/(a^3*d^4) - 3/2*(2*b^2*d^2*e^2*f + 4*a*b*d*e*f^2 - (d^2*e^2*f - 2*f^3)*a^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^3*d^4) + 3/2*(2*b^2*d^2*e^2*f - 4*a*b*d*e*f^2 - (d^2*e^2*f - 2*f^3)*a^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^3*d^4) + 1/8*((a^2*f^3 - 2*b^2*f^3)*d^4*x^4 + 4*(a^2*d*e*f^2 - 2*b^2*d*e*f^2 + 2*a*b*f^3)*d^3*x^3 - 6*(2*b^2*d^2*e^2*f - 4*a*b*d*e*f^2 - (d^2*e^2*f - 2*f^3)*a^2)*d^2*x^2)/(a^3*d^4) - 1/8*((a^2*f^3 - 2*b^2*f^3)*d^4*x^4 + 4*(a^2*d*e*f^2 - 2*b^2*d*e*f^2 - 2*a*b*f^3)*d^3*x^3 - 6*(2*b^2*d^2*e^2*f + 4*a*b*d*e*f^2 - (d^2*e^2*f - 2*f^3)*a^2)*d^2*x^2)/(a^3*d^4) - integrate(2*(b^3*f^3*x^3*e^c + 3*b^3*e*f^2*x^2*e^c + 3*b^3*e^2*f*x*e^c)*e^(d*x)/(a^3*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x + c) - a^3*b), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{{\mathrm{sinh}\left(c+d\,x\right)}^3\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^3/(sinh(c + d*x)^3*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csch(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.249 $\int \frac{(e+fx)^2\mathbf{csch}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=725

$$\frac{2b^2f^2\text{Li}_3\left(-e^{c+dx}\right)}{a^3d^3}-\frac{2b^2f^2\text{Li}_3\left(e^{c+dx}\right)}{a^3d^3}-\frac{2b^2f(e+fx)\text{Li}_2\left(-e^{c+dx}\right)}{a^3d^2}+\frac{2b^2f(e+fx)\text{Li}_2\left(e^{c+dx}\right)}{a^3d^2}-\frac{2b^2(e+fx)^2\tanh^{-1}}{a^3d}$$

```
[Out] b*(f*x+e)^2/a^2/d+(f*x+e)^2*arctanh(exp(d*x+c))/a/d-2*b^2*(f*x+e)^2*arctanh
(exp(d*x+c))/a^3/d-f^2*arctanh(cosh(d*x+c))/a/d^3+b*(f*x+e)^2*coth(d*x+c)/a
^2/d-f*(f*x+e)*csch(d*x+c)/a/d^2-1/2*(f*x+e)^2*coth(d*x+c)*csch(d*x+c)/a/d-
2*b*f*(f*x+e)*ln(1-exp(2*d*x+2*c))/a^2/d^2+f*(f*x+e)*polylog(2,-exp(d*x+c))
/a/d^2-2*b^2*f*(f*x+e)*polylog(2,-exp(d*x+c))/a^3/d^2-f*(f*x+e)*polylog(2,e
xp(d*x+c))/a/d^2+2*b^2*f*(f*x+e)*polylog(2,exp(d*x+c))/a^3/d^2-b*f^2*polylo
g(2,exp(2*d*x+2*c))/a^2/d^3-f^2*polylog(3,-exp(d*x+c))/a/d^3+2*b^2*f^2*poly
log(3,-exp(d*x+c))/a^3/d^3+f^2*polylog(3,exp(d*x+c))/a/d^3-2*b^2*f^2*polylo
g(3,exp(d*x+c))/a^3/d^3-b^3*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2))
)/a^3/d/(a^2+b^2)^(1/2)+b^3*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2))
)/a^3/d/(a^2+b^2)^(1/2)-2*b^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2
)^(1/2)))/a^3/d^2/(a^2+b^2)^(1/2)+2*b^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(
a+(a^2+b^2)^(1/2)))/a^3/d^2/(a^2+b^2)^(1/2)+2*b^3*f^2*polylog(3,-b*exp(d*x+
c)/(a-(a^2+b^2)^(1/2)))/a^3/d^3/(a^2+b^2)^(1/2)-2*b^3*f^2*polylog(3,-b*exp(
d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/d^3/(a^2+b^2)^(1/2)
```

Rubi [A] time = 1.37, antiderivative size = 725, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 14, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5575, 4186, 3770, 4182, 2531, 2282, 6589, 4184, 3716, 2190, 2279, 2391, 3322, 2264}

$$-\frac{2b^3f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^3d^2\sqrt{a^2+b^2}}+\frac{2b^3f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^3d^2\sqrt{a^2+b^2}}-\frac{2b^2f(e+fx)\text{PolyLog}\left(2,-e^{c+d}\right.}{a^3d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(e + f*x)^2)/(a^2*d) + ((e + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d) - (2*b^2
*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a^3*d) - (f^2*ArcTanh[Cosh[c + d*x]])/(
a*d^3) + (b*(e + f*x)^2*Coth[c + d*x])/(a^2*d) - (f*(e + f*x)*Csch[c + d*x]
)/(a*d^2) - ((e + f*x)^2*Coth[c + d*x]*Csch[c + d*x])/(2*a*d) - (b^3*(e + f
*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*Sqrt[a^2 + b^2]*
d) + (b^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^3*
Sqrt[a^2 + b^2]*d) - (2*b*f*(e + f*x)*Log[1 - E^(2*(c + d*x))])/(a^2*d^2) +
```

```
(f*(e + f*x)*PolyLog[2, -E^(c + d*x)])/(a*d^2) - (2*b^2*f*(e + f*x)*PolyLo
g[2, -E^(c + d*x)])/(a^3*d^2) - (f*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a*d^
2) + (2*b^2*f*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a^3*d^2) - (2*b^3*f*(e +
f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*Sqrt[a^2 +
b^2]*d^2) + (2*b^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))])/(a^3*Sqrt[a^2 + b^2]*d^2) - (b*f^2*PolyLog[2, E^(2*(c + d*x))])/(
a^2*d^3) - (f^2*PolyLog[3, -E^(c + d*x)])/(a*d^3) + (2*b^2*f^2*PolyLog[3, -
E^(c + d*x)])/(a^3*d^3) + (f^2*PolyLog[3, E^(c + d*x)])/(a*d^3) - (2*b^2*f^
2*PolyLog[3, E^(c + d*x)])/(a^3*d^3) + (2*b^3*f^2*PolyLog[3, -((b*E^(c + d*
x))/(a - Sqrt[a^2 + b^2]))])/(a^3*Sqrt[a^2 + b^2]*d^3) - (2*b^3*f^2*PolyLog
[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*Sqrt[a^2 + b^2]*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{csch}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{csch}^3(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{f(e+fx)\text{csch}(c+dx)}{ad^2} - \frac{(e+fx)^2\coth(c+dx)\text{csch}(c+dx)}{2ad} - \frac{\int (e+fx)^2\text{csc}}{2a}$$

$$= \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{f^2\tanh^{-1}(\cosh(c+dx))}{ad^3} + \frac{b(e+fx)^2\coth(c+dx)}{a^2d}$$

$$= \frac{b(e+fx)^2}{a^2d} + \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} - \frac{f^2\tanh}{}$$

$$= \frac{b(e+fx)^2}{a^2d} + \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} - \frac{f^2\tanh}{}$$

$$= \frac{b(e+fx)^2}{a^2d} + \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} - \frac{f^2\tanh}{}$$

$$= \frac{b(e+fx)^2}{a^2d} + \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} - \frac{f^2\tanh}{}$$

$$= \frac{b(e+fx)^2}{a^2d} + \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} - \frac{f^2\tanh}{}$$

$$= \frac{b(e+fx)^2}{a^2d} + \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} - \frac{f^2\tanh}{}$$

Mathematica [B] time = 24.57, size = 1531, normalized size = 2.11

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (8*a*b*d^2*e*E^(2*c)*f*x + 4*a*b*d^2*E^(2*c)*f^2*x^2 - 2*a^2*d^2*e^2*ArcTan
h[E^(c + d*x)] + 4*b^2*d^2*e^2*ArcTanh[E^(c + d*x)] + 2*a^2*d^2*e^2*E^(2*c)
*ArcTanh[E^(c + d*x)] - 4*b^2*d^2*e^2*E^(2*c)*ArcTanh[E^(c + d*x)] + 4*a^2*
f^2*ArcTanh[E^(c + d*x)] - 4*a^2*E^(2*c)*f^2*ArcTanh[E^(c + d*x)] + 2*a^2*d
^2*e*f*x*Log[1 - E^(c + d*x)] - 4*b^2*d^2*e*f*x*Log[1 - E^(c + d*x)] - 2*a^
```

```
2*d^2*e*E^(2*c)*f*x*Log[1 - E^(c + d*x)] + 4*b^2*d^2*e*E^(2*c)*f*x*Log[1 -
E^(c + d*x)] + a^2*d^2*f^2*x^2*Log[1 - E^(c + d*x)] - 2*b^2*d^2*f^2*x^2*Log
[1 - E^(c + d*x)] - a^2*d^2*E^(2*c)*f^2*x^2*Log[1 - E^(c + d*x)] + 2*b^2*d^
2*E^(2*c)*f^2*x^2*Log[1 - E^(c + d*x)] - 2*a^2*d^2*e*f*x*Log[1 + E^(c + d*x
)] + 4*b^2*d^2*e*f*x*Log[1 + E^(c + d*x)] + 2*a^2*d^2*e*E^(2*c)*f*x*Log[1 +
 E^(c + d*x)] - 4*b^2*d^2*e*E^(2*c)*f*x*Log[1 + E^(c + d*x)] - a^2*d^2*f^2*
x^2*Log[1 + E^(c + d*x)] + 2*b^2*d^2*f^2*x^2*Log[1 + E^(c + d*x)] + a^2*d^2
*E^(2*c)*f^2*x^2*Log[1 + E^(c + d*x)] - 2*b^2*d^2*E^(2*c)*f^2*x^2*Log[1 + E
^(c + d*x)] + 4*a*b*d*e*f*Log[1 - E^(2*(c + d*x))] - 4*a*b*d*e*E^(2*c)*f*Lo
g[1 - E^(2*(c + d*x))] + 4*a*b*d*f^2*x*Log[1 - E^(2*(c + d*x))] - 4*a*b*d*E
^(2*c)*f^2*x*Log[1 - E^(2*(c + d*x))] + 2*(a^2 - 2*b^2)*d*(-1 + E^(2*c))*f*
(e + f*x)*PolyLog[2, -E^(c + d*x)] - 2*(a^2 - 2*b^2)*d*(-1 + E^(2*c))*f*(e
+ f*x)*PolyLog[2, E^(c + d*x)] + 2*a*b*f^2*PolyLog[2, E^(2*(c + d*x))] - 2*
a*b*E^(2*c)*f^2*PolyLog[2, E^(2*(c + d*x))] + 2*a^2*f^2*PolyLog[3, -E^(c +
d*x)] - 4*b^2*f^2*PolyLog[3, -E^(c + d*x)] - 2*a^2*E^(2*c)*f^2*PolyLog[3, -
E^(c + d*x)] + 4*b^2*E^(2*c)*f^2*PolyLog[3, -E^(c + d*x)] - 2*a^2*f^2*PolyL
og[3, E^(c + d*x)] + 4*b^2*f^2*PolyLog[3, E^(c + d*x)] + 2*a^2*E^(2*c)*f^2*
PolyLog[3, E^(c + d*x)] - 4*b^2*E^(2*c)*f^2*PolyLog[3, E^(c + d*x)])/(2*a^3
*d^3*(-1 + E^(2*c))) + (b^3*(2*d^2*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2
 + b^2]] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d^2
*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*d^2*e*f*x*Log[1
 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2])] - 2*d*f*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-
a + Sqrt[a^2 + b^2])] + 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + S
qrt[a^2 + b^2]))] + 2*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])
] - 2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(a^3*Sqrt[
a^2 + b^2]*d^3) + (Csch[c]*Csch[c + d*x]^2*(2*b*d*e^2*Cosh[c] + 4*b*d*e*f*x
*Cosh[c] + 2*b*d*f^2*x^2*Cosh[c] + 2*a*e*f*Cosh[d*x] + 2*a*f^2*x*Cosh[d*x]
- 2*a*e*f*Cosh[2*c + d*x] - 2*a*f^2*x*Cosh[2*c + d*x] - 2*b*d*e^2*Cosh[c +
2*d*x] - 4*b*d*e*f*x*Cosh[c + 2*d*x] - 2*b*d*f^2*x^2*Cosh[c + 2*d*x] + a*d*
e^2*Sinh[d*x] + 2*a*d*e*f*x*Sinh[d*x] + a*d*f^2*x^2*Sinh[d*x] - a*d*e^2*Sin
h[2*c + d*x] - 2*a*d*e*f*x*Sinh[2*c + d*x] - a*d*f^2*x^2*Sinh[2*c + d*x]))/
(4*a^2*d^2)
```

fricas [C] time = 0.91, size = 10341, normalized size = 14.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(4*(a^3*b + a*b^3)*d^2*e^2 - 8*(a^3*b + a*b^3)*c*d*e*f + 4*(a^3*b + a*
b^3)*c^2*f^2 - 4*((a^3*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x
 + 2*(a^3*b + a*b^3)*c*d*e*f - (a^3*b + a*b^3)*c^2*f^2)*cosh(d*x + c)^4 - 4
*((a^3*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + 2*(a^3*b + a*
```

```
b^3)*c*d*e*f - (a^3*b + a*b^3)*c^2*f^2)*sinh(d*x + c)^4 + 2*((a^4 + a^2*b^2
)*d^2*f^2*x^2 + (a^4 + a^2*b^2)*d^2*e^2 + 2*(a^4 + a^2*b^2)*d*e*f + 2*((a^4
 + a^2*b^2)*d^2*e*f + (a^4 + a^2*b^2)*d*f^2)*x)*cosh(d*x + c)^3 + 2*((a^4 +
 a^2*b^2)*d^2*f^2*x^2 + (a^4 + a^2*b^2)*d^2*e^2 + 2*(a^4 + a^2*b^2)*d*e*f +
 2*((a^4 + a^2*b^2)*d^2*e*f + (a^4 + a^2*b^2)*d*f^2)*x - 8*((a^3*b + a*b^3)
*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + 2*(a^3*b + a*b^3)*c*d*e*f - (a
^3*b + a*b^3)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*((a^3*b + a*b^3)*
d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x - (a^3*b + a*b^3)*d^2*e^2 + 4*(a^
3*b + a*b^3)*c*d*e*f - 2*(a^3*b + a*b^3)*c^2*f^2)*cosh(d*x + c)^2 + 2*(2*(a
^3*b + a*b^3)*d^2*f^2*x^2 + 4*(a^3*b + a*b^3)*d^2*e*f*x - 2*(a^3*b + a*b^3)
*d^2*e^2 + 8*(a^3*b + a*b^3)*c*d*e*f - 4*(a^3*b + a*b^3)*c^2*f^2 - 12*((a^3
*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + 2*(a^3*b + a*b^3)*c
*d*e*f - (a^3*b + a*b^3)*c^2*f^2)*cosh(d*x + c)^2 + 3*((a^4 + a^2*b^2)*d^2*
f^2*x^2 + (a^4 + a^2*b^2)*d^2*e^2 + 2*(a^4 + a^2*b^2)*d*e*f + 2*((a^4 + a^2
*b^2)*d^2*e*f + (a^4 + a^2*b^2)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^2 +
4*(b^4*d*f^2*x + b^4*d*e*f + (b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^4 + 4*
(b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d*f^2*x + b^
4*d*e*f)*sinh(d*x + c)^4 - 2*(b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^2 - 2*
(b^4*d*f^2*x + b^4*d*e*f - 3*(b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^2)*sin
h(d*x + c)^2 + 4*((b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^3 - (b^4*d*f^2*x
+ b^4*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*c
osh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((
a^2 + b^2)/b^2) - b)/b + 1) - 4*(b^4*d*f^2*x + b^4*d*e*f + (b^4*d*f^2*x + b
^4*d*e*f)*cosh(d*x + c)^4 + 4*(b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)*sinh(
d*x + c)^3 + (b^4*d*f^2*x + b^4*d*e*f)*sinh(d*x + c)^4 - 2*(b^4*d*f^2*x + b
^4*d*e*f)*cosh(d*x + c)^2 - 2*(b^4*d*f^2*x + b^4*d*e*f - 3*(b^4*d*f^2*x + b
^4*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d*f^2*x + b^4*d*e*f)*c
osh(d*x + c)^3 - (b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*sq
rt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(b^4*d^2*e^2
- 2*b^4*c*d*e*f + b^4*c^2*f^2 + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)
*cosh(d*x + c)^4 + 4*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x +
 c)*sinh(d*x + c)^3 + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*sinh(d*x
+ c)^4 - 2*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)^2 - 2*
(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2 - 3*(b^4*d^2*e^2 - 2*b^4*c*d*e*f
 + b^4*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d^2*e^2 - 2*b^4*
c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)^3 - (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4
*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(
d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(b^4*d^
2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2 + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^
2*f^2)*cosh(d*x + c)^4 + 4*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh
(d*x + c)*sinh(d*x + c)^3 + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*sin
h(d*x + c)^4 - 2*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)^
2 - 2*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2 - 3*(b^4*d^2*e^2 - 2*b^4*c
*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d^2*e^2 -
```

```
2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)^3 - (b^4*d^2*e^2 - 2*b^4*c*d*e*f
 + b^4*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b
*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(
b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2 + (b^4*d^2*
f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^4 +
4*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*
x + c)*sinh(d*x + c)^3 + (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f
 - b^4*c^2*f^2)*sinh(d*x + c)^4 - 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*
b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2
*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2 - 3*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x
 + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*
d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^
3 - (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(
d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*si
nh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b
)/b) - 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2 +
 (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x
 + c)^4 + 4*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^
2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b
^4*c*d*e*f - b^4*c^2*f^2)*sinh(d*x + c)^4 - 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*
e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^4*d^2*f^2*x^2 +
 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2 - 3*(b^4*d^2*f^2*x^2 + 2*b^4
*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2
+ 4*((b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh
(d*x + c)^3 - (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*
f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x +
 c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2
)/b^2) - b)/b) - 4*(b^4*f^2*cosh(d*x + c)^4 + 4*b^4*f^2*cosh(d*x + c)*sinh(
d*x + c)^3 + b^4*f^2*sinh(d*x + c)^4 - 2*b^4*f^2*cosh(d*x + c)^2 + b^4*f^2
+ 2*(3*b^4*f^2*cosh(d*x + c)^2 - b^4*f^2)*sinh(d*x + c)^2 + 4*(b^4*f^2*cosh
(d*x + c)^3 - b^4*f^2*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*p
olylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*
x + c))*sqrt((a^2 + b^2)/b^2))/b) + 4*(b^4*f^2*cosh(d*x + c)^4 + 4*b^4*f^2*
cosh(d*x + c)*sinh(d*x + c)^3 + b^4*f^2*sinh(d*x + c)^4 - 2*b^4*f^2*cosh(d*
x + c)^2 + b^4*f^2 + 2*(3*b^4*f^2*cosh(d*x + c)^2 - b^4*f^2)*sinh(d*x + c)^
2 + 4*(b^4*f^2*cosh(d*x + c)^3 - b^4*f^2*cosh(d*x + c))*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d
*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 2*((a^4 + a^2*b^2)*d
^2*f^2*x^2 + (a^4 + a^2*b^2)*d^2*e^2 - 2*(a^4 + a^2*b^2)*d*e*f + 2*((a^4 +
a^2*b^2)*d^2*e*f - (a^4 + a^2*b^2)*d*f^2)*x)*cosh(d*x + c) + 2*((a^4 - a^2*
b^2 - 2*b^4)*d*f^2*x + ((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 -
2*b^4)*d*e*f + 2*(a^3*b + a*b^3)*f^2)*cosh(d*x + c)^4 + 4*((a^4 - a^2*b^2 -
 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 - 2*b^4)*d*e*f + 2*(a^3*b + a*b^3)*f^2)*co
sh(d*x + c)*sinh(d*x + c)^3 + ((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2
*b^2 - 2*b^4)*d*e*f + 2*(a^3*b + a*b^3)*f^2)*sinh(d*x + c)^4 + (a^4 - a^2*b
```

^2 - 2*b^4)*d*e*f + 2*(a^3*b + a*b^3)*f^2 - 2*((a^4 - a^2*b^2 - 2*b^4)*d*f^
2*x + (a^4 - a^2*b^2 - 2*b^4)*d*e*f + 2*(a^3*b + a*b^3)*f^2)*cosh(d*x + c)^
2 - 2*((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 - 2*b^4)*d*e*f + 2*
(a^3*b + a*b^3)*f^2 - 3*((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 -
 2*b^4)*d*e*f + 2*(a^3*b + a*b^3)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4
*(((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 - 2*b^4)*d*e*f + 2*(a^3
*b + a*b^3)*f^2)*cosh(d*x + c)^3 - ((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4
- a^2*b^2 - 2*b^4)*d*e*f + 2*(a^3*b + a*b^3)*f^2)*cosh(d*x + c))*sinh(d*x +
 c))*dilog(cosh(d*x + c) + sinh(d*x + c)) - 2*((a^4 - a^2*b^2 - 2*b^4)*d*f^
2*x + ((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 - 2*b^4)*d*e*f - 2*
(a^3*b + a*b^3)*f^2)*cosh(d*x + c)^4 + 4*((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x +
 (a^4 - a^2*b^2 - 2*b^4)*d*e*f - 2*(a^3*b + a*b^3)*f^2)*cosh(d*x + c)*sinh(
d*x + c)^3 + ((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 - 2*b^4)*d*e
f - 2(a^3*b + a*b^3)*f^2)*sinh(d*x + c)^4 + (a^4 - a^2*b^2 - 2*b^4)*d*e*f
 - 2*(a^3*b + a*b^3)*f^2 - 2*((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2*
b^2 - 2*b^4)*d*e*f - 2*(a^3*b + a*b^3)*f^2)*cosh(d*x + c)^2 - 2*((a^4 - a^2
*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 - 2*b^4)*d*e*f - 2*(a^3*b + a*b^3)*f
^2 - 3*((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 - 2*b^4)*d*e*f - 2
*(a^3*b + a*b^3)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^4 - a^2*b^2
 - 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 - 2*b^4)*d*e*f - 2*(a^3*b + a*b^3)*f^2)*
cosh(d*x + c)^3 - ((a^4 - a^2*b^2 - 2*b^4)*d*f^2*x + (a^4 - a^2*b^2 - 2*b^4
)*d*e*f - 2*(a^3*b + a*b^3)*f^2)*cosh(d*x + c))*sinh(d*x + c))*dilog(-cosh(
d*x + c) - sinh(d*x + c)) - ((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + (a^4 - a
^2*b^2 - 2*b^4)*d^2*e^2 + ((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + (a^4 - a^2
*b^2 - 2*b^4)*d^2*e^2 - 4*(a^3*b + a*b^3)*d*e*f - 2*(a^4 + a^2*b^2)*f^2 + 2
*((a^4 - a^2*b^2 - 2*b^4)*d^2*e*f - 2*(a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x +
c)^4 + 4*((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + (a^4 - a^2*b^2 - 2*b^4)*d^2
e^2 - 4(a^3*b + a*b^3)*d*e*f - 2*(a^4 + a^2*b^2)*f^2 + 2*((a^4 - a^2*b^2
- 2*b^4)*d^2*e*f - 2*(a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c)^
3 + ((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + (a^4 - a^2*b^2 - 2*b^4)*d^2*e^2
- 4*(a^3*b + a*b^3)*d*e*f - 2*(a^4 + a^2*b^2)*f^2 + 2*((a^4 - a^2*b^2 - 2*b
^4)*d^2*e*f - 2*(a^3*b + a*b^3)*d*f^2)*x)*sinh(d*x + c)^4 - 4*(a^3*b + a*b^
3)*d*e*f - 2*(a^4 + a^2*b^2)*f^2 - 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 +
 (a^4 - a^2*b^2 - 2*b^4)*d^2*e^2 - 4*(a^3*b + a*b^3)*d*e*f - 2*(a^4 + a^2*b
^2)*f^2 + 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*e*f - 2*(a^3*b + a*b^3)*d*f^2)*x)*
cosh(d*x + c)^2 - 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + (a^4 - a^2*b^2 -
 2*b^4)*d^2*e^2 - 4*(a^3*b + a*b^3)*d*e*f - 2*(a^4 + a^2*b^2)*f^2 - 3*((a^4
 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + (a^4 - a^2*b^2 - 2*b^4)*d^2*e^2 - 4*(a^3*
b + a*b^3)*d*e*f - 2*(a^4 + a^2*b^2)*f^2 + 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*e
f - 2(a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^2 + 2*((a^4 - a^2*b^2 - 2*b^
4)*d^2*e*f - 2*(a^3*b + a*b^3)*d*f^2)*x)*sinh(d*x + c)^2 + 2*((a^4 - a^2*b^
2 - 2*b^4)*d^2*e*f - 2*(a^3*b + a*b^3)*d*f^2)*x + 4*(((a^4 - a^2*b^2 - 2*b^
4)*d^2*f^2*x^2 + (a^4 - a^2*b^2 - 2*b^4)*d^2*e^2 - 4*(a^3*b + a*b^3)*d*e*f
- 2*(a^4 + a^2*b^2)*f^2 + 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*e*f - 2*(a^3*b + a
*b^3)*d*f^2)*x)*cosh(d*x + c)^3 - ((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + (a

^4 - a^2*b^2 - 2*b^4)*d^2*e^2 - 4*(a^3*b + a*b^3)*d*e*f - 2*(a^4 + a^2*b^2)
f^2 + 2((a^4 - a^2*b^2 - 2*b^4)*d^2*e*f - 2*(a^3*b + a*b^3)*d*f^2)*x)*cos
h(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) + ((a^4 -
 a^2*b^2 - 2*b^4)*d^2*e^2 + ((a^4 - a^2*b^2 - 2*b^4)*d^2*e^2 + 2*(2*a^3*b +
 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4)*c)*d*e*f - (2*a^4 + 2*a^2*b^2 - (a^4 - a
^2*b^2 - 2*b^4)*c^2 + 4*(a^3*b + a*b^3)*c)*f^2)*cosh(d*x + c)^4 + 4*((a^4 -
 a^2*b^2 - 2*b^4)*d^2*e^2 + 2*(2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4)*
c)*d*e*f - (2*a^4 + 2*a^2*b^2 - (a^4 - a^2*b^2 - 2*b^4)*c^2 + 4*(a^3*b + a*
b^3)*c)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 - a^2*b^2 - 2*b^4)*d^2*e
^2 + 2*(2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4)*c)*d*e*f - (2*a^4 + 2*a
^2*b^2 - (a^4 - a^2*b^2 - 2*b^4)*c^2 + 4*(a^3*b + a*b^3)*c)*f^2)*sinh(d*x +
 c)^4 + 2*(2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4)*c)*d*e*f - (2*a^4 +
2*a^2*b^2 - (a^4 - a^2*b^2 - 2*b^4)*c^2 + 4*(a^3*b + a*b^3)*c)*f^2 - 2*((a^
4 - a^2*b^2 - 2*b^4)*d^2*e^2 + 2*(2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^
4)*c)*d*e*f - (2*a^4 + 2*a^2*b^2 - (a^4 - a^2*b^2 - 2*b^4)*c^2 + 4*(a^3*b +
 a*b^3)*c)*f^2)*cosh(d*x + c)^2 - 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*e^2 + 2*(2
*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4)*c)*d*e*f - (2*a^4 + 2*a^2*b^2 -
(a^4 - a^2*b^2 - 2*b^4)*c^2 + 4*(a^3*b + a*b^3)*c)*f^2 - 3*((a^4 - a^2*b^2
- 2*b^4)*d^2*e^2 + 2*(2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4)*c)*d*e*f
- (2*a^4 + 2*a^2*b^2 - (a^4 - a^2*b^2 - 2*b^4)*c^2 + 4*(a^3*b + a*b^3)*c)*f
^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^4 - a^2*b^2 - 2*b^4)*d^2*e^2
+ 2*(2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4)*c)*d*e*f - (2*a^4 + 2*a^2*
b^2 - (a^4 - a^2*b^2 - 2*b^4)*c^2 + 4*(a^3*b + a*b^3)*c)*f^2)*cosh(d*x + c)
^3 - ((a^4 - a^2*b^2 - 2*b^4)*d^2*e^2 + 2*(2*a^3*b + 2*a*b^3 - (a^4 - a^2*b
^2 - 2*b^4)*c)*d*e*f - (2*a^4 + 2*a^2*b^2 - (a^4 - a^2*b^2 - 2*b^4)*c^2 + 4
*(a^3*b + a*b^3)*c)*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) +
sinh(d*x + c) - 1) + ((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + 2*(a^4 - a^2*b^
2 - 2*b^4)*c*d*e*f + ((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + 2*(a^4 - a^2*b^
2 - 2*b^4)*c*d*e*f - ((a^4 - a^2*b^2 - 2*b^4)*c^2 - 4*(a^3*b + a*b^3)*c)*f^
2 + 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*e*f + 2*(a^3*b + a*b^3)*d*f^2)*x)*cosh(d
x + c)^4 + 4((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + 2*(a^4 - a^2*b^2 - 2*b
^4)*c*d*e*f - ((a^4 - a^2*b^2 - 2*b^4)*c^2 - 4*(a^3*b + a*b^3)*c)*f^2 + 2*(
(a^4 - a^2*b^2 - 2*b^4)*d^2*e*f + 2*(a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)
*sinh(d*x + c)^3 + ((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + 2*(a^4 - a^2*b^2
- 2*b^4)*c*d*e*f - ((a^4 - a^2*b^2 - 2*b^4)*c^2 - 4*(a^3*b + a*b^3)*c)*f^2
+ 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*e*f + 2*(a^3*b + a*b^3)*d*f^2)*x)*sinh(d*x
 + c)^4 - ((a^4 - a^2*b^2 - 2*b^4)*c^2 - 4*(a^3*b + a*b^3)*c)*f^2 - 2*((a^4
 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + 2*(a^4 - a^2*b^2 - 2*b^4)*c*d*e*f - ((a^4
 - a^2*b^2 - 2*b^4)*c^2 - 4*(a^3*b + a*b^3)*c)*f^2 + 2*((a^4 - a^2*b^2 - 2*
b^4)*d^2*e*f + 2*(a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^2 - 2*((a^4 - a^2*
b^2 - 2*b^4)*d^2*f^2*x^2 + 2*(a^4 - a^2*b^2 - 2*b^4)*c*d*e*f - ((a^4 - a^2*
b^2 - 2*b^4)*c^2 - 4*(a^3*b + a*b^3)*c)*f^2 - 3*((a^4 - a^2*b^2 - 2*b^4)*d^
2*f^2*x^2 + 2*(a^4 - a^2*b^2 - 2*b^4)*c*d*e*f - ((a^4 - a^2*b^2 - 2*b^4)*c^
2 - 4*(a^3*b + a*b^3)*c)*f^2 + 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*e*f + 2*(a^3*
b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^2 + 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*e*f +

```
 2*(a^3*b + a*b^3)*d*f^2)*x)*sinh(d*x + c)^2 + 2*((a^4 - a^2*b^2 - 2*b^4)*d
^2*e*f + 2*(a^3*b + a*b^3)*d*f^2)*x + 4*(((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x
^2 + 2*(a^4 - a^2*b^2 - 2*b^4)*c*d*e*f - ((a^4 - a^2*b^2 - 2*b^4)*c^2 - 4*(
a^3*b + a*b^3)*c)*f^2 + 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*e*f + 2*(a^3*b + a*b
^3)*d*f^2)*x)*cosh(d*x + c)^3 - ((a^4 - a^2*b^2 - 2*b^4)*d^2*f^2*x^2 + 2*(a
^4 - a^2*b^2 - 2*b^4)*c*d*e*f - ((a^4 - a^2*b^2 - 2*b^4)*c^2 - 4*(a^3*b + a
*b^3)*c)*f^2 + 2*((a^4 - a^2*b^2 - 2*b^4)*d^2*e*f + 2*(a^3*b + a*b^3)*d*f^2
)*x)*cosh(d*x + c))*sinh(d*x + c))*log(-cosh(d*x + c) - sinh(d*x + c) + 1)
- 2*((a^4 - a^2*b^2 - 2*b^4)*f^2*cosh(d*x + c)^4 + 4*(a^4 - a^2*b^2 - 2*b^4
)*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 - a^2*b^2 - 2*b^4)*f^2*sinh(d*x
+ c)^4 - 2*(a^4 - a^2*b^2 - 2*b^4)*f^2*cosh(d*x + c)^2 + (a^4 - a^2*b^2 - 2
*b^4)*f^2 + 2*(3*(a^4 - a^2*b^2 - 2*b^4)*f^2*cosh(d*x + c)^2 - (a^4 - a^2*b
^2 - 2*b^4)*f^2)*sinh(d*x + c)^2 + 4*((a^4 - a^2*b^2 - 2*b^4)*f^2*cosh(d*x
+ c)^3 - (a^4 - a^2*b^2 - 2*b^4)*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(
3, cosh(d*x + c) + sinh(d*x + c)) + 2*((a^4 - a^2*b^2 - 2*b^4)*f^2*cosh(d*x
 + c)^4 + 4*(a^4 - a^2*b^2 - 2*b^4)*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + (a^
4 - a^2*b^2 - 2*b^4)*f^2*sinh(d*x + c)^4 - 2*(a^4 - a^2*b^2 - 2*b^4)*f^2*co
sh(d*x + c)^2 + (a^4 - a^2*b^2 - 2*b^4)*f^2 + 2*(3*(a^4 - a^2*b^2 - 2*b^4)*
f^2*cosh(d*x + c)^2 - (a^4 - a^2*b^2 - 2*b^4)*f^2)*sinh(d*x + c)^2 + 4*((a^
4 - a^2*b^2 - 2*b^4)*f^2*cosh(d*x + c)^3 - (a^4 - a^2*b^2 - 2*b^4)*f^2*cosh
(d*x + c))*sinh(d*x + c))*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) + 2*((
a^4 + a^2*b^2)*d^2*f^2*x^2 + (a^4 + a^2*b^2)*d^2*e^2 - 2*(a^4 + a^2*b^2)*d*
e*f - 8*((a^3*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + 2*(a^3
*b + a*b^3)*c*d*e*f - (a^3*b + a*b^3)*c^2*f^2)*cosh(d*x + c)^3 + 3*((a^4 +
a^2*b^2)*d^2*f^2*x^2 + (a^4 + a^2*b^2)*d^2*e^2 + 2*(a^4 + a^2*b^2)*d*e*f +
2*((a^4 + a^2*b^2)*d^2*e*f + (a^4 + a^2*b^2)*d*f^2)*x)*cosh(d*x + c)^2 + 2*
((a^4 + a^2*b^2)*d^2*e*f - (a^4 + a^2*b^2)*d*f^2)*x + 4*((a^3*b + a*b^3)*d^
2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x - (a^3*b + a*b^3)*d^2*e^2 + 4*(a^3*
b + a*b^3)*c*d*e*f - 2*(a^3*b + a*b^3)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c
))/((a^5 + a^3*b^2)*d^3*cosh(d*x + c)^4 + 4*(a^5 + a^3*b^2)*d^3*cosh(d*x +
c)*sinh(d*x + c)^3 + (a^5 + a^3*b^2)*d^3*sinh(d*x + c)^4 - 2*(a^5 + a^3*b^2
)*d^3*cosh(d*x + c)^2 + (a^5 + a^3*b^2)*d^3 + 2*(3*(a^5 + a^3*b^2)*d^3*cosh
(d*x + c)^2 - (a^5 + a^3*b^2)*d^3)*sinh(d*x + c)^2 + 4*((a^5 + a^3*b^2)*d^3
*cosh(d*x + c)^3 - (a^5 + a^3*b^2)*d^3*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.52, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{csch}\left(dx+c\right)^{3}}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*e^2*(2*b^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c)
- a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a^3*d) - 2*(a*e^(-d*x - c) + 2*b*e
^(-2*d*x - 2*c) + a*e^(-3*d*x - 3*c) - 2*b)/((2*a^2*e^(-2*d*x - 2*c) - a^2*
e^(-4*d*x - 4*c) - a^2)*d) - (a^2 - 2*b^2)*log(e^(-d*x - c) + 1)/(a^3*d) +
(a^2 - 2*b^2)*log(e^(-d*x - c) - 1)/(a^3*d)) - (2*b*d*f^2*x^2 + 4*b*d*e*f*x
 + (a*d*f^2*x^2*e^(3*c) + 2*a*e*f*e^(3*c) + 2*(d*e*f + f^2)*a*x*e^(3*c))*e^
(3*d*x) - 2*(b*d*f^2*x^2*e^(2*c) + 2*b*d*e*f*x*e^(2*c))*e^(2*d*x) + (a*d*f^
2*x^2*e^c - 2*a*e*f*e^c + 2*(d*e*f - f^2)*a*x*e^c)*e^(d*x))/(a^2*d^2*e^(4*d
*x + 4*c) - 2*a^2*d^2*e^(2*d*x + 2*c) + a^2*d^2) + (2*b*d*e*f + a*f^2)*x/(a
^2*d^2) + (2*b*d*e*f - a*f^2)*x/(a^2*d^2) - (2*b*d*e*f + a*f^2)*log(e^(d*x
+ c) + 1)/(a^2*d^3) - (2*b*d*e*f - a*f^2)*log(e^(d*x + c) - 1)/(a^2*d^3) +
1/2*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3
, -e^(d*x + c)))*(a^2*f^2 - 2*b^2*f^2)/(a^3*d^3) - 1/2*(d^2*x^2*log(-e^(d*x
 + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*(a^2*f^2
 - 2*b^2*f^2)/(a^3*d^3) + (a^2*d*e*f - 2*b^2*d*e*f - 2*a*b*f^2)*(d*x*log(e^
(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^3*d^3) - (a^2*d*e*f - 2*b^2*d*e*f
+ 2*a*b*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^3*d^3) + 1
/6*((a^2*f^2 - 2*b^2*f^2)*d^3*x^3 + 3*(a^2*d*e*f - 2*b^2*d*e*f + 2*a*b*f^2)
*d^2*x^2)/(a^3*d^3) - 1/6*((a^2*f^2 - 2*b^2*f^2)*d^3*x^3 + 3*(a^2*d*e*f - 2
*b^2*d*e*f - 2*a*b*f^2)*d^2*x^2)/(a^3*d^3) - integrate(2*(b^3*f^2*x^2*e^c +
 2*b^3*e*f*x*e^c)*e^(d*x)/(a^3*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x + c) - a^3*
b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^{2}}{\sinh\left(c+d\,x\right)^{3}\,\left(a+b\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^2/(sinh(c + d*x)^3*(a + b*sinh(c + d*x))), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.250 $\int \frac{(e+fx)\textbf{csch}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=420

$$-\frac{b^2 f \text{Li}_2\left(-e^{c+dx}\right)}{a^3 d^2}+\frac{b^2 f \text{Li}_2\left(e^{c+dx}\right)}{a^3 d^2}-\frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3 d}-\frac{bf\log(\sinh(c+dx))}{a^2 d^2}+\frac{b(e+fx)\coth(c+dx)}{a^2 d}-\frac{b^3}{}$$

```
[Out] (f*x+e)*arctanh(exp(d*x+c))/a/d-2*b^2*(f*x+e)*arctanh(exp(d*x+c))/a^3/d+b*(
f*x+e)*coth(d*x+c)/a^2/d-1/2*f*csch(d*x+c)/a/d^2-1/2*(f*x+e)*coth(d*x+c)*cs
ch(d*x+c)/a/d-b*f*ln(sinh(d*x+c))/a^2/d^2+1/2*f*polylog(2,-exp(d*x+c))/a/d^
2-b^2*f*polylog(2,-exp(d*x+c))/a^3/d^2-1/2*f*polylog(2,exp(d*x+c))/a/d^2+b^
2*f*polylog(2,exp(d*x+c))/a^3/d^2-b^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2
)^(1/2)))/a^3/d/(a^2+b^2)^(1/2)+b^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^
(1/2)))/a^3/d/(a^2+b^2)^(1/2)-b^3*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1
/2)))/a^3/d^2/(a^2+b^2)^(1/2)+b^3*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1
/2)))/a^3/d^2/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.73, antiderivative size = 420, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {5575, 4185, 4182, 2279, 2391, 4184, 3475, 3322, 2264, 2190}

$$-\frac{b^3 f \text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^3 d^2\sqrt{a^2+b^2}}+\frac{b^3 f \text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^3 d^2\sqrt{a^2+b^2}}-\frac{b^2 f \text{PolyLog}\left(2,-e^{c+dx}\right)}{a^3 d^2}+\frac{b^2 f \text{PolyLog}\left(2,e^{c+dx}\right)}{a^3 d^2}+\frac{f}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((e + f*x)*ArcTanh[E^(c + d*x)])/(a*d) - (2*b^2*(e + f*x)*ArcTanh[E^(c + d*
x)])/(a^3*d) + (b*(e + f*x)*Coth[c + d*x])/(a^2*d) - (f*Csch[c + d*x])/(2*a
*d^2) - ((e + f*x)*Coth[c + d*x]*Csch[c + d*x])/(2*a*d) - (b^3*(e + f*x)*Lo
g[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*Sqrt[a^2 + b^2]*d) + (b^
3*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^3*Sqrt[a^2 +
 b^2]*d) - (b*f*Log[Sinh[c + d*x]])/(a^2*d^2) + (f*PolyLog[2, -E^(c + d*x)]
)/(2*a*d^2) - (b^2*f*PolyLog[2, -E^(c + d*x)])/(a^3*d^2) - (f*PolyLog[2, E^
(c + d*x)])/(2*a*d^2) + (b^2*f*PolyLog[2, E^(c + d*x)])/(a^3*d^2) - (b^3*f*
PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*Sqrt[a^2 + b^2]*
d^2) + (b^3*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*Sq
rt[a^2 + b^2]*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5575

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csch[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csch[c + d*x]^(n - 1))/(a +
b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && I
GtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\text{csch}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{csch}^3(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{f\text{csch}(c+dx)}{2ad^2} - \frac{(e+fx)\coth(c+dx)\text{csch}(c+dx)}{2ad} - \frac{\int (e+fx)\text{csch}(c+dx)\,d}{2a}$$

$$= \frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} + \frac{b(e+fx)\coth(c+dx)}{a^2d} - \frac{f\text{csch}(c+dx)}{2ad^2} - \frac{(e+fx)\text{co}}{}$$

$$= \frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} + \frac{b(e+fx)\coth(c+dx)}{a^2d} -$$

$$= \frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} + \frac{b(e+fx)\coth(c+dx)}{a^2d} -$$

$$= \frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} + \frac{b(e+fx)\coth(c+dx)}{a^2d} -$$

$$= \frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} + \frac{b(e+fx)\coth(c+dx)}{a^2d} -$$

$$= \frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} + \frac{b(e+fx)\coth(c+dx)}{a^2d} -$$

Mathematica [C] time = 7.91, size = 736, normalized size = 1.75

$$-\frac{ib^2f\left(i\left(\text{Li}_2\left(-e^{-c-dx}\right)-\text{Li}_2\left(e^{-c-dx}\right)\right)+i(c+dx)\left(\log\left(1-e^{-c-dx}\right)-\log\left(e^{-c-dx}+1\right)\right)\right)}{a^3d^2}-\frac{b^2cf\log\left(\tanh\left(\frac{1}{2}(c+a\right.\right.}{a^3d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((2*b*d*e*Cosh[(c + d*x)/2] - a*f*Cosh[(c + d*x)/2] - 2*b*c*f*Cosh[(c + d*x
)/2] + 2*b*f*(c + d*x)*Cosh[(c + d*x)/2])*Csch[(c + d*x)/2])/(4*a^2*d^2) +
((-(d*e) + c*f - f*(c + d*x))*Csch[(c + d*x)/2]^2)/(8*a*d^2) - (b*f*Log[Sin
h[c + d*x]])/(a^2*d^2) - (e*Log[Tanh[(c + d*x)/2]])/(2*a*d) + (b^2*e*Log[Ta
nh[(c + d*x)/2]])/(a^3*d) + (c*f*Log[Tanh[(c + d*x)/2]])/(2*a*d^2) - (b^2*c
*f*Log[Tanh[(c + d*x)/2]])/(a^3*d^2) + ((I/2)*f*(I*(c + d*x)*(Log[1 - E^(-c
```

```
 - d*x)] - Log[1 + E^(-c - d*x)]) + I*(PolyLog[2, -E^(-c - d*x)] - PolyLog[
2, E^(-c - d*x)])))/(a*d^2) - (I*b^2*f*(I*(c + d*x)*(Log[1 - E^(-c - d*x)]
- Log[1 + E^(-c - d*x)]) + I*(PolyLog[2, -E^(-c - d*x)] - PolyLog[2, E^(-c
- d*x)])))/(a^3*d^2) + (b^3*(2*d*e*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b
^2]] - 2*c*f*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - f*(c + d*x)*Log
[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c +
 d*x))/(a + Sqrt[a^2 + b^2])] - f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2
 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(a^3*S
qrt[a^2 + b^2]*d^2) + ((-(d*e) + c*f - f*(c + d*x))*Sech[(c + d*x)/2]^2)/(8
*a*d^2) + (Sech[(c + d*x)/2]*(2*b*d*e*Sinh[(c + d*x)/2] + a*f*Sinh[(c + d*x
)/2] - 2*b*c*f*Sinh[(c + d*x)/2] + 2*b*f*(c + d*x)*Sinh[(c + d*x)/2]))/(4*a
^2*d^2)
```

fricas [B] time = 0.58, size = 4720, normalized size = 11.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(4*((a^3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*c*f)*cosh(d*x + c)^4 + 4*((
a^3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*c*f)*sinh(d*x + c)^4 - 2*((a^4 + a^2
*b^2)*d*f*x + (a^4 + a^2*b^2)*d*e + (a^4 + a^2*b^2)*f)*cosh(d*x + c)^3 - 2*
((a^4 + a^2*b^2)*d*f*x + (a^4 + a^2*b^2)*d*e + (a^4 + a^2*b^2)*f - 8*((a^3*
b + a*b^3)*d*f*x + (a^3*b + a*b^3)*c*f)*cosh(d*x + c))*sinh(d*x + c)^3 - 4*
(a^3*b + a*b^3)*d*e + 4*(a^3*b + a*b^3)*c*f - 4*((a^3*b + a*b^3)*d*f*x - (a
^3*b + a*b^3)*d*e + 2*(a^3*b + a*b^3)*c*f)*cosh(d*x + c)^2 - 2*(2*(a^3*b +
a*b^3)*d*f*x - 2*(a^3*b + a*b^3)*d*e + 4*(a^3*b + a*b^3)*c*f - 12*((a^3*b +
 a*b^3)*d*f*x + (a^3*b + a*b^3)*c*f)*cosh(d*x + c)^2 + 3*((a^4 + a^2*b^2)*d
*f*x + (a^4 + a^2*b^2)*d*e + (a^4 + a^2*b^2)*f)*cosh(d*x + c))*sinh(d*x + c
)^2 - 2*(b^4*f*cosh(d*x + c)^4 + 4*b^4*f*cosh(d*x + c)*sinh(d*x + c)^3 + b^
4*f*sinh(d*x + c)^4 - 2*b^4*f*cosh(d*x + c)^2 + b^4*f + 2*(3*b^4*f*cosh(d*x
 + c)^2 - b^4*f)*sinh(d*x + c)^2 + 4*(b^4*f*cosh(d*x + c)^3 - b^4*f*cosh(d*
x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sin
h(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)
/b + 1) + 2*(b^4*f*cosh(d*x + c)^4 + 4*b^4*f*cosh(d*x + c)*sinh(d*x + c)^3
+ b^4*f*sinh(d*x + c)^4 - 2*b^4*f*cosh(d*x + c)^2 + b^4*f + 2*(3*b^4*f*cosh
(d*x + c)^2 - b^4*f)*sinh(d*x + c)^2 + 4*(b^4*f*cosh(d*x + c)^3 - b^4*f*cos
h(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b + 1) + 2*(b^4*d*e - b^4*c*f + (b^4*d*e - b^4*c*f)*cosh(d*x + c)^4 +
4*(b^4*d*e - b^4*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d*e - b^4*c*f)*s
inh(d*x + c)^4 - 2*(b^4*d*e - b^4*c*f)*cosh(d*x + c)^2 - 2*(b^4*d*e - b^4*c
*f - 3*(b^4*d*e - b^4*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d*e -
 b^4*c*f)*cosh(d*x + c)^3 - (b^4*d*e - b^4*c*f)*cosh(d*x + c))*sinh(d*x + c
```

))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sq
rt((a^2 + b^2)/b^2) + 2*a) - 2*(b^4*d*e - b^4*c*f + (b^4*d*e - b^4*c*f)*cos
h(d*x + c)^4 + 4*(b^4*d*e - b^4*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d
*e - b^4*c*f)*sinh(d*x + c)^4 - 2*(b^4*d*e - b^4*c*f)*cosh(d*x + c)^2 - 2*(
b^4*d*e - b^4*c*f - 3*(b^4*d*e - b^4*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2
+ 4*((b^4*d*e - b^4*c*f)*cosh(d*x + c)^3 - (b^4*d*e - b^4*c*f)*cosh(d*x + c
))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*
x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(b^4*d*f*x + b^4*c*f + (b^4*d
*f*x + b^4*c*f)*cosh(d*x + c)^4 + 4*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)*sin
h(d*x + c)^3 + (b^4*d*f*x + b^4*c*f)*sinh(d*x + c)^4 - 2*(b^4*d*f*x + b^4*c
*f)*cosh(d*x + c)^2 - 2*(b^4*d*f*x + b^4*c*f - 3*(b^4*d*f*x + b^4*c*f)*cosh
(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^3 - (
b^4*d*f*x + b^4*c*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*lo
g(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))
sqrt((a^2 + b^2)/b^2) - b)/b) + 2(b^4*d*f*x + b^4*c*f + (b^4*d*f*x + b^4*
c*f)*cosh(d*x + c)^4 + 4*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)*sinh(d*x + c)^
3 + (b^4*d*f*x + b^4*c*f)*sinh(d*x + c)^4 - 2*(b^4*d*f*x + b^4*c*f)*cosh(d*
x + c)^2 - 2*(b^4*d*f*x + b^4*c*f - 3*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^2
)*sinh(d*x + c)^2 + 4*((b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^3 - (b^4*d*f*x +
b^4*c*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(
d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2) - b)/b) - 2*((a^4 + a^2*b^2)*d*f*x + (a^4 + a^2*b^2)*d*e - (a^4
+ a^2*b^2)*f)*cosh(d*x + c) - ((a^4 - a^2*b^2 - 2*b^4)*f*cosh(d*x + c)^4 +
4*(a^4 - a^2*b^2 - 2*b^4)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 - a^2*b^2
- 2*b^4)*f*sinh(d*x + c)^4 - 2*(a^4 - a^2*b^2 - 2*b^4)*f*cosh(d*x + c)^2 +
2*(3*(a^4 - a^2*b^2 - 2*b^4)*f*cosh(d*x + c)^2 - (a^4 - a^2*b^2 - 2*b^4)*f
)*sinh(d*x + c)^2 + (a^4 - a^2*b^2 - 2*b^4)*f + 4*((a^4 - a^2*b^2 - 2*b^4)*
f*cosh(d*x + c)^3 - (a^4 - a^2*b^2 - 2*b^4)*f*cosh(d*x + c))*sinh(d*x + c))
*dilog(cosh(d*x + c) + sinh(d*x + c)) + ((a^4 - a^2*b^2 - 2*b^4)*f*cosh(d*x
+ c)^4 + 4*(a^4 - a^2*b^2 - 2*b^4)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4
- a^2*b^2 - 2*b^4)*f*sinh(d*x + c)^4 - 2*(a^4 - a^2*b^2 - 2*b^4)*f*cosh(d*x
+ c)^2 + 2*(3*(a^4 - a^2*b^2 - 2*b^4)*f*cosh(d*x + c)^2 - (a^4 - a^2*b^2 -
2*b^4)*f)*sinh(d*x + c)^2 + (a^4 - a^2*b^2 - 2*b^4)*f + 4*((a^4 - a^2*b^2
- 2*b^4)*f*cosh(d*x + c)^3 - (a^4 - a^2*b^2 - 2*b^4)*f*cosh(d*x + c))*sinh(
d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) + (((a^4 - a^2*b^2 - 2*b^4)
*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*d*e - 2*(a^3*b + a*b^3)*f)*cosh(d*x + c)^4
+ 4*((a^4 - a^2*b^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*d*e - 2*(a^3*
b + a*b^3)*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 - a^2*b^2 - 2*b^4)*d*f*
x + (a^4 - a^2*b^2 - 2*b^4)*d*e - 2*(a^3*b + a*b^3)*f)*sinh(d*x + c)^4 + (a
^4 - a^2*b^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*d*e - 2*((a^4 - a^2*b
^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*d*e - 2*(a^3*b + a*b^3)*f)*cosh
(d*x + c)^2 - 2*((a^4 - a^2*b^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*d*
e - 3*((a^4 - a^2*b^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*d*e - 2*(a^3
*b + a*b^3)*f)*cosh(d*x + c)^2 - 2*(a^3*b + a*b^3)*f)*sinh(d*x + c)^2 - 2*(
a^3*b + a*b^3)*f + 4*(((a^4 - a^2*b^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b

```
^4)*d*e - 2*(a^3*b + a*b^3)*f)*cosh(d*x + c)^3 - ((a^4 - a^2*b^2 - 2*b^4)*d
*f*x + (a^4 - a^2*b^2 - 2*b^4)*d*e - 2*(a^3*b + a*b^3)*f)*cosh(d*x + c))*si
nh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) - (((a^4 - a^2*b^2 - 2*
b^4)*d*e + (2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4)*c)*f)*cosh(d*x + c)
^4 + 4*((a^4 - a^2*b^2 - 2*b^4)*d*e + (2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 -
 2*b^4)*c)*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 - a^2*b^2 - 2*b^4)*d*e
+ (2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4)*c)*f)*sinh(d*x + c)^4 + (a^4
 - a^2*b^2 - 2*b^4)*d*e - 2*((a^4 - a^2*b^2 - 2*b^4)*d*e + (2*a^3*b + 2*a*b
^3 - (a^4 - a^2*b^2 - 2*b^4)*c)*f)*cosh(d*x + c)^2 - 2*((a^4 - a^2*b^2 - 2*
b^4)*d*e - 3*((a^4 - a^2*b^2 - 2*b^4)*d*e + (2*a^3*b + 2*a*b^3 - (a^4 - a^2
*b^2 - 2*b^4)*c)*f)*cosh(d*x + c)^2 + (2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 -
 2*b^4)*c)*f)*sinh(d*x + c)^2 + (2*a^3*b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4
)*c)*f + 4*(((a^4 - a^2*b^2 - 2*b^4)*d*e + (2*a^3*b + 2*a*b^3 - (a^4 - a^2*
b^2 - 2*b^4)*c)*f)*cosh(d*x + c)^3 - ((a^4 - a^2*b^2 - 2*b^4)*d*e + (2*a^3*
b + 2*a*b^3 - (a^4 - a^2*b^2 - 2*b^4)*c)*f)*cosh(d*x + c))*sinh(d*x + c))*l
og(cosh(d*x + c) + sinh(d*x + c) - 1) - (((a^4 - a^2*b^2 - 2*b^4)*d*f*x + (
a^4 - a^2*b^2 - 2*b^4)*c*f)*cosh(d*x + c)^4 + 4*((a^4 - a^2*b^2 - 2*b^4)*d*
f*x + (a^4 - a^2*b^2 - 2*b^4)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 -
a^2*b^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*c*f)*sinh(d*x + c)^4 + (a^
4 - a^2*b^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*c*f - 2*((a^4 - a^2*b^
2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*c*f)*cosh(d*x + c)^2 - 2*((a^4 -
 a^2*b^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*c*f - 3*((a^4 - a^2*b^2 -
 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)
^2 + 4*(((a^4 - a^2*b^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*c*f)*cosh(
d*x + c)^3 - ((a^4 - a^2*b^2 - 2*b^4)*d*f*x + (a^4 - a^2*b^2 - 2*b^4)*c*f)*
cosh(d*x + c))*sinh(d*x + c))*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 2*(
(a^4 + a^2*b^2)*d*f*x - 8*((a^3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*c*f)*cos
h(d*x + c)^3 + (a^4 + a^2*b^2)*d*e + 3*((a^4 + a^2*b^2)*d*f*x + (a^4 + a^2*
b^2)*d*e + (a^4 + a^2*b^2)*f)*cosh(d*x + c)^2 - (a^4 + a^2*b^2)*f + 4*((a^3
*b + a*b^3)*d*f*x - (a^3*b + a*b^3)*d*e + 2*(a^3*b + a*b^3)*c*f)*cosh(d*x +
 c))*sinh(d*x + c))/((a^5 + a^3*b^2)*d^2*cosh(d*x + c)^4 + 4*(a^5 + a^3*b^2
)*d^2*cosh(d*x + c)*sinh(d*x + c)^3 + (a^5 + a^3*b^2)*d^2*sinh(d*x + c)^4 -
 2*(a^5 + a^3*b^2)*d^2*cosh(d*x + c)^2 + (a^5 + a^3*b^2)*d^2 + 2*(3*(a^5 +
a^3*b^2)*d^2*cosh(d*x + c)^2 - (a^5 + a^3*b^2)*d^2)*sinh(d*x + c)^2 + 4*((a
^5 + a^3*b^2)*d^2*cosh(d*x + c)^3 - (a^5 + a^3*b^2)*d^2*cosh(d*x + c))*sinh
(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.26, size = 861, normalized size = 2.05

$$-\frac{adfx\,\mathrm{e}^{3dx+3c}+ade\,\mathrm{e}^{3dx+3c}-2bdfx\,\mathrm{e}^{2dx+2c}+adfx\,\mathrm{e}^{dx+c}+af\,\mathrm{e}^{3dx+3c}-2bde\,\mathrm{e}^{2dx+2c}+ade\,\mathrm{e}^{dx+c}+2bdfx-af\,\mathrm{e}}{d^2a^2\left(\mathrm{e}^{2dx+2c}-1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] -(a*d*f*x*exp(3*d*x+3*c)+a*d*e*exp(3*d*x+3*c)-2*b*d*f*x*exp(2*d*x+2*c)+a*d*
f*x*exp(d*x+c)+a*f*exp(3*d*x+3*c)-2*b*d*e*exp(2*d*x+2*c)+a*d*e*exp(d*x+c)+2
*b*d*f*x-a*f*exp(d*x+c)+2*b*d*e)/d^2/a^2/(exp(2*d*x+2*c)-1)^2-1/d^2/a^3*b^3
*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)
))*c+1/d^2/a^3*b^3*f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a
+(a^2+b^2)^(1/2)))*c-1/d/a^3*b^2*f*ln(exp(d*x+c)+1)*x-2/d^2/a^3*b^3*f*c/(a^
2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/d/a^3*b^3*
e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d/a^3
*b^3*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(
1/2)))*x+1/d/a^3*b^3*f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/
(a+(a^2+b^2)^(1/2)))*x-1/d/a^3*b^2*e*ln(exp(d*x+c)+1)+1/d/a^3*b^2*e*ln(exp(
d*x+c)-1)-1/d^2/a^3*b^2*f*c*ln(exp(d*x+c)-1)-1/d^2/a^3*b^3*f/(a^2+b^2)^(1/2
)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d^2/a^3*b
^3*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1
/2)))+1/2/a/d*ln(exp(d*x+c)+1)*f*x-1/d^2/a^3*b^2*f*dilog(exp(d*x+c)+1)-1/d^
2/a^3*b^2*f*dilog(exp(d*x+c))+1/2/a/d*e*ln(exp(d*x+c)+1)-1/2/a/d*e*ln(exp(d
*x+c)-1)+1/2/a/d^2*f*c*ln(exp(d*x+c)-1)+2/d^2/a^2*b*f*ln(exp(d*x+c))-1/d^2/
a^2*b*f*ln(exp(d*x+c)+1)-1/d^2/a^2*b*f*ln(exp(d*x+c)-1)+1/2/d^2*f/a*dilog(e
xp(d*x+c)+1)+1/2/d^2*f*dilog(exp(d*x+c))/a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(8\,b^3\int\frac{xe^{(dx+c)}}{4\left(a^3be^{(2\,dx+2\,c)}+2\,a^4e^{(dx+c)}-a^3b\right)}\,dx+8\,a^2d\int\frac{x}{16\left(a^3de^{(dx+c)}+a^3d\right)}\,dx-16\,b^2d\int\frac{x}{16\left(a^3de^{(dx+c)}+a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(8*b^3*integrate(1/4*x*e^(d*x + c)/(a^3*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x +
 c) - a^3*b), x) + 8*a^2*d*integrate(1/16*x/(a^3*d*e^(d*x + c) + a^3*d), x)
 - 16*b^2*d*integrate(1/16*x/(a^3*d*e^(d*x + c) + a^3*d), x) + 8*a^2*d*inte
grate(1/16*x/(a^3*d*e^(d*x + c) - a^3*d), x) - 16*b^2*d*integrate(1/16*x/(a
```

```
^3*d*e^(d*x + c) - a^3*d), x) - a*b*((d*x + c)/(a^3*d^2) - log(e^(d*x + c)
+ 1)/(a^3*d^2)) - a*b*((d*x + c)/(a^3*d^2) - log(e^(d*x + c) - 1)/(a^3*d^2)
) - (2*b*d*x*e^(2*d*x + 2*c) - 2*b*d*x - (a*d*x*e^(3*c) + a*e^(3*c))*e^(3*d
*x) - (a*d*x*e^c - a*e^c)*e^(d*x))/(a^2*d^2*e^(4*d*x + 4*c) - 2*a^2*d^2*e^(
2*d*x + 2*c) + a^2*d^2))*f - 1/2*e*(2*b^3*log((b*e^(-d*x - c) - a - sqrt(a^
2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a^3*d) -
 2*(a*e^(-d*x - c) + 2*b*e^(-2*d*x - 2*c) + a*e^(-3*d*x - 3*c) - 2*b)/((2*a
^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) - (a^2 - 2*b^2)*log(e^
(-d*x - c) + 1)/(a^3*d) + (a^2 - 2*b^2)*log(e^(-d*x - c) - 1)/(a^3*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{{\mathrm{sinh}\left(c+d\,x\right)}^3\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)/(sinh(c + d*x)^3*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + f x\right) \operatorname{csch}^{3}{\left(c + d x \right)}}{a + b \sinh{\left(c + d x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)*csch(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.251 $\int \frac{\operatorname{csch}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=113

$$\frac{b\coth(c+dx)}{a^2d}+\frac{\left(a^2-2b^2\right)\tanh^{-1}(\cosh(c+dx))}{2a^3d}+\frac{2b^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^3d\sqrt{a^2+b^2}}-\frac{\coth(c+dx)\operatorname{csch}(c+dx)}{2ad}$$

```
[Out] 1/2*(a^2-2*b^2)*arctanh(cosh(d*x+c))/a^3/d+b*coth(d*x+c)/a^2/d-1/2*coth(d*x
+c)*csch(d*x+c)/a/d+2*b^3*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2)
)/a^3/d/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.40, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2802, 3055, 3001, 3770, 2660, 618, 204}

$$\frac{2b^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^3d\sqrt{a^2+b^2}}+\frac{\left(a^2-2b^2\right)\tanh^{-1}(\cosh(c+dx))}{2a^3d}+\frac{b\coth(c+dx)}{a^2d}-\frac{\coth(c+dx)\operatorname{csch}(c+dx)}{2ad}$$

Antiderivative was successfully verified.

```
[In] Int[Csch[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((a^2 - 2*b^2)*ArcTanh[Cosh[c + d*x]])/(2*a^3*d) + (2*b^3*ArcTanh[(b - a*Ta
nh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(a^3*Sqrt[a^2 + b^2]*d) + (b*Coth[c + d*
x])/(a^2*d) - (Coth[c + d*x]*Csch[c + d*x])/(2*a*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
```

```
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2802

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b^2*Cos[e + f*x]*(a + b*Sin[e + f*x
])^(m + 1)*(c + d*Sin[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 - b^2)
), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^
(m + 1)*(c + d*Sin[e + f*x])^n*Simp[a*(b*c - a*d)*(m + 1) + b^2*d*(m + n +
2) - (b^2*c + b*(b*c - a*d)*(m + 1))*Sin[e + f*x] - b^2*d*(m + n + 3)*Sin[e
 + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d,
0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && LtQ[m, -1] && IntegersQ[2*m
, 2*n] && ((EqQ[a, 0] && IntegerQ[m] &&  !IntegerQ[n]) ||  !(IntegerQ[2*n]
&& LtQ[n, -1] && ((IntegerQ[n] &&  !IntegerQ[m]) || EqQ[a, 0])))
```

Rule 3001

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])), x_Symbol] :> Dist[(A*b
- a*B)/(b*c - a*d), Int[1/(a + b*Sin[e + f*x]), x], x] + Dist[(B*c - A*d)/(
b*c - a*d), Int[1/(c + d*Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f,
A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3055

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((A*b^2 - a*b*B + a^2*C)*Cos[e + f*x]
*(a + b*Sin[e + f*x])^(m + 1)*(c + d*Sin[e + f*x])^(n + 1))/(f*(m + 1)*(b*c
 - a*d)*(a^2 - b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 - b^2)), Int[(a
 + b*Sin[e + f*x])^(m + 1)*(c + d*Sin[e + f*x])^n*Simp[(m + 1)*(b*c - a*d)*
(a*A - b*B + a*C) + d*(A*b^2 - a*b*B + a^2*C)*(m + n + 2) - (c*(A*b^2 - a*b
*B + a^2*C) + (m + 1)*(b*c - a*d)*(A*b - a*B + b*C))*Sin[e + f*x] - d*(A*b^
2 - a*b*B + a^2*C)*(m + n + 3)*Sin[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c
, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ
[c^2 - d^2, 0] && LtQ[m, -1] && ((EqQ[a, 0] && IntegerQ[m] &&  !IntegerQ[n]
) ||  !(IntegerQ[2*n] && LtQ[n, -1] && ((IntegerQ[n] &&  !IntegerQ[m]) || E
qQ[a, 0])))
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} + \frac{i\int \frac{\operatorname{csch}^2(c+dx)\left(2ib+ia\sinh(c+dx)+ib\sinh^2(c+dx)\right)}{a+b\sinh(c+dx)}\,dx}{2a}$$

$$= \frac{b\coth(c+dx)}{a^2d} - \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} - \frac{\int \frac{\operatorname{csch}(c+dx)\left(a^2-2b^2+ab\sinh(c+dx)\right)}{a+b\sinh(c+dx)}\,dx}{2a^2}$$

$$= \frac{b\coth(c+dx)}{a^2d} - \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} - \frac{b^3\int \frac{1}{a+b\sinh(c+dx)}\,dx}{a^3} - \frac{\left(a^2-2b^2\right)\int \operatorname{cs}}{2a}$$

$$= \frac{\left(a^2-2b^2\right)\tanh^{-1}(\cosh(c+dx))}{2a^3d} + \frac{b\coth(c+dx)}{a^2d} - \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} + \frac{(2}{}$$

$$= \frac{\left(a^2-2b^2\right)\tanh^{-1}(\cosh(c+dx))}{2a^3d} + \frac{b\coth(c+dx)}{a^2d} - \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} - \frac{(4}{}$$

$$= \frac{\left(a^2-2b^2\right)\tanh^{-1}(\cosh(c+dx))}{2a^3d} + \frac{2b^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^3\sqrt{a^2+b^2}\,d} + \frac{b\coth(c+dx)}{a^2d} -$$

Mathematica [A] time = 1.81, size = 145, normalized size = 1.28

$$-\frac{4\left(a^2-2b^2\right)\log\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right) + \frac{16b^3\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{\sqrt{-a^2-b^2}} + a^2\operatorname{csch}^2\left(\frac{1}{2}(c+dx)\right) + a^2\operatorname{sech}^2\left(\frac{1}{2}(c+dx)\right) - 4}{8a^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csch[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/8*((16*b^3*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2
 - b^2] - 4*a*b*Coth[(c + d*x)/2] + a^2*Csch[(c + d*x)/2]^2 + 4*(a^2 - 2*b^
2)*Log[Tanh[(c + d*x)/2]] + a^2*Sech[(c + d*x)/2]^2 - 4*a*b*Tanh[(c + d*x)/
2])/(a^3*d)
```

fricas [B] time = 0.66, size = 1203, normalized size = 10.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(4*a^3*b + 4*a*b^3 + 2*(a^4 + a^2*b^2)*cosh(d*x + c)^3 + 2*(a^4 + a^2*
b^2)*sinh(d*x + c)^3 - 4*(a^3*b + a*b^3)*cosh(d*x + c)^2 - 2*(2*a^3*b + 2*a
*b^3 - 3*(a^4 + a^2*b^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 2*(b^3*cosh(d*x +
 c)^4 + 4*b^3*cosh(d*x + c)*sinh(d*x + c)^3 + b^3*sinh(d*x + c)^4 - 2*b^3*c
osh(d*x + c)^2 + b^3 + 2*(3*b^3*cosh(d*x + c)^2 - b^3)*sinh(d*x + c)^2 + 4*
(b^3*cosh(d*x + c)^3 - b^3*cosh(d*x + c))*sinh(d*x + c))*sqrt(a^2 + b^2)*lo
g((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2
+ b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x + c) + 2*sqrt(a^2 + b^2)*(b*co
sh(d*x + c) + b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2
+ 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) + 2*(a^4
+ a^2*b^2)*cosh(d*x + c) - ((a^4 - a^2*b^2 - 2*b^4)*cosh(d*x + c)^4 + 4*(a^
4 - a^2*b^2 - 2*b^4)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 - a^2*b^2 - 2*b^4
)*sinh(d*x + c)^4 + a^4 - a^2*b^2 - 2*b^4 - 2*(a^4 - a^2*b^2 - 2*b^4)*cosh(
d*x + c)^2 - 2*(a^4 - a^2*b^2 - 2*b^4 - 3*(a^4 - a^2*b^2 - 2*b^4)*cosh(d*x
+ c)^2)*sinh(d*x + c)^2 + 4*((a^4 - a^2*b^2 - 2*b^4)*cosh(d*x + c)^3 - (a^4
 - a^2*b^2 - 2*b^4)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(
d*x + c) + 1) + ((a^4 - a^2*b^2 - 2*b^4)*cosh(d*x + c)^4 + 4*(a^4 - a^2*b^2
 - 2*b^4)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 - a^2*b^2 - 2*b^4)*sinh(d*x
+ c)^4 + a^4 - a^2*b^2 - 2*b^4 - 2*(a^4 - a^2*b^2 - 2*b^4)*cosh(d*x + c)^2
- 2*(a^4 - a^2*b^2 - 2*b^4 - 3*(a^4 - a^2*b^2 - 2*b^4)*cosh(d*x + c)^2)*sin
h(d*x + c)^2 + 4*((a^4 - a^2*b^2 - 2*b^4)*cosh(d*x + c)^3 - (a^4 - a^2*b^2
- 2*b^4)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) -
1) + 2*(a^4 + a^2*b^2 + 3*(a^4 + a^2*b^2)*cosh(d*x + c)^2 - 4*(a^3*b + a*b^
3)*cosh(d*x + c))*sinh(d*x + c))/((a^5 + a^3*b^2)*d*cosh(d*x + c)^4 + 4*(a^
5 + a^3*b^2)*d*cosh(d*x + c)*sinh(d*x + c)^3 + (a^5 + a^3*b^2)*d*sinh(d*x +
 c)^4 - 2*(a^5 + a^3*b^2)*d*cosh(d*x + c)^2 + 2*(3*(a^5 + a^3*b^2)*d*cosh(d
*x + c)^2 - (a^5 + a^3*b^2)*d)*sinh(d*x + c)^2 + (a^5 + a^3*b^2)*d + 4*((a^
5 + a^3*b^2)*d*cosh(d*x + c)^3 - (a^5 + a^3*b^2)*d*cosh(d*x + c))*sinh(d*x
+ c))
```

giac [A] time = 2.00, size = 176, normalized size = 1.56

$$-\frac{\frac{2\,b^{3}\log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\,\sqrt{a^{2}+b^{2}}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\,\sqrt{a^{2}+b^{2}}\right|}\right)}{\sqrt{a^{2}+b^{2}}\,a^{3}}-\frac{\left(a^{2}-2\,b^{2}\right)\log\left(e^{(dx+c)}+1\right)}{a^{3}}+\frac{\left(a^{2}-2\,b^{2}\right)\log\left(\left|e^{(dx+c)}-1\right|\right)}{a^{3}}+\frac{2\,\left(ae^{(3\,dx+3\,c)}-2\,be^{(2\,dx+2\,c)}+ae^{(dx+c)}+2\,b\right)}{a^{2}\left(e^{(2\,dx+2\,c)}-1\right)^{2}}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(2*b^3*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d
*x + c) + 2*a + 2*sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a^3) - (a^2 - 2*b^2)*l
og(e^(d*x + c) + 1)/a^3 + (a^2 - 2*b^2)*log(abs(e^(d*x + c) - 1))/a^3 + 2*(
```

```
a*e^(3*d*x + 3*c) - 2*b*e^(2*d*x + 2*c) + a*e^(d*x + c) + 2*b)/(a^2*(e^(2*d
*x + 2*c) - 1)^2))/d
```

maple [A] time = 0.00, size = 164, normalized size = 1.45

$$\frac{\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)}{8da}+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b}{2d\,a^2}-\frac{2b^3\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{d\,a^3\sqrt{a^2+b^2}}-\frac{1}{8da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{2da}+\frac{\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/8/d/a*tanh(1/2*d*x+1/2*c)^2+1/2/d/a^2*tanh(1/2*d*x+1/2*c)*b-2/d/a^3*b^3/(
a^2+b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))-1
/8/d/a/tanh(1/2*d*x+1/2*c)^2-1/2/d/a*ln(tanh(1/2*d*x+1/2*c))+1/d/a^3*ln(tan
h(1/2*d*x+1/2*c))*b^2+1/2/d*b/a^2/tanh(1/2*d*x+1/2*c)
```

maxima [A] time = 0.53, size = 211, normalized size = 1.87

$$-\frac{b^3\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,a^3d}+\frac{ae^{(-dx-c)}+2\,be^{(-2\,dx-2\,c)}+ae^{(-3\,dx-3\,c)}-2\,b}{\left(2\,a^2e^{(-2\,dx-2\,c)}-a^2e^{(-4\,dx-4\,c)}-a^2\right)d}+\frac{\left(a^2-2\,b^2\right)\log\left(e^{(-dx-c)}+1\right)}{2\,a^3d}-\frac{\left(a^2-2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -b^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(
a^2 + b^2)))/(sqrt(a^2 + b^2)*a^3*d) + (a*e^(-d*x - c) + 2*b*e^(-2*d*x - 2*
c) + a*e^(-3*d*x - 3*c) - 2*b)/((2*a^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4
*c) - a^2)*d) + 1/2*(a^2 - 2*b^2)*log(e^(-d*x - c) + 1)/(a^3*d) - 1/2*(a^2
- 2*b^2)*log(e^(-d*x - c) - 1)/(a^3*d)
```

mupad [B] time = 0.75, size = 776, normalized size = 6.87

$$\frac{e^{c+d\,x}}{a\,d-a\,d\,e^{2\,c+2\,d\,x}}-\frac{2\,e^{c+d\,x}}{a\,d-2\,a\,d\,e^{2\,c+2\,d\,x}+a\,d\,e^{4\,c+4\,d\,x}}-\frac{2\,b}{a^2\,d-a^2\,d\,e^{2\,c+2\,d\,x}}-\frac{\ln\left(4\,a^4+24\,b^4-20\,a^2\,b^2-4\,a^4\,e^{d\,x}\,e^{c}\right.}{2\,a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
```

```
[Out] exp(c + d*x)/(a*d - a*d*exp(2*c + 2*d*x)) - (2*exp(c + d*x))/(a*d - 2*a*d*e
xp(2*c + 2*d*x) + a*d*exp(4*c + 4*d*x)) - (2*b)/(a^2*d - a^2*d*exp(2*c + 2*
```

```
d*x)) - log(4*a^4 + 24*b^4 - 20*a^2*b^2 - 4*a^4*exp(d*x)*exp(c) - 24*b^4*ex
p(d*x)*exp(c) + 20*a^2*b^2*exp(d*x)*exp(c))/(2*a*d) + log(4*a^4 + 24*b^4 -
20*a^2*b^2 + 4*a^4*exp(d*x)*exp(c) + 24*b^4*exp(d*x)*exp(c) - 20*a^2*b^2*ex
p(d*x)*exp(c))/(2*a*d) - (b^3*log(16*a^5*b - 48*a*b^5 - 24*b^5*(a^2 + b^2)^
(1/2) - 32*a^3*b^3 - 40*a^2*b^3*(a^2 + b^2)^(1/2) - 32*a^6*exp(d*x)*exp(c)
+ 24*b^6*exp(d*x)*exp(c) + 16*a^4*b*(a^2 + b^2)^(1/2) + 112*a^2*b^4*exp(d*x
)*exp(c) + 56*a^4*b^2*exp(d*x)*exp(c) - 32*a^5*exp(d*x)*exp(c)*(a^2 + b^2)^
(1/2) + 72*a*b^4*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2) + 72*a^3*b^2*exp(d*x)*ex
p(c)*(a^2 + b^2)^(1/2))*(a^2 + b^2)^(1/2))/(a^5*d + a^3*b^2*d) + (b^3*log(2
4*b^5*(a^2 + b^2)^(1/2) - 48*a*b^5 + 16*a^5*b - 32*a^3*b^3 + 40*a^2*b^3*(a^
2 + b^2)^(1/2) - 32*a^6*exp(d*x)*exp(c) + 24*b^6*exp(d*x)*exp(c) - 16*a^4*b
*(a^2 + b^2)^(1/2) + 112*a^2*b^4*exp(d*x)*exp(c) + 56*a^4*b^2*exp(d*x)*exp(
c) + 32*a^5*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2) - 72*a*b^4*exp(d*x)*exp(c)*(a
^2 + b^2)^(1/2) - 72*a^3*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2))*(a^2 + b^2)
^(1/2))/(a^5*d + a^3*b^2*d) + (b^2*log(4*a^4 + 24*b^4 - 20*a^2*b^2 - 4*a^4*
exp(d*x)*exp(c) - 24*b^4*exp(d*x)*exp(c) + 20*a^2*b^2*exp(d*x)*exp(c)))/(a^
3*d) - (b^2*log(4*a^4 + 24*b^4 - 20*a^2*b^2 + 4*a^4*exp(d*x)*exp(c) + 24*b^
4*exp(d*x)*exp(c) - 20*a^2*b^2*exp(d*x)*exp(c)))/(a^3*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(csch(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.252 $\int \frac{\operatorname{csch}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=31

$$\operatorname{Int}\left(\frac{\operatorname{csch}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csch[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][Csch[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\operatorname{csch}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Csch[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] $Aborted
```

fricas [A] time = 0.68, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(dx+c)^3}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(csch(d*x + c)^3/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 2.61, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx+c)^{3}}{\left(fx+e\right)\left(a+b\sinh(dx+c)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-8\,b^{3}\int -\frac{e^{(dx+c)}}{4\left(a^{3}bfx+a^{3}be-\left(a^{3}bfxe^{(2c)}+a^{3}bee^{(2c)}\right)e^{(2dx)}-2\left(a^{4}fxe^{c}+a^{4}ee^{c}\right)e^{(dx)}\right)}\,dx-\frac{2\,bdfx+2}{a^{2}d^{2}f^{2}x^{2}+2\,a^{2}d^{2}efx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -8*b^3*integrate(-1/4*e^(d*x + c)/(a^3*b*f*x + a^3*b*e - (a^3*b*f*x*e^(2*c)
 + a^3*b*e*e^(2*c))*e^(2*d*x) - 2*(a^4*f*x*e^c + a^4*e*e^c)*e^(d*x)), x) -
(2*b*d*f*x + 2*b*d*e + (a*d*f*x*e^(3*c) + (d*e - f)*a*e^(3*c))*e^(3*d*x) -
2*(b*d*f*x*e^(2*c) + b*d*e*e^(2*c))*e^(2*d*x) + (a*d*f*x*e^c + (d*e + f)*a*
e^c)*e^(d*x))/(a^2*d^2*f^2*x^2 + 2*a^2*d^2*e*f*x + a^2*d^2*e^2 + (a^2*d^2*f
^2*x^2*e^(4*c) + 2*a^2*d^2*e*f*x*e^(4*c) + a^2*d^2*e^2*e^(4*c))*e^(4*d*x) -
 2*(a^2*d^2*f^2*x^2*e^(2*c) + 2*a^2*d^2*e*f*x*e^(2*c) + a^2*d^2*e^2*e^(2*c)
)*e^(2*d*x)) - 8*integrate(1/16*(2*b^2*d^2*e^2 + 2*a*b*d*e*f - (d^2*e^2 - 2
*f^2)*a^2 - (a^2*d^2*f^2 - 2*b^2*d^2*f^2)*x^2 - 2*(a^2*d^2*e*f - 2*b^2*d^2*
e*f - a*b*d*f^2)*x)/(a^3*d^2*f^3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3*d^2*e^2*
f*x + a^3*d^2*e^3 - (a^3*d^2*f^3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c + 3*a^3*
d^2*e^2*f*x*e^c + a^3*d^2*e^3*e^c)*e^(d*x)), x) - 8*integrate(-1/16*(2*b^2*
```

```
d^2*e^2 - 2*a*b*d*e*f - (d^2*e^2 - 2*f^2)*a^2 - (a^2*d^2*f^2 - 2*b^2*d^2*f^
2)*x^2 - 2*(a^2*d^2*e*f - 2*b^2*d^2*e*f + a*b*d*f^2)*x)/(a^3*d^2*f^3*x^3 +
3*a^3*d^2*e*f^2*x^2 + 3*a^3*d^2*e^2*f*x + a^3*d^2*e^3 + (a^3*d^2*f^3*x^3*e^
c + 3*a^3*d^2*e*f^2*x^2*e^c + 3*a^3*d^2*e^2*f*x*e^c + a^3*d^2*e^3*e^c)*e^(d
*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sinh\left(c+d\,x\right)^3\,\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sinh(c + d*x)^3*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(sinh(c + d*x)^3*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}^{3}{\left(c + dx \right)}}{\left(a + b \sinh{\left(c + dx \right)}\right) \left(e + fx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(csch(c + d*x)**3/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.253 $\int \frac{(e+fx)^3\cosh(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=139

$$-\frac{12if^3\text{Li}_4\left(-ie^{c+dx}\right)}{ad^4}+\frac{12if^2(e+fx)\text{Li}_3\left(-ie^{c+dx}\right)}{ad^3}-\frac{6if(e+fx)^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2}-\frac{2i(e+fx)^3\log\left(1+ie^{c+dx}\right)}{ad}+\frac{i(e+f}{4af}$$

```
[Out] 1/4*I*(f*x+e)^4/a/f-2*I*(f*x+e)^3*ln(1+I*exp(d*x+c))/a/d-6*I*f*(f*x+e)^2*po
lylog(2,-I*exp(d*x+c))/a/d^2+12*I*f^2*(f*x+e)*polylog(3,-I*exp(d*x+c))/a/d^
3-12*I*f^3*polylog(4,-I*exp(d*x+c))/a/d^4
```

Rubi [A] time = 0.21, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {5559, 2190, 2531, 6609, 2282, 6589}

$$\frac{12if^2(e+fx)\text{PolyLog}\left(3,-ie^{c+dx}\right)}{ad^3}-\frac{6if(e+fx)^2\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^2}-\frac{12if^3\text{PolyLog}\left(4,-ie^{c+dx}\right)}{ad^4}-\frac{2i(e+fx)^3\text{lo}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((I/4)*(e + f*x)^4)/(a*f) - ((2*I)*(e + f*x)^3*Log[1 + I*E^(c + d*x)])/(a*d
) - ((6*I)*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^2) + ((12*I)*f^
2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/(a*d^3) - ((12*I)*f^3*PolyLog[4,
(-I)*E^(c + d*x)])/(a*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5559

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + Dist[2, Int[((e + f*x)^m*E^(c + d*x))/(a + b*E^(c + d*x)), x], x] /;
FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)}{a+ia\sinh(c+dx)}\,dx = \frac{i(e+fx)^4}{4af} + 2\int \frac{e^{c+dx}(e+fx)^3}{a+iae^{c+dx}}\,dx$$
$$= \frac{i(e+fx)^4}{4af} - \frac{2i(e+fx)^3\log\left(1+ie^{c+dx}\right)}{ad} + \frac{(6if)\int (e+fx)^2\log\left(1+ie^{c+dx}\right)\,dx}{ad}$$
$$= \frac{i(e+fx)^4}{4af} - \frac{2i(e+fx)^3\log\left(1+ie^{c+dx}\right)}{ad} - \frac{6if(e+fx)^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2} + \frac{\left(12if^2\right)\int}{}$$
$$= \frac{i(e+fx)^4}{4af} - \frac{2i(e+fx)^3\log\left(1+ie^{c+dx}\right)}{ad} - \frac{6if(e+fx)^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2} + \frac{12if^2(e+}{}$$
$$= \frac{i(e+fx)^4}{4af} - \frac{2i(e+fx)^3\log\left(1+ie^{c+dx}\right)}{ad} - \frac{6if(e+fx)^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2} + \frac{12if^2(e+}{}$$
$$= \frac{i(e+fx)^4}{4af} - \frac{2i(e+fx)^3\log\left(1+ie^{c+dx}\right)}{ad} - \frac{6if(e+fx)^2\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2} + \frac{12if^2(e+}{}$$

Mathematica [A] time = 0.07, size = 118, normalized size = 0.85

$$\frac{i\left(-\frac{24f\left(d^2(e+fx)^2\text{Li}_2\left(-ie^{c+dx}\right)-2df(e+fx)\text{Li}_3\left(-ie^{c+dx}\right)+2f^2\text{Li}_4\left(-ie^{c+dx}\right)\right)}{d^4} - \frac{8(e+fx)^3\log\left(1+ie^{c+dx}\right)}{d} + \frac{(e+fx)^4}{f}\right)}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((I/4)*((e + f*x)^4/f - (8*(e + f*x)^3*Log[1 + I*E^(c + d*x)])/d - (24*f*(d
^2*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)] - 2*d*f*(e + f*x)*PolyLog[3, (-
I)*E^(c + d*x)] + 2*f^2*PolyLog[4, (-I)*E^(c + d*x)]))/d^4))/a
```

fricas [C] time = 0.58, size = 295, normalized size = 2.12

$$\frac{i\,d^4f^3x^4 + 4i\,d^4ef^2x^3 + 6i\,d^4e^2fx^2 + 4i\,d^4e^3x + 8i\,cd^3e^3 - 12i\,c^2d^2e^2f + 8i\,c^3def^2 - 2i\,c^4f^3 - 48i\,f^3\text{polylog}\left(4,-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(I*d^4*f^3*x^4 + 4*I*d^4*e*f^2*x^3 + 6*I*d^4*e^2*f*x^2 + 4*I*d^4*e^3*x
+ 8*I*c*d^3*e^3 - 12*I*c^2*d^2*e^2*f + 8*I*c^3*d*e*f^2 - 2*I*c^4*f^3 - 48*I
*f^3*polylog(4, -I*e^(d*x + c)) + (-24*I*d^2*f^3*x^2 - 48*I*d^2*e*f^2*x - 2
```

```
4*I*d^2*e^2*f)*dilog(-I*e^(d*x + c)) + (-8*I*d^3*e^3 + 24*I*c*d^2*e^2*f - 2
4*I*c^2*d*e*f^2 + 8*I*c^3*f^3)*log(e^(d*x + c) - I) + (-8*I*d^3*f^3*x^3 - 2
4*I*d^3*e*f^2*x^2 - 24*I*d^3*e^2*f*x - 24*I*c*d^2*e^2*f + 24*I*c^2*d*e*f^2
- 8*I*c^3*f^3)*log(I*e^(d*x + c) + 1) + (48*I*d*f^3*x + 48*I*d*e*f^2)*polyl
og(3, -I*e^(d*x + c)))/(a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^3\cosh\left(dx+c\right)}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.21, size = 635, normalized size = 4.57

$$-\frac{ie^3x}{a}+\frac{ix^4f^3}{4a}+\frac{6ie^2fcx}{da}+\frac{6ie^2fc\ln\left(\mathrm{e}^{dx+c}-i\right)}{d^2a}-\frac{6ief^2c^2\ln\left(\mathrm{e}^{dx+c}-i\right)}{d^3a}-\frac{6ie^2fc\ln\left(\mathrm{e}^{dx+c}\right)}{d^2a}+\frac{6ief^2c^2\ln\left(\mathrm{e}^{dx+c}\right)}{d^3a}+\frac{6ie}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -12*I*f^3*polylog(4,-I*exp(d*x+c))/a/d^4-I/a*e^3*x+1/4*I/a*x^4*f^3+3/2*I/a*
e^2*f*x^2-2*I/d/a*f^3*ln(1+I*exp(d*x+c))*x^3+3*I/d^2/a*e^2*f*c^2-4*I/d^3/a*
e*f^2*c^3+2*I/d^3/a*f^3*c^3*x-2*I/d^4/a*f^3*c^3*ln(exp(d*x+c))-6*I/d^2/a*e^
2*f*polylog(2,-I*exp(d*x+c))+12*I/d^3/a*e*f^2*polylog(3,-I*exp(d*x+c))+2*I/
d^4/a*f^3*c^3*ln(exp(d*x+c)-I)-2*I/d^4/a*f^3*c^3*ln(1+I*exp(d*x+c))-6*I/d^2
/a*f^3*polylog(2,-I*exp(d*x+c))*x^2+12*I/d^3/a*f^3*polylog(3,-I*exp(d*x+c))
*x+3/2*I/d^4/a*f^3*c^4+2*I/d/a*ln(exp(d*x+c))*e^3-2*I/d/a*ln(exp(d*x+c)-I)*
e^3+I/a*e*f^2*x^3+6*I/d/a*e^2*f*c*x+6*I/d^2/a*e^2*f*c*ln(exp(d*x+c)-I)-6*I/
d^3/a*e*f^2*c^2*ln(exp(d*x+c)-I)-6*I/d^2/a*e^2*f*c*ln(exp(d*x+c))+6*I/d^3/a
*e*f^2*c^2*ln(exp(d*x+c))+6*I/d^3/a*e*f^2*c^2*ln(1+I*exp(d*x+c))-6*I/d/a*e^
2*f*ln(1+I*exp(d*x+c))*x-6*I/d^2/a*e^2*f*ln(1+I*exp(d*x+c))*c-6*I/d/a*e*f^2
*ln(1+I*exp(d*x+c))*x^2-12*I/d^2/a*e*f^2*polylog(2,-I*exp(d*x+c))*x-6*I/d^2
/a*e*f^2*c^2*x
```

maxima [B] time = 0.54, size = 264, normalized size = 1.90

$$-\frac{i\,e^3\log\left(i\,a\sinh\left(dx+c\right)+a\right)}{ad}-\frac{6i\left(dx\log\left(i\,e^{(dx+c)}+1\right)+\mathrm{Li}_2\left(-i\,e^{(dx+c)}\right)\right)e^2f}{ad^2}-\frac{i\left(f^3x^4+4\,ef^2x^3+6\,e^2fx^2\right)}{4\,a}-\frac{6i}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -I*e^3*log(I*a*sinh(d*x + c) + a)/(a*d) - 6*I*(d*x*log(I*e^(d*x + c) + 1) +
 dilog(-I*e^(d*x + c)))*e^2*f/(a*d^2) - 1/4*I*(f^3*x^4 + 4*e*f^2*x^3 + 6*e^
2*f*x^2)/a - 6*I*(d^2*x^2*log(I*e^(d*x + c) + 1) + 2*d*x*dilog(-I*e^(d*x +
c)) - 2*polylog(3, -I*e^(d*x + c)))*e*f^2/(a*d^3) - 2*I*(d^3*x^3*log(I*e^(d
*x + c) + 1) + 3*d^2*x^2*dilog(-I*e^(d*x + c)) - 6*d*x*polylog(3, -I*e^(d*x
 + c)) + 6*polylog(4, -I*e^(d*x + c)))*f^3/(a*d^4) + 1/2*(I*d^4*f^3*x^4 + 4
*I*d^4*e*f^2*x^3 + 6*I*d^4*e^2*f*x^2)/(a*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cosh(c+d\,x)\,\left(e+f\,x\right)^3}{a+a\sinh(c+d\,x)\,1\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^3)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x)^3)/(a + a*sinh(c + d*x)*1i), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e^3\cosh(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{f^3x^3\cosh(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{3ef^2x^2\cosh(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{3e^2fx\cosh(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e**3*cosh(c + d*x)/(sinh(c + d*x) - I), x) + Integral(f**3*x**
3*cosh(c + d*x)/(sinh(c + d*x) - I), x) + Integral(3*e*f**2*x**2*cosh(c + d
*x)/(sinh(c + d*x) - I), x) + Integral(3*e**2*f*x*cosh(c + d*x)/(sinh(c + d
*x) - I), x))/a
```

3.254 $\int \frac{(e+fx)^2 \cosh(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=106

$$\frac{4if^2\text{Li}_3\left(-ie^{c+dx}\right)}{ad^3}-\frac{4if(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2}-\frac{2i(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad}+\frac{i(e+fx)^3}{3af}$$

```
[Out] 1/3*I*(f*x+e)^3/a/f-2*I*(f*x+e)^2*ln(1+I*exp(d*x+c))/a/d-4*I*f*(f*x+e)*poly
log(2,-I*exp(d*x+c))/a/d^2+4*I*f^2*polylog(3,-I*exp(d*x+c))/a/d^3
```

Rubi [A] time = 0.18, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {5559, 2190, 2531, 2282, 6589}

$$-\frac{4if(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^2}+\frac{4if^2\text{PolyLog}\left(3,-ie^{c+dx}\right)}{ad^3}-\frac{2i(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad}+\frac{i(e+fx)^3}{3af}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((I/3)*(e + f*x)^3)/(a*f) - ((2*I)*(e + f*x)^2*Log[1 + I*E^(c + d*x)])/(a*d
) - ((4*I)*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^2) + ((4*I)*f^2*P
olyLog[3, (-I)*E^(c + d*x)])/(a*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5559

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + Dist[2, Int[((e + f*x)^m*E^(c + d*x))/(a + b*E^(c + d*x)), x], x] /;
FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)}{a+ia\sinh(c+dx)}\,dx = \frac{i(e+fx)^3}{3af} + 2\int \frac{e^{c+dx}(e+fx)^2}{a+iae^{c+dx}}\,dx$$
$$= \frac{i(e+fx)^3}{3af} - \frac{2i(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad} + \frac{(4if)\int(e+fx)\log\left(1+ie^{c+dx}\right)dx}{ad}$$
$$= \frac{i(e+fx)^3}{3af} - \frac{2i(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad} - \frac{4if(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2} + \frac{\left(4if^2\right)\int \text{L}}{}$$
$$= \frac{i(e+fx)^3}{3af} - \frac{2i(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad} - \frac{4if(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2} + \frac{\left(4if^2\right)\text{Sub}}{}$$
$$= \frac{i(e+fx)^3}{3af} - \frac{2i(e+fx)^2\log\left(1+ie^{c+dx}\right)}{ad} - \frac{4if(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2} + \frac{4if^2\text{Li}_3\left(-\right.}{ad^3}$$

Mathematica [A] time = 0.05, size = 94, normalized size = 0.89

$$\frac{i\left(d^2(e+fx)^2\left(d(e+fx)-6f\log\left(1+ie^{c+dx}\right)\right)-12df^2(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)+12f^3\text{Li}_3\left(-ie^{c+dx}\right)\right)}{3ad^3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((I/3)*(d^2*(e + f*x)^2*(d*(e + f*x) - 6*f*Log[1 + I*E^(c + d*x)]) - 12*d*f
^2*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)] + 12*f^3*PolyLog[3, (-I)*E^(c + d
*x)]))/(a*d^3*f)
```

fricas [C] time = 0.46, size = 181, normalized size = 1.71

$$\frac{i\,d^3f^2x^3+3i\,d^3efx^2+3i\,d^3e^2x+6i\,cd^2e^2-6i\,c^2def+2i\,c^3f^2+12i\,f^2\text{polylog}\left(3,-i\,e^{(dx+c)}\right)+\left(-12i\,df^2x-12i\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/3*(I*d^3*f^2*x^3 + 3*I*d^3*e*f*x^2 + 3*I*d^3*e^2*x + 6*I*c*d^2*e^2 - 6*I*
c^2*d*e*f + 2*I*c^3*f^2 + 12*I*f^2*polylog(3, -I*e^(d*x + c)) + (-12*I*d*f^
2*x - 12*I*d*e*f)*dilog(-I*e^(d*x + c)) + (-6*I*d^2*e^2 + 12*I*c*d*e*f - 6*
I*c^2*f^2)*log(e^(d*x + c) - I) + (-6*I*d^2*f^2*x^2 - 12*I*d^2*e*f*x - 12*I
*c*d*e*f + 6*I*c^2*f^2)*log(I*e^(d*x + c) + 1))/(a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\cosh\left(dx+c\right)}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.14, size = 393, normalized size = 3.71

$$-\frac{2if^2c^2\ln\left(e^{dx+c}-i\right)}{d^3a}-\frac{2i\ln\left(e^{dx+c}-i\right)e^2}{da}-\frac{4ief\ln\left(1+ie^{dx+c}\right)x}{da}+\frac{2i\ln\left(e^{dx+c}\right)e^2}{da}-\frac{ie^2x}{a}-\frac{4if^2c^3}{3d^3a}+\frac{ix^3f^2}{3a}+\frac{4iefcx}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -2*I/d^3/a*f^2*c^2*ln(exp(d*x+c)-I)-2*I/d/a*ln(exp(d*x+c)-I)*e^2-4*I/d/a*e*
f*ln(1+I*exp(d*x+c))*x+4*I*f^2*polylog(3,-I*exp(d*x+c))/a/d^3+2*I/d/a*ln(ex
p(d*x+c))*e^2-I/a*e^2*x-4/3*I/d^3/a*f^2*c^3+1/3*I/a*x^3*f^2+4*I/d/a*e*f*c*x
+2*I/d^2/a*e*f*c^2+2*I/d^3/a*f^2*c^2*ln(exp(d*x+c))+4*I/d^2/a*e*f*c*ln(exp(
d*x+c)-I)-4*I/d^2/a*e*f*ln(1+I*exp(d*x+c))*c-2*I/d^2/a*f^2*c^2*x-4*I/d^2/a*
e*f*c*ln(exp(d*x+c))-4*I/d^2/a*e*f*polylog(2,-I*exp(d*x+c))-2*I/d/a*f^2*ln(
1+I*exp(d*x+c))*x^2+I/a*e*f*x^2+2*I/d^3/a*f^2*ln(1+I*exp(d*x+c))*c^2-4*I/d^
2/a*f^2*polylog(2,-I*exp(d*x+c))*x
```

maxima [A] time = 0.75, size = 164, normalized size = 1.55

$$-\frac{i\,e^2\log\left(i\,a\sinh\left(dx+c\right)+a\right)}{ad}-\frac{i\,f^2x^3+3i\,e f x^2}{3\,a}-\frac{4i\left(dx\log\left(i\,e^{(dx+c)}+1\right)+\mathrm{Li}_2\left(-i\,e^{(dx+c)}\right)\right)ef}{ad^2}-\frac{2i\left(d^2x^2\log\left(i\,e^{(d\cdot}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -I*e^2*log(I*a*sinh(d*x + c) + a)/(a*d) - 1/3*(I*f^2*x^3 + 3*I*e*f*x^2)/a -
 4*I*(d*x*log(I*e^(d*x + c) + 1) + dilog(-I*e^(d*x + c)))*e*f/(a*d^2) - 2*I
*(d^2*x^2*log(I*e^(d*x + c) + 1) + 2*d*x*dilog(-I*e^(d*x + c)) - 2*polylog(
3, -I*e^(d*x + c)))*f^2/(a*d^3) + 1/3*(2*I*d^3*f^2*x^3 + 6*I*d^3*e*f*x^2)/(
a*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cosh\left(c+d\,x\right)\,\left(e+f\,x\right)^2}{a+a\sinh\left(c+d\,x\right)\,1\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^2)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x)^2)/(a + a*sinh(c + d*x)*1i), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e^2\cosh\left(c+dx\right)}{\sinh\left(c+dx\right)-i}\,dx+\int \frac{f^2x^2\cosh\left(c+dx\right)}{\sinh\left(c+dx\right)-i}\,dx+\int \frac{2efx\cosh\left(c+dx\right)}{\sinh\left(c+dx\right)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e**2*cosh(c + d*x)/(sinh(c + d*x) - I), x) + Integral(f**2*x**
2*cosh(c + d*x)/(sinh(c + d*x) - I), x) + Integral(2*e*f*x*cosh(c + d*x)/(s
inh(c + d*x) - I), x))/a
```

3.255 $\int \frac{(e+fx)\cosh(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=73

$$-\frac{2if\mathrm{Li}_2\left(-ie^{c+dx}\right)}{ad^2}-\frac{2i(e+fx)\log\left(1+ie^{c+dx}\right)}{ad}+\frac{i(e+fx)^2}{2af}$$

```
[Out] 1/2*I*(f*x+e)^2/a/f-2*I*(f*x+e)*ln(1+I*exp(d*x+c))/a/d-2*I*f*polylog(2,-I*e
xp(d*x+c))/a/d^2
```

Rubi [A] time = 0.11, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {5559, 2190, 2279, 2391}

$$-\frac{2if\,\mathrm{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^2}-\frac{2i(e+fx)\log\left(1+ie^{c+dx}\right)}{ad}+\frac{i(e+fx)^2}{2af}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((I/2)*(e + f*x)^2)/(a*f) - ((2*I)*(e + f*x)*Log[1 + I*E^(c + d*x)])/(a*d)
- ((2*I)*f*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5559

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + Dist[2, Int[((e + f*x)^m*E^(c + d*x))/(a + b*E^(c + d*x)), x], x] /;
FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[a^2 + b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(e+fx)\cosh(c+dx)}{a+ia\sinh(c+dx)}\,dx &= \frac{i(e+fx)^2}{2af}+2\int \frac{e^{c+dx}(e+fx)}{a+iae^{c+dx}}\,dx\\ &= \frac{i(e+fx)^2}{2af}-\frac{2i(e+fx)\log\left(1+ie^{c+dx}\right)}{ad}+\frac{(2if)\int \log\left(1+ie^{c+dx}\right)\,dx}{ad}\\ &= \frac{i(e+fx)^2}{2af}-\frac{2i(e+fx)\log\left(1+ie^{c+dx}\right)}{ad}+\frac{(2if)\,\text{Subst}\left(\int \frac{\log(1+ix)}{x}\,dx,x,e^{c+dx}\right)}{ad^2}\\ &= \frac{i(e+fx)^2}{2af}-\frac{2i(e+fx)\log\left(1+ie^{c+dx}\right)}{ad}-\frac{2if\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 66, normalized size = 0.90

$$\frac{i\left(d(e+fx)\left(d(e+fx)-4f\log\left(1+ie^{c+dx}\right)\right)-4f^2\text{Li}_2\left(-ie^{c+dx}\right)\right)}{2ad^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((I/2)*(d*(e + f*x)*(d*(e + f*x) - 4*f*Log[1 + I*E^(c + d*x)]) - 4*f^2*Poly
Log[2, (-I)*E^(c + d*x)]))/(a*d^2*f)
```

fricas [A] time = 0.47, size = 89, normalized size = 1.22

$$\frac{i\,d^2fx^2+2i\,d^2ex+4i\,cde-2i\,c^2f-4i\,f\text{Li}_2\left(-i\,e^{(dx+c)}\right)+\left(-4i\,de+4i\,cf\right)\log\left(e^{(dx+c)}-i\right)+\left(-4i\,dfx-4i\,cf\right)\log}{2\,ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(I*d^2*f*x^2 + 2*I*d^2*e*x + 4*I*c*d*e - 2*I*c^2*f - 4*I*f*dilog(-I*e^(
d*x + c)) + (-4*I*d*e + 4*I*c*f)*log(e^(d*x + c) - I) + (-4*I*d*f*x - 4*I*c
*f)*log(I*e^(d*x + c) + 1))/(a*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\cosh\left(dx+c\right)}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.15, size = 188, normalized size = 2.58

$$\frac{ifx^2}{2a}-\frac{iex}{a}-\frac{2i\ln\left(\mathrm{e}^{dx+c}-i\right)e}{da}+\frac{2i\ln\left(\mathrm{e}^{dx+c}\right)e}{da}+\frac{2ifcx}{da}+\frac{ifc^2}{d^2a}-\frac{2if\ln\left(1+i\mathrm{e}^{dx+c}\right)x}{da}-\frac{2if\ln\left(1+i\mathrm{e}^{dx+c}\right)c}{d^2a}-\frac{2if\,\mathrm{poly}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 1/2*I*f*x^2/a-I*e*x/a-2*I/d/a*ln(exp(d*x+c)-I)*e+2*I/d/a*ln(exp(d*x+c))*e+2
*I/d/a*f*c*x+I/d^2/a*f*c^2-2*I/d/a*f*ln(1+I*exp(d*x+c))*x-2*I/d^2/a*f*ln(1+
I*exp(d*x+c))*c-2*I*f*polylog(2,-I*exp(d*x+c))/a/d^2+2*I/d^2/a*f*c*ln(exp(d
*x+c)-I)-2*I/d^2/a*f*c*ln(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,f\left(-\frac{i\,x^2}{a}+4\int\frac{x}{ae^{(dx+c)}-i\,a}\,dx\right)-\frac{i\,e\log\left(i\,a\sinh\left(dx+c\right)+a\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*f*(-I*x^2/a + 4*integrate(x/(a*e^(d*x + c) - I*a), x)) - I*e*log(I*a*si
nh(d*x + c) + a)/(a*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cosh\left(c+d\,x\right)\,\left(e+f\,x\right)}{a+a\sinh\left(c+d\,x\right)\,1\mathrm{i}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x))/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x))/(a + a*sinh(c + d*x)*1i), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e\cosh(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{fx\cosh(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e*cosh(c + d*x)/(sinh(c + d*x) - I), x) + Integral(f*x*cosh(c
+ d*x)/(sinh(c + d*x) - I), x))/a
```

3.256 $\int \frac{\cosh(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=23

$$-\frac{i\log(-\sinh(c+dx)+i)}{ad}$$

```
[Out] -I*ln(I-sinh(d*x+c))/a/d
```

Rubi [A] time = 0.03, antiderivative size = 23, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2667, 31}

$$-\frac{i\log(-\sinh(c+dx)+i)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[Cosh[c + d*x]/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I)*Log[I - Sinh[c + d*x]])/(a*d)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2667

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^(m + (p - 1)/2)*(a - x)
^((p - 1)/2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && In
tegerQ[(p - 1)/2] && EqQ[a^2 - b^2, 0] && (GeQ[p, -1] ||  !IntegerQ[m + 1/2
])
```

Rubi steps

$$\begin{aligned}\int \frac{\cosh(c+dx)}{a+ia\sinh(c+dx)}\,dx &= -\frac{i\,\text{Subst}\left(\int \frac{1}{a+x}\,dx, x, ia\sinh(c+dx)\right)}{ad}\\ &= -\frac{i\log(i-\sinh(c+dx))}{ad}\end{aligned}$$

Mathematica [A] time = 0.01, size = 23, normalized size = 1.00

$$-\frac{i\log(-\sinh(c+dx)+i)}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cosh[c + d*x]/(a + I*a*Sinh[c + d*x]),x]
[Out] ((-I)*Log[I - Sinh[c + d*x]])/(a*d)
```

fricas [A] time = 0.48, size = 23, normalized size = 1.00

$$\frac{i\,dx-2i\,\log\left(e^{(dx+c)}-i\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
[Out] (I*d*x - 2*I*log(e^(d*x + c) - I))/(a*d)
```

giac [A] time = 0.30, size = 32, normalized size = 1.39

$$\frac{\frac{2i\,(dx+c)}{a}-\frac{4i\,\log\left(i\,e^{(dx+c)}+1\right)}{a}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
[Out] 1/2*(2*I*(d*x + c)/a - 4*I*log(I*e^(d*x + c) + 1)/a)/d
```

maple [A] time = 0.03, size = 23, normalized size = 1.00

$$-\frac{i\ln\left(a+ia\sinh\left(dx+c\right)\right)}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
[Out] -I/d*ln(a+I*a*sinh(d*x+c))/a
```

maxima [A] time = 0.39, size = 20, normalized size = 0.87

$$-\frac{i\,\log\left(i\,a\sinh\left(dx+c\right)+a\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -I*log(I*a*sinh(d*x + c) + a)/(a*d)
```

mupad [B] time = 0.24, size = 19, normalized size = 0.83

$$-\frac{\ln\left(\sinh\left(c+d\,x\right)-\mathrm{i}\right)\,1\mathrm{i}}{a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] -(log(sinh(c + d*x) - 1i)*1i)/(a*d)
```

sympy [A] time = 0.22, size = 22, normalized size = 0.96

$$\frac{ix}{a}-\frac{2i\log\left(e^{dx}-ie^{-c}\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] I*x/a - 2*I*log(exp(d*x) - I*exp(-c))/(a*d)
```

3.257 $\int \frac{\cosh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=32

$$\mathrm{Int}\left(\frac{\cosh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Cosh[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Cosh[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx=\int \frac{\cosh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Mathematica [A] time = 27.61, size = 0, normalized size = 0.00

$$\int \frac{\cosh(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cosh[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Integrate[Cosh[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{-i\,e^{(dx+c)}+1}{-i\,afx-i\,ae+\left(afx+ae\right)e^{(dx+c)}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((-I*e^(d*x + c) + 1)/(-I*a*f*x - I*a*e + (a*f*x + a*e)*e^(d*x + c)
), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)}{(fx+e)(i\,a\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(cosh(d*x + c)/((f*x + e)*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)}{(fx+e)\,(a+ia\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\log(fx+e)}{af} + 2\int \frac{1}{-i\,afx - i\,ae + (afxe^{c} + aee^{c})e^{(dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -I*log(f*x + e)/(a*f) + 2*integrate(1/(-I*a*f*x - I*a*e + (a*f*x*e^c + a*e*
e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh(c+d\,x)}{(e+f\,x)\,(a+a\sinh(c+d\,x)\,1\mathrm{i})}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)/((e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(cosh(c + d*x)/((e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int \frac{\cosh(c+dx)}{e\sinh(c+dx)-ie+fx\sinh(c+dx)-ifx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(cosh(c + d*x)/(e*sinh(c + d*x) - I*e + f*x*sinh(c + d*x) - I*f*
x), x)/a
```

3.258 $\int \frac{\cosh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{\cosh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Cosh[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Cosh[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx = \int \frac{\cosh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Mathematica [A] time = 32.36, size = 0, normalized size = 0.00

$$\int \frac{\cosh(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cosh[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Integrate[Cosh[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

fricas [A] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{-i\,e^{(dx+c)}+1}{-i\,af^2x^2-2i\,aefx-i\,ae^2+\left(af^2x^2+2\,aefx+ae^2\right)e^{(dx+c)}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((-I*e^(d*x + c) + 1)/(-I*a*f^2*x^2 - 2*I*a*e*f*x - I*a*e^2 + (a*f^
2*x^2 + 2*a*e*f*x + a*e^2)*e^(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)}{(fx+e)^2(i\,a\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(cosh(d*x + c)/((f*x + e)^2*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)}{(fx+e)^2\,(a+ia\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i}{af^2x+aef}+2\int \frac{1}{-i\,af^2x^2-2i\,aefx-i\,ae^2+\left(af^2x^2e^c+2\,aefxe^c+ae^2e^c\right)e^{(dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] I/(a*f^2*x + a*e*f) + 2*integrate(1/(-I*a*f^2*x^2 - 2*I*a*e*f*x - I*a*e^2 +
 (a*f^2*x^2*e^c + 2*a*e*f*x*e^c + a*e^2*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh(c+d\,x)}{{(e+f\,x)}^2\,(a+a\sinh(c+d\,x)\,1{}\mathrm{i})}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(cosh(c + d*x)/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int \frac{\cosh(c+dx)}{e^2\sinh(c+dx)-ie^2+2efx\sinh(c+dx)-2iefx+f^2x^2\sinh(c+dx)-if^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(cosh(c + d*x)/(e**2*sinh(c + d*x) - I*e**2 + 2*e*f*x*sinh(c + d
*x) - 2*I*e*f*x + f**2*x**2*sinh(c + d*x) - I*f**2*x**2), x)/a
```

3.259 $\int \frac{(e+fx)^3\cosh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=108

$$\frac{6if^3\sinh(c+dx)}{ad^4}-\frac{6if^2(e+fx)\cosh(c+dx)}{ad^3}+\frac{3if(e+fx)^2\sinh(c+dx)}{ad^2}-\frac{i(e+fx)^3\cosh(c+dx)}{ad}+\frac{(e+fx)^4}{4af}$$

```
[Out] 1/4*(f*x+e)^4/a/f-6*I*f^2*(f*x+e)*cosh(d*x+c)/a/d^3-I*(f*x+e)^3*cosh(d*x+c)
/a/d+6*I*f^3*sinh(d*x+c)/a/d^4+3*I*f*(f*x+e)^2*sinh(d*x+c)/a/d^2
```

Rubi [A] time = 0.16, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {5563, 32, 3296, 2637}

$$-\frac{6if^2(e+fx)\cosh(c+dx)}{ad^3}+\frac{3if(e+fx)^2\sinh(c+dx)}{ad^2}+\frac{6if^3\sinh(c+dx)}{ad^4}-\frac{i(e+fx)^3\cosh(c+dx)}{ad}+\frac{(e+fx)^4}{4af}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (e + f*x)^4/(4*a*f) - ((6*I)*f^2*(e + f*x)*Cosh[c + d*x])/(a*d^3) - (I*(e +
 f*x)^3*Cosh[c + d*x])/(a*d) + ((6*I)*f^3*Sinh[c + d*x])/(a*d^4) + ((3*I)*f
*(e + f*x)^2*Sinh[c + d*x])/(a*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5563

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cosh[c
```

```
+ d*x]^(n - 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2)*Si
nh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ
[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)^3\sinh(c+dx)\,dx}{a}+\frac{\int (e+fx)^3\,dx}{a}$$
$$=\frac{(e+fx)^4}{4af}-\frac{i(e+fx)^3\cosh(c+dx)}{ad}+\frac{(3if)\int (e+fx)^2\cosh(c+dx)\,dx}{ad}$$
$$=\frac{(e+fx)^4}{4af}-\frac{i(e+fx)^3\cosh(c+dx)}{ad}+\frac{3if(e+fx)^2\sinh(c+dx)}{ad^2}-\frac{\left(6if^2\right)\int (e$$
$$=\frac{(e+fx)^4}{4af}-\frac{6if^2(e+fx)\cosh(c+dx)}{ad^3}-\frac{i(e+fx)^3\cosh(c+dx)}{ad}+\frac{3if(e+fx$$
$$=\frac{(e+fx)^4}{4af}-\frac{6if^2(e+fx)\cosh(c+dx)}{ad^3}-\frac{i(e+fx)^3\cosh(c+dx)}{ad}+\frac{6if^3\sinh(}{ad^4}$$

Mathematica [A] time = 0.77, size = 106, normalized size = 0.98

$$\frac{12if\sinh(c+dx)\left(d^2(e+fx)^2+2f^2\right)-4id(e+fx)\cosh(c+dx)\left(d^2(e+fx)^2+6f^2\right)+d^4x\left(4e^3+6e^2fx+4ef\right.}{4ad^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (d^4*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3) - (4*I)*d*(e + f*x)*(6*f
^2 + d^2*(e + f*x)^2)*Cosh[c + d*x] + (12*I)*f*(2*f^2 + d^2*(e + f*x)^2)*Si
nh[c + d*x])/(4*a*d^4)
```

fricas [B] time = 0.47, size = 258, normalized size = 2.39

$$\frac{\left(-2i\,d^3f^3x^3-2i\,d^3e^3-6i\,d^2e^2f-12i\,def^2-12i\,f^3+\left(-6i\,d^3ef^2-6i\,d^2f^3\right)x^2+\left(-6i\,d^3e^2f-12i\,d^2ef^2-12i\,df\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/4*(-2*I*d^3*f^3*x^3 - 2*I*d^3*e^3 - 6*I*d^2*e^2*f - 12*I*d*e*f^2 - 12*I*f
^3 + (-6*I*d^3*e*f^2 - 6*I*d^2*f^3)*x^2 + (-6*I*d^3*e^2*f - 12*I*d^2*e*f^2
- 12*I*d*f^3)*x + (-2*I*d^3*f^3*x^3 - 2*I*d^3*e^3 + 6*I*d^2*e^2*f - 12*I*d*
e*f^2 + 12*I*f^3 + (-6*I*d^3*e*f^2 + 6*I*d^2*f^3)*x^2 + (-6*I*d^3*e^2*f + 1
2*I*d^2*e*f^2 - 12*I*d*f^3)*x)*e^(2*d*x + 2*c) + (d^4*f^3*x^4 + 4*d^4*e*f^2
*x^3 + 6*d^4*e^2*f*x^2 + 4*d^4*e^3*x)*e^(d*x + c))*e^(-d*x - c)/(a*d^4)
```

giac [B] time = 2.53, size = 803, normalized size = 7.44

$$\frac{d^4 f^3 x^4 e^{(2\,dx+3\,c)} - i\,d^4 f^3 x^4 e^{(dx+2\,c)} - 2i\,d^3 f^3 x^3 e^{(3\,dx+4\,c)} + 4\,d^4 f^2 x^3 e^{(2\,dx+3\,c+1)} - 2\,d^3 f^3 x^3 e^{(2\,dx+3\,c)} - 4i\,d^4 f^2 x^3 e^{(dx+2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/4*(d^4*f^3*x^4*e^(2*d*x + 3*c) - I*d^4*f^3*x^4*e^(d*x + 2*c) - 2*I*d^3*f^
3*x^3*e^(3*d*x + 4*c) + 4*d^4*f^2*x^3*e^(2*d*x + 3*c + 1) - 2*d^3*f^3*x^3*e
^(2*d*x + 3*c) - 4*I*d^4*f^2*x^3*e^(d*x + 2*c + 1) - 2*I*d^3*f^3*x^3*e^(d*x
 + 2*c) - 2*d^3*f^3*x^3*e^c - 6*I*d^3*f^2*x^2*e^(3*d*x + 4*c + 1) + 6*I*d^2
*f^3*x^2*e^(3*d*x + 4*c) + 6*d^4*f*x^2*e^(2*d*x + 3*c + 2) - 6*d^3*f^2*x^2*
e^(2*d*x + 3*c + 1) + 6*d^2*f^3*x^2*e^(2*d*x + 3*c) - 6*I*d^4*f*x^2*e^(d*x
+ 2*c + 2) - 6*I*d^3*f^2*x^2*e^(d*x + 2*c + 1) - 6*I*d^2*f^3*x^2*e^(d*x + 2
*c) - 6*d^3*f^2*x^2*e^(c + 1) - 6*d^2*f^3*x^2*e^c - 6*I*d^3*f*x*e^(3*d*x +
4*c + 2) + 12*I*d^2*f^2*x*e^(3*d*x + 4*c + 1) - 12*I*d*f^3*x*e^(3*d*x + 4*c
) + 4*d^4*x*e^(2*d*x + 3*c + 3) - 6*d^3*f*x*e^(2*d*x + 3*c + 2) + 12*d^2*f^
2*x*e^(2*d*x + 3*c + 1) - 12*d*f^3*x*e^(2*d*x + 3*c) - 4*I*d^4*x*e^(d*x + 2
*c + 3) - 6*I*d^3*f*x*e^(d*x + 2*c + 2) - 12*I*d^2*f^2*x*e^(d*x + 2*c + 1)
- 12*I*d*f^3*x*e^(d*x + 2*c) - 6*d^3*f*x*e^(c + 2) - 12*d^2*f^2*x*e^(c + 1)
 - 12*d*f^3*x*e^c - 2*I*d^3*e^(3*d*x + 4*c + 3) + 6*I*d^2*f*e^(3*d*x + 4*c
+ 2) - 12*I*d*f^2*e^(3*d*x + 4*c + 1) + 12*I*f^3*e^(3*d*x + 4*c) - 2*d^3*e^
(2*d*x + 3*c + 3) + 6*d^2*f*e^(2*d*x + 3*c + 2) - 12*d*f^2*e^(2*d*x + 3*c +
 1) + 12*f^3*e^(2*d*x + 3*c) - 2*I*d^3*e^(d*x + 2*c + 3) - 6*I*d^2*f*e^(d*x
 + 2*c + 2) - 12*I*d*f^2*e^(d*x + 2*c + 1) - 12*I*f^3*e^(d*x + 2*c) - 2*d^3
*e^(c + 3) - 6*d^2*f*e^(c + 2) - 12*d*f^2*e^(c + 1) - 12*f^3*e^c)/(a*d^4*e^
(2*d*x + 3*c) - I*a*d^4*e^(d*x + 2*c))
```

maple [B] time = 0.09, size = 447, normalized size = 4.14

$$\frac{3ic\,f^3\left((dx+c)^2\cosh(dx+c)-2\,(dx+c)\sinh(dx+c)+2\cosh(dx+c)\right)-3if^2ed\left((dx+c)^2\cosh(dx+c)-2\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 1/d^4/a*(3*I*c*f^3*((d*x+c)^2*cosh(d*x+c)-2*(d*x+c)*sinh(d*x+c)+2*cosh(d*x+
c))-3*I*f^2*e*d*((d*x+c)^2*cosh(d*x+c)-2*(d*x+c)*sinh(d*x+c)+2*cosh(d*x+c))
+6*I*f^2*c*e*d*((d*x+c)*cosh(d*x+c)-sinh(d*x+c))+3*I*c*f*e^2*d^2*cosh(d*x+c
)-3*I*c^2*f^2*e*d*cosh(d*x+c)-I*f^3*((d*x+c)^3*cosh(d*x+c)-3*(d*x+c)^2*sinh
(d*x+c)+6*(d*x+c)*cosh(d*x+c)-6*sinh(d*x+c))-I*d^3*e^3*cosh(d*x+c)-3*I*c^2*
f^3*((d*x+c)*cosh(d*x+c)-sinh(d*x+c))-3*I*f*e^2*d^2*((d*x+c)*cosh(d*x+c)-si
nh(d*x+c))+I*f^3*c^3*cosh(d*x+c)+1/4*f^3*(d*x+c)^4-c*f^3*(d*x+c)^3+d*e*f^2*
(d*x+c)^3+3/2*c^2*f^3*(d*x+c)^2-3*f^2*c*e*d*(d*x+c)^2+3/2*d^2*e^2*f*(d*x+c)
^2-f^3*c^3*(d*x+c)+3*c^2*f^2*e*d*(d*x+c)-3*c*f*e^2*d^2*(d*x+c)+d^3*e^3*(d*x
+c))
```

maxima [B] time = 2.38, size = 373, normalized size = 3.45

$$\frac{3}{4}e^2f\left(\frac{4\,xe^{(dx+c)}}{ade^{(dx+c)}-i\,ad}+\frac{-2i\,d^2x^2e^c-2i\,dxe^c-\left(2i\,dxe^{(3\,c)}-2i\,e^{(3\,c)}\right)e^{(2\,dx)}+2\left(d^2x^2e^{(2\,c)}-3\,dxe^{(2\,c)}+e^{(2\,c)}\right)e^{(dx)}-}{ad^2e^{(dx+2\,c)}-i\,ad^2e^c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] 3/4*e^2*f*(4*x*e^(d*x + c)/(a*d*e^(d*x + c) - I*a*d) + (-2*I*d^2*x^2*e^c -
2*I*d*x*e^c - (2*I*d*x*e^(3*c) - 2*I*e^(3*c))*e^(2*d*x) + 2*(d^2*x^2*e^(2*c
) - 3*d*x*e^(2*c) + e^(2*c))*e^(d*x) - 2*(d*x + 1)*e^(-d*x) - 2*I*e^c)/(a*d
^2*e^(d*x + 2*c) - I*a*d^2*e^c)) + 1/4*e^3*(4*(d*x + c)/(a*d) - 2*I*e^(d*x
+ c)/(a*d) - 2*I*e^(-d*x - c)/(a*d)) + 1/4*(4*d^3*x^3*e^c - (6*I*d^2*x^2*e^
(2*c) - 12*I*d*x*e^(2*c) + 12*I*e^(2*c))*e^(d*x) - (6*I*d^2*x^2 + 12*I*d*x
+ 12*I)*e^(-d*x))*e*f^2*e^(-c)/(a*d^3) + 1/4*(d^4*x^4*e^c - (2*I*d^3*x^3*e^
(2*c) - 6*I*d^2*x^2*e^(2*c) + 12*I*d*x*e^(2*c) - 12*I*e^(2*c))*e^(d*x) - (2
*I*d^3*x^3 + 6*I*d^2*x^2 + 12*I*d*x + 12*I)*e^(-d*x))*f^3*e^(-c)/(a*d^4)
```

mupad [B] time = 0.72, size = 269, normalized size = 2.49

$$e^{c+d\,x}\left(\frac{\left(-d^3\,e^3+3\,d^2\,e^2\,f-6\,d\,e\,f^2+6\,f^3\right)\,1\mathrm{i}}{2\,a\,d^4}-\frac{f^3\,x^3\,1\mathrm{i}}{2\,a\,d}+\frac{f^2\,x^2\,\left(f-d\,e\right)\,3\mathrm{i}}{2\,a\,d^2}-\frac{f\,x\,\left(d^2\,e^2-2\,d\,e\,f+2\,f^2\right)\,3\mathrm{i}}{2\,a\,d^3}\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*(e + f*x)^3)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] exp(c + d*x)*(((6*f^3 - d^3*e^3 + 3*d^2*e^2*f - 6*d*e*f^2)*1i)/(2*a*d^4) -
(f^3*x^3*1i)/(2*a*d) + (f^2*x^2*(f - d*e)*3i)/(2*a*d^2) - (f*x*(2*f^2 + d^2
*e^2 - 2*d*e*f)*3i)/(2*a*d^3)) - exp(- c - d*x)*(((6*f^3 + d^3*e^3 + 3*d^2*
e^2*f + 6*d*e*f^2)*1i)/(2*a*d^4) + (f^3*x^3*1i)/(2*a*d) + (f^2*x^2*(f + d*e
)*3i)/(2*a*d^2) + (f*x*(2*f^2 + d^2*e^2 + 2*d*e*f)*3i)/(2*a*d^3)) + (e^3*x)
/a + (f^3*x^4)/(4*a) + (3*e^2*f*x^2)/(2*a) + (e*f^2*x^3)/a
```

sympy [A] time = 0.76, size = 520, normalized size = 4.81

$$\begin{cases} \frac{\left(\left(-2iad^7e^3-6iad^7e^2fx-6iad^7ef^2x^2-2iad^7f^3x^3-6iad^6e^2f-12iad^6ef^2x-6iad^6f^3x^2-12iad^5ef^2-12iad^5f^3x-12iad^4f^3\right)e^{-dx}+\left(-2iad^7e^3e^{2c}-6iad^7e^2fxe^{2c}\right.\right.}{4a^2d^8} \\ \frac{x^4\left(-if^3e^{2c}+if^3\right)e^{-c}}{8a}+\frac{x^3\left(-ief^2e^{2c}+ief^2\right)e^{-c}}{2a}+\frac{x^2\left(-3ie^2fe^{2c}+3ie^2f\right)e^{-c}}{4a}+\frac{x\left(-ie^3e^{2c}+ie^3\right)e^{-c}}{2a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Piecewise((((-2*I*a*d**7*e**3 - 6*I*a*d**7*e**2*f*x - 6*I*a*d**7*e*f**2*x**
2 - 2*I*a*d**7*f**3*x**3 - 6*I*a*d**6*e**2*f - 12*I*a*d**6*e*f**2*x - 6*I*a
*d**6*f**3*x**2 - 12*I*a*d**5*e*f**2 - 12*I*a*d**5*f**3*x - 12*I*a*d**4*f**
3)*exp(-d*x) + (-2*I*a*d**7*e**3*exp(2*c) - 6*I*a*d**7*e**2*f*x*exp(2*c) -
6*I*a*d**7*e*f**2*x**2*exp(2*c) - 2*I*a*d**7*f**3*x**3*exp(2*c) + 6*I*a*d**
6*e**2*f*exp(2*c) + 12*I*a*d**6*e*f**2*x*exp(2*c) + 6*I*a*d**6*f**3*x**2*ex
p(2*c) - 12*I*a*d**5*e*f**2*exp(2*c) - 12*I*a*d**5*f**3*x*exp(2*c) + 12*I*a
*d**4*f**3*exp(2*c))*exp(d*x))*exp(-c)/(4*a**2*d**8), Ne(4*a**2*d**8*exp(c)
, 0)), (x**4*(-I*f**3*exp(2*c) + I*f**3)*exp(-c)/(8*a) + x**3*(-I*e*f**2*ex
p(2*c) + I*e*f**2)*exp(-c)/(2*a) + x**2*(-3*I*e**2*f*exp(2*c) + 3*I*e**2*f)
*exp(-c)/(4*a) + x*(-I*e**3*exp(2*c) + I*e**3)*exp(-c)/(2*a), True)) + e**3
*x/a + 3*e**2*f*x**2/(2*a) + e*f**2*x**3/a + f**3*x**4/(4*a)
```

3.260 $\int \frac{(e+fx)^2 \cosh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=82

$$-\frac{2if^2\cosh(c+dx)}{ad^3}+\frac{2if(e+fx)\sinh(c+dx)}{ad^2}-\frac{i(e+fx)^2\cosh(c+dx)}{ad}+\frac{(e+fx)^3}{3af}$$

```
[Out] 1/3*(f*x+e)^3/a/f-2*I*f^2*cosh(d*x+c)/a/d^3-I*(f*x+e)^2*cosh(d*x+c)/a/d+2*I
*f*(f*x+e)*sinh(d*x+c)/a/d^2
```

Rubi [A] time = 0.13, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {5563, 32, 3296, 2638}

$$\frac{2if(e+fx)\sinh(c+dx)}{ad^2}-\frac{2if^2\cosh(c+dx)}{ad^3}-\frac{i(e+fx)^2\cosh(c+dx)}{ad}+\frac{(e+fx)^3}{3af}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (e + f*x)^3/(3*a*f) - ((2*I)*f^2*Cosh[c + d*x])/(a*d^3) - (I*(e + f*x)^2*Co
sh[c + d*x])/(a*d) + ((2*I)*f*(e + f*x)*Sinh[c + d*x])/(a*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5563

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cosh[c
+ d*x]^(n - 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2)*Si
```

```
nh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ
[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)^2\sinh(c+dx)\,dx}{a}+\frac{\int (e+fx)^2\,dx}{a}$$
$$=\frac{(e+fx)^3}{3af}-\frac{i(e+fx)^2\cosh(c+dx)}{ad}+\frac{(2if)\int (e+fx)\cosh(c+dx)\,dx}{ad}$$
$$=\frac{(e+fx)^3}{3af}-\frac{i(e+fx)^2\cosh(c+dx)}{ad}+\frac{2if(e+fx)\sinh(c+dx)}{ad^2}-\frac{\left(2if^2\right)\int \sinh}{ad^2}$$
$$=\frac{(e+fx)^3}{3af}-\frac{2if^2\cosh(c+dx)}{ad^3}-\frac{i(e+fx)^2\cosh(c+dx)}{ad}+\frac{2if(e+fx)\sinh(c+}{ad^2}$$

Mathematica [A] time = 0.50, size = 78, normalized size = 0.95

$$\frac{-3i\cosh(c+dx)\left(d^2(e+fx)^2+2f^2\right)+6idf(e+fx)\sinh(c+dx)+d^3x\left(3e^2+3efx+f^2x^2\right)}{3ad^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (d^3*x*(3*e^2 + 3*e*f*x + f^2*x^2) - (3*I)*(2*f^2 + d^2*(e + f*x)^2)*Cosh[c
 + d*x] + (6*I)*d*f*(e + f*x)*Sinh[c + d*x])/(3*a*d^3)
```

fricas [B] time = 0.49, size = 157, normalized size = 1.91

$$\frac{\left(-3i\,d^2f^2x^2-3i\,d^2e^2-6i\,def-6i\,f^2+\left(-6i\,d^2ef-6i\,df^2\right)x+\left(-3i\,d^2f^2x^2-3i\,d^2e^2+6i\,def-6i\,f^2+\left(-6i\,d^2ef\right.\right.\right.}{6\,ad^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/6*(-3*I*d^2*f^2*x^2 - 3*I*d^2*e^2 - 6*I*d*e*f - 6*I*f^2 + (-6*I*d^2*e*f -
 6*I*d*f^2)*x + (-3*I*d^2*f^2*x^2 - 3*I*d^2*e^2 + 6*I*d*e*f - 6*I*f^2 + (-6
*I*d^2*e*f + 6*I*d*f^2)*x)*e^(2*d*x + 2*c) + 2*(d^3*f^2*x^3 + 3*d^3*e*f*x^2
 + 3*d^3*e^2*x)*e^(d*x + c))*e^(-d*x - c)/(a*d^3)
```

giac [B] time = 1.04, size = 480, normalized size = 5.85

$$\frac{2\,d^3f^2x^3e^{(2\,dx+3\,c)} - 2i\,d^3f^2x^3e^{(dx+2\,c)} - 3i\,d^2f^2x^2e^{(3\,dx+4\,c)} + 6\,d^3fx^2e^{(2\,dx+3\,c+1)} - 3\,d^2f^2x^2e^{(2\,dx+3\,c)} - 6i\,d^3fx^2e^{(d}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (2*d^3*f^2*x^3*e^(2*d*x + 3*c) - 2*I*d^3*f^2*x^3*e^(d*x + 2*c) - 3*I*d^2*f^
2*x^2*e^(3*d*x + 4*c) + 6*d^3*f*x^2*e^(2*d*x + 3*c + 1) - 3*d^2*f^2*x^2*e^(
2*d*x + 3*c) - 6*I*d^3*f*x^2*e^(d*x + 2*c + 1) - 3*I*d^2*f^2*x^2*e^(d*x + 2
*c) - 3*d^2*f^2*x^2*e^c - 6*I*d^2*f*x*e^(3*d*x + 4*c + 1) + 6*I*d*f^2*x*e^(
3*d*x + 4*c) + 6*d^3*x*e^(2*d*x + 3*c + 2) - 6*d^2*f*x*e^(2*d*x + 3*c + 1)
+ 6*d*f^2*x*e^(2*d*x + 3*c) - 6*I*d^3*x*e^(d*x + 2*c + 2) - 6*I*d^2*f*x*e^(
d*x + 2*c + 1) - 6*I*d*f^2*x*e^(d*x + 2*c) - 6*d^2*f*x*e^(c + 1) - 6*d*f^2*
x*e^c - 3*I*d^2*e^(3*d*x + 4*c + 2) + 6*I*d*f*e^(3*d*x + 4*c + 1) - 6*I*f^2
*e^(3*d*x + 4*c) - 3*d^2*e^(2*d*x + 3*c + 2) + 6*d*f*e^(2*d*x + 3*c + 1) -
6*f^2*e^(2*d*x + 3*c) - 3*I*d^2*e^(d*x + 2*c + 2) - 6*I*d*f*e^(d*x + 2*c +
1) - 6*I*f^2*e^(d*x + 2*c) - 3*d^2*e^(c + 2) - 6*d*f*e^(c + 1) - 6*f^2*e^c)
/(6*a*d^3*e^(2*d*x + 3*c) - 6*I*a*d^3*e^(d*x + 2*c))
```

maple [B] time = 0.08, size = 223, normalized size = 2.72

$$-\frac{if^2\left((dx+c)^2\cosh(dx+c) - 2(dx+c)\sinh(dx+c) + 2\cosh(dx+c)\right) - 2ic\,f^2\left((dx+c)\cosh(dx+c) - \sinh\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/d^3/a*(I*f^2*((d*x+c)^2*cosh(d*x+c)-2*(d*x+c)*sinh(d*x+c)+2*cosh(d*x+c))
-2*I*c*f^2*((d*x+c)*cosh(d*x+c)-sinh(d*x+c))+2*I*f*e*d*((d*x+c)*cosh(d*x+c)
-sinh(d*x+c))+I*c^2*f^2*cosh(d*x+c)-2*I*c*d*f*e*cosh(d*x+c)+I*d^2*e^2*cosh(
d*x+c)-1/3*f^2*(d*x+c)^3+c*f^2*(d*x+c)^2-d*e*f*(d*x+c)^2-c^2*f^2*(d*x+c)+2*
c*d*f*e*(d*x+c)-d^2*e^2*(d*x+c))
```

maxima [B] time = 0.57, size = 271, normalized size = 3.30

$$\frac{1}{2}ef\left(\frac{4\,xe^{(dx+c)}}{ade^{(dx+c)} - i\,ad} + \frac{-2i\,d^2x^2e^c - 2i\,dxe^c - \left(2i\,dxe^{(3\,c)} - 2i\,e^{(3\,c)}\right)e^{(2\,dx)} + 2\left(d^2x^2e^{(2\,c)} - 3\,dxe^{(2\,c)} + e^{(2\,c)}\right)e^{(dx)} - }{ad^2e^{(dx+2\,c)} - i\,ad^2e^c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] 1/2*e*f*(4*x*e^(d*x + c)/(a*d*e^(d*x + c) - I*a*d) + (-2*I*d^2*x^2*e^c - 2*
I*d*x*e^c - (2*I*d*x*e^(3*c) - 2*I*e^(3*c))*e^(2*d*x) + 2*(d^2*x^2*e^(2*c)
- 3*d*x*e^(2*c) + e^(2*c))*e^(d*x) - 2*(d*x + 1)*e^(-d*x) - 2*I*e^c)/(a*d^2
*e^(d*x + 2*c) - I*a*d^2*e^c)) + 1/4*e^2*(4*(d*x + c)/(a*d) - 2*I*e^(d*x +
c)/(a*d) - 2*I*e^(-d*x - c)/(a*d)) + 1/12*(4*d^3*x^3*e^c - (6*I*d^2*x^2*e^(
2*c) - 12*I*d*x*e^(2*c) + 12*I*e^(2*c))*e^(d*x) - (6*I*d^2*x^2 + 12*I*d*x +
 12*I)*e^(-d*x))*f^2*e^(-c)/(a*d^3)
```

mupad [B] time = 0.52, size = 167, normalized size = 2.04

$$\frac{e^2\,x}{a}-\mathrm{e}^{-c-d\,x}\,\left(\frac{\left(d^2\,e^2+2\,d\,e\,f+2\,f^2\right)\,1\mathrm{i}}{2\,a\,d^3}+\frac{f^2\,x^2\,1\mathrm{i}}{2\,a\,d}+\frac{f\,x\,\left(f+d\,e\right)\,1\mathrm{i}}{a\,d^2}\right)-\mathrm{e}^{c+d\,x}\,\left(\frac{\left(d^2\,e^2-2\,d\,e\,f+2\,f^2\right)\,1\mathrm{i}}{2\,a\,d^3}+\frac{f^2\,x^2}{2\,a\,d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*(e + f*x)^2)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] (e^2*x)/a - exp(- c - d*x)*(((2*f^2 + d^2*e^2 + 2*d*e*f)*1i)/(2*a*d^3) + (f
^2*x^2*1i)/(2*a*d) + (f*x*(f + d*e)*1i)/(a*d^2)) - exp(c + d*x)*(((2*f^2 +
d^2*e^2 - 2*d*e*f)*1i)/(2*a*d^3) + (f^2*x^2*1i)/(2*a*d) - (f*x*(f - d*e)*1i
)/(a*d^2)) + (f^2*x^3)/(3*a) + (e*f*x^2)/a
```

sympy [A] time = 0.57, size = 320, normalized size = 3.90

$$\begin{cases} \frac{\left(\left(-2iad^5e^2-4iad^5efx-2iad^5f^2x^2-4iad^4ef-4iad^4f^2x-4iad^3f^2\right)e^{-dx}+\left(-2iad^5e^2e^{2c}-4iad^5efxe^{2c}-2iad^5f^2x^2e^{2c}+4iad^4efe^{2c}+4iad^4f^2xe^{2c}-4iad^3f^2e^{2c}\right)\cdots}{4a^2d^6} \\ \frac{x^3\left(-if^2e^{2c}+if^2\right)e^{-c}}{6a}+\frac{x^2\left(-iefe^{2c}+ief\right)e^{-c}}{2a}+\frac{x\left(-ie^2e^{2c}+ie^2\right)e^{-c}}{2a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Piecewise((((-2*I*a*d**5*e**2 - 4*I*a*d**5*e*f*x - 2*I*a*d**5*f**2*x**2 - 4
*I*a*d**4*e*f - 4*I*a*d**4*f**2*x - 4*I*a*d**3*f**2)*exp(-d*x) + (-2*I*a*d*
*5*e**2*exp(2*c) - 4*I*a*d**5*e*f*x*exp(2*c) - 2*I*a*d**5*f**2*x**2*exp(2*c
) + 4*I*a*d**4*e*f*exp(2*c) + 4*I*a*d**4*f**2*x*exp(2*c) - 4*I*a*d**3*f**2*
exp(2*c))*exp(d*x))*exp(-c)/(4*a**2*d**6), Ne(4*a**2*d**6*exp(c), 0)), (x**
3*(-I*f**2*exp(2*c) + I*f**2)*exp(-c)/(6*a) + x**2*(-I*e*f*exp(2*c) + I*e*f
)*exp(-c)/(2*a) + x*(-I*e**2*exp(2*c) + I*e**2)*exp(-c)/(2*a), True)) + e**
2*x/a + e*f*x**2/a + f**2*x**3/(3*a)
```

3.261 $\int \frac{(e+fx)\cosh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=56

$$\frac{if\sinh(c+dx)}{ad^2} - \frac{i(e+fx)\cosh(c+dx)}{ad} + \frac{ex}{a} + \frac{fx^2}{2a}$$

```
[Out] e*x/a+1/2*f*x^2/a-I*(f*x+e)*cosh(d*x+c)/a/d+I*f*sinh(d*x+c)/a/d^2
```

Rubi [A] time = 0.07, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {5563, 3296, 2637}

$$\frac{if\sinh(c+dx)}{ad^2} - \frac{i(e+fx)\cosh(c+dx)}{ad} + \frac{ex}{a} + \frac{fx^2}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (e*x)/a + (f*x^2)/(2*a) - (I*(e + f*x)*Cosh[c + d*x])/(a*d) + (I*f*Sinh[c +
 d*x])/(a*d^2)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5563

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cosh[c
+ d*x]^(n - 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2)*Si
nh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ
[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int(e+fx)\sinh(c+dx)\,dx}{a} + \frac{\int(e+fx)\,dx}{a}$$
$$= \frac{ex}{a} + \frac{fx^2}{2a} - \frac{i(e+fx)\cosh(c+dx)}{ad} + \frac{(if)\int\cosh(c+dx)\,dx}{ad}$$
$$= \frac{ex}{a} + \frac{fx^2}{2a} - \frac{i(e+fx)\cosh(c+dx)}{ad} + \frac{if\sinh(c+dx)}{ad^2}$$

Mathematica [A] time = 0.62, size = 57, normalized size = 1.02

$$-\frac{(c+dx)(cf-2de-dfx)+2id(e+fx)\cosh(c+dx)-2if\sinh(c+dx)}{2ad^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] -1/2*((c + d*x)*(-2*d*e + c*f - d*f*x) + (2*I)*d*(e + f*x)*Cosh[c + d*x] -
(2*I)*f*Sinh[c + d*x])/(a*d^2)
```

fricas [A] time = 0.47, size = 76, normalized size = 1.36

$$\frac{\left(-i\,dfx-i\,de+\left(-i\,dfx-i\,de+i\,f\right)e^{(2\,dx+2\,c)}+\left(d^2fx^2+2\,d^2ex\right)e^{(dx+c)}-i\,f\right)e^{(-dx-c)}}{2\,ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(-I*d*f*x - I*d*e + (-I*d*f*x - I*d*e + I*f)*e^(2*d*x + 2*c) + (d^2*f*x
^2 + 2*d^2*e*x)*e^(d*x + c) - I*f)*e^(-d*x - c)/(a*d^2)
```

giac [B] time = 0.22, size = 231, normalized size = 4.12

$$\frac{d^2fx^2e^{(2\,dx+3\,c)}-i\,d^2fx^2e^{(dx+2\,c)}-i\,dfxe^{(3\,dx+4\,c)}+2\,d^2xe^{(2\,dx+3\,c+1)}-dfxe^{(2\,dx+3\,c)}-2i\,d^2xe^{(dx+2\,c+1)}-i\,dfxe^{(dx+2}}{2\,ad^2e^{(2\,dx+3\,c)}-2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (d^2*f*x^2*e^(2*d*x + 3*c) - I*d^2*f*x^2*e^(d*x + 2*c) - I*d*f*x*e^(3*d*x +
 4*c) + 2*d^2*x*e^(2*d*x + 3*c + 1) - d*f*x*e^(2*d*x + 3*c) - 2*I*d^2*x*e^(
d*x + 2*c + 1) - I*d*f*x*e^(d*x + 2*c) - d*f*x*e^c - I*d*e^(3*d*x + 4*c + 1
```

```
) + I*f*e^(3*d*x + 4*c) - d*e^(2*d*x + 3*c + 1) + f*e^(2*d*x + 3*c) - I*d*e
^(d*x + 2*c + 1) - I*f*e^(d*x + 2*c) - d*e^(c + 1) - f*e^c)/(2*a*d^2*e^(2*d
*x + 3*c) - 2*I*a*d^2*e^(d*x + 2*c))
```

maple [A] time = 0.08, size = 83, normalized size = 1.48

$$\frac{-if\left((dx+c)\cosh(dx+c)-\sinh(dx+c)\right)+icf\cosh(dx+c)-ide\cosh(dx+c)+\frac{f(dx+c)^2}{2}-cf(dx+c)+de(}{d^2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 1/d^2/a*(-I*f*((d*x+c)*cosh(d*x+c)-sinh(d*x+c))+I*c*f*cosh(d*x+c)-I*d*e*cos
h(d*x+c)+1/2*f*(d*x+c)^2-c*f*(d*x+c)+d*e*(d*x+c))
```

maxima [B] time = 0.51, size = 188, normalized size = 3.36

$$\frac{1}{4}f\left(\frac{4\,xe^{(dx+c)}}{ade^{(dx+c)}-i\,ad}+\frac{-2i\,d^2x^2e^c-2i\,dxe^c-\left(2i\,dxe^{(3\,c)}-2i\,e^{(3\,c)}\right)e^{(2\,dx)}+2\left(d^2x^2e^{(2\,c)}-3\,dxe^{(2\,c)}+e^{(2\,c)}\right)e^{(dx)}-2}{ad^2e^{(dx+2\,c)}-i\,ad^2e^c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/4*f*(4*x*e^(d*x + c)/(a*d*e^(d*x + c) - I*a*d) + (-2*I*d^2*x^2*e^c - 2*I*
d*x*e^c - (2*I*d*x*e^(3*c) - 2*I*e^(3*c))*e^(2*d*x) + 2*(d^2*x^2*e^(2*c) -
3*d*x*e^(2*c) + e^(2*c))*e^(d*x) - 2*(d*x + 1)*e^(-d*x) - 2*I*e^c)/(a*d^2*e
^(d*x + 2*c) - I*a*d^2*e^c)) + 1/4*e*(4*(d*x + c)/(a*d) - 2*I*e^(d*x + c)/(
a*d) - 2*I*e^(-d*x - c)/(a*d))
```

mupad [B] time = 0.38, size = 87, normalized size = 1.55

$$\frac{f\,x^2}{2\,a}+\mathrm{e}^{c+d\,x}\,\left(\frac{\left(f-d\,e\right)\,1\mathrm{i}}{2\,a\,d^2}-\frac{f\,x\,1\mathrm{i}}{2\,a\,d}\right)-\mathrm{e}^{-c-d\,x}\,\left(\frac{\left(f+d\,e\right)\,1\mathrm{i}}{2\,a\,d^2}+\frac{f\,x\,1\mathrm{i}}{2\,a\,d}\right)+\frac{e\,x}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*(e + f*x))/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] exp(c + d*x)*(((f - d*e)*1i)/(2*a*d^2) - (f*x*1i)/(2*a*d)) - exp(- c - d*x)
*(((f + d*e)*1i)/(2*a*d^2) + (f*x*1i)/(2*a*d)) + (f*x^2)/(2*a) + (e*x)/a
```

sympy [A] time = 0.41, size = 168, normalized size = 3.00

$$\begin{cases} \frac{((-2iad^3e-2iad^3fx-2iad^2f)e^{-dx}+(-2iad^3ee^{2c}-2iad^3fxe^{2c}+2iad^2fe^{2c})e^{dx})e^{-c}}{4a^2d^4} & \text{for } 4a^2d^4e^c \neq 0 \\ \frac{x^2(-ife^{2c}+if)e^{-c}}{4a} + \frac{x(-iee^{2c}+ie)e^{-c}}{2a} & \text{otherwise} \end{cases} + \frac{ex}{a} + \frac{fx^2}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Piecewise((((-2*I*a*d**3*e - 2*I*a*d**3*f*x - 2*I*a*d**2*f)*exp(-d*x) + (-2
*I*a*d**3*e*exp(2*c) - 2*I*a*d**3*f*x*exp(2*c) + 2*I*a*d**2*f*exp(2*c))*exp
(d*x))*exp(-c)/(4*a**2*d**4), Ne(4*a**2*d**4*exp(c), 0)), (x**2*(-I*f*exp(2
*c) + I*f)*exp(-c)/(4*a) + x*(-I*e*exp(2*c) + I*e)*exp(-c)/(2*a), True)) +
e*x/a + f*x**2/(2*a)
```

3.262 $\int \frac{\cosh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=22

$$\frac{x}{a}-\frac{i\cosh(c+dx)}{ad}$$

```
[Out] x/a-I*cosh(d*x+c)/a/d
```

Rubi [A] time = 0.04, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {2682, 8}

$$\frac{x}{a}-\frac{i\cosh(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[Cosh[c + d*x]^2/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] x/a - (I*Cosh[c + d*x])/(a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2682

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Simp[(g*(g*Cos[e + f*x])^(p - 1))/(b*f*(p - 1)), x] + Di
st[g^2/a, Int[(g*Cos[e + f*x])^(p - 2), x], x] /; FreeQ[{a, b, e, f, g}, x]
 && EqQ[a^2 - b^2, 0] && GtQ[p, 1] && IntegerQ[2*p]
```

Rubi steps

$$\begin{aligned}\int \frac{\cosh^2(c+dx)}{a+ia\sinh(c+dx)}\,dx &= -\frac{i\cosh(c+dx)}{ad}+\frac{\int 1\,dx}{a}\\ &= \frac{x}{a}-\frac{i\cosh(c+dx)}{ad}\end{aligned}$$

Mathematica [B] time = 0.15, size = 139, normalized size = 6.32

$$\frac{\cosh^3(c+dx)\left(-i\sqrt{1+i\sinh(c+dx)}\,\sinh(c+dx)+\sqrt{1+i\sinh(c+dx)}-2\sqrt{1-i\sinh(c+dx)}\,\sin^{-1}\left(\frac{\sqrt{1-i\sin}}{\sqrt{}}\right.\right.}{ad\sqrt{1+i\sinh(c+dx)}\,(\sinh(c+dx)-i)(\sinh(c+dx)+i)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cosh[c + d*x]^2/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (Cosh[c + d*x]^3*(-2*ArcSin[Sqrt[1 - I*Sinh[c + d*x]]/Sqrt[2]]*Sqrt[1 - I*S
inh[c + d*x]] + Sqrt[1 + I*Sinh[c + d*x]] - I*Sqrt[1 + I*Sinh[c + d*x]]*Sin
h[c + d*x]))/(a*d*Sqrt[1 + I*Sinh[c + d*x]]*(-I + Sinh[c + d*x])*(I + Sinh[
c + d*x])^2)
```

fricas [A] time = 0.45, size = 40, normalized size = 1.82

$$\frac{\left(2\,dxe^{(dx+c)} - i\,e^{(2\,dx+2\,c)} - i\right)e^{(-dx-c)}}{2\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*d*x*e^(d*x + c) - I*e^(2*d*x + 2*c) - I)*e^(-d*x - c)/(a*d)
```

giac [B] time = 0.19, size = 41, normalized size = 1.86

$$\frac{\frac{2\,(dx+c)}{a} - \frac{i\,e^{(dx+c)}}{a} - \frac{i\,e^{(-dx-c)}}{a}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(2*(d*x + c)/a - I*e^(d*x + c)/a - I*e^(-d*x - c)/a)/d
```

maple [B] time = 0.08, size = 85, normalized size = 3.86

$$\frac{i}{da\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)} - \frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{da} - \frac{i}{da\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)} + \frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] I/d/a/(tanh(1/2*d*x+1/2*c)-1)-1/d/a*ln(tanh(1/2*d*x+1/2*c)-1)-I/d/a/(tanh(1
/2*d*x+1/2*c)+1)+1/d/a*ln(tanh(1/2*d*x+1/2*c)+1)
```

maxima [B] time = 0.39, size = 44, normalized size = 2.00

$$\frac{dx+c}{ad} - \frac{i\,e^{(dx+c)}}{2\,ad} - \frac{i\,e^{(-dx-c)}}{2\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] (d*x + c)/(a*d) - 1/2*I*e^(d*x + c)/(a*d) - 1/2*I*e^(-d*x - c)/(a*d)
```

mupad [B] time = 0.21, size = 36, normalized size = 1.64

$$\frac{x}{a}-\frac{\frac{\mathrm{e}^{c+d\,x}\,1\mathrm{i}}{2}+\frac{\mathrm{e}^{-c-d\,x}\,1\mathrm{i}}{2}}{a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)^2/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] x/a - ((exp(c + d*x)*1i)/2 + (exp(- c - d*x)*1i)/2)/(a*d)
```

sympy [A] time = 0.25, size = 80, normalized size = 3.64

$$\begin{cases} \frac{\left(-2iade^{2c}e^{dx}-2iade^{-dx}\right)e^{-c}}{4a^2d^2} & \text{for}\ 4a^2d^2e^c \neq 0 \\ x\left(\frac{\left(-ie^{2c}+2e^c+i\right)e^{-c}}{2a}-\frac{1}{a}\right) & \text{otherwise} \end{cases}+\frac{x}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Piecewise(((-2*I*a*d*exp(2*c)*exp(d*x) - 2*I*a*d*exp(-d*x))*exp(-c)/(4*a**2
*d**2), Ne(4*a**2*d**2*exp(c), 0)), (x*((-I*exp(2*c) + 2*exp(c) + I)*exp(-c
)/(2*a) - 1/a), True)) + x/a
```

3.263 $\int \frac{\cosh^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=76

$$-\frac{i\sinh\left(c-\frac{de}{f}\right)\operatorname{Chi}\left(\frac{de}{f}+dx\right)}{af}-\frac{i\cosh\left(c-\frac{de}{f}\right)\operatorname{Shi}\left(\frac{de}{f}+dx\right)}{af}+\frac{\log(e+fx)}{af}$$

```
[Out] ln(f*x+e)/a/f-I*cosh(c-d*e/f)*Shi(d*e/f+d*x)/a/f-I*Chi(d*e/f+d*x)*sinh(c-d*
e/f)/a/f
```

Rubi [A] time = 0.20, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {5563, 31, 3303, 3298, 3301}

$$-\frac{i\sinh\left(c-\frac{de}{f}\right)\operatorname{Chi}\left(\frac{de}{f}+dx\right)}{af}-\frac{i\cosh\left(c-\frac{de}{f}\right)\operatorname{Shi}\left(\frac{de}{f}+dx\right)}{af}+\frac{\log(e+fx)}{af}$$

Antiderivative was successfully verified.

```
[In] Int[Cosh[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Log[e + f*x]/(a*f) - (I*CoshIntegral[(d*e)/f + d*x]*Sinh[c - (d*e)/f])/(a*f
) - (I*Cosh[c - (d*e)/f]*SinhIntegral[(d*e)/f + d*x])/(a*f)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 5563

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cosh[c
+ d*x]^(n - 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2)*Si
nh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ
[a^2 + b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\cosh^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx &= -\frac{i\int \frac{\sinh(c+dx)}{e+fx}\,dx}{a}+\frac{\int \frac{1}{e+fx}\,dx}{a}\\ &= \frac{\log(e+fx)}{af}-\frac{\left(i\cosh\left(c-\frac{de}{f}\right)\right)\int \frac{\sinh\left(\frac{de}{f}+dx\right)}{e+fx}\,dx}{a}-\frac{\left(i\sinh\left(c-\frac{de}{f}\right)\right)\int \frac{\cosh(}{e}\\ &= \frac{\log(e+fx)}{af}-\frac{i\text{Chi}\left(\frac{de}{f}+dx\right)\sinh\left(c-\frac{de}{f}\right)}{af}-\frac{i\cosh\left(c-\frac{de}{f}\right)\text{Shi}\left(\frac{de}{f}+dx\right.}{af}\end{aligned}$$

Mathematica [A] time = 0.32, size = 62, normalized size = 0.82

$$\frac{-i\sinh\left(c-\frac{de}{f}\right)\text{Chi}\left(d\left(\frac{e}{f}+x\right)\right)-i\cosh\left(c-\frac{de}{f}\right)\text{Shi}\left(d\left(\frac{e}{f}+x\right)\right)+\log(e+fx)}{af}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cosh[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] (Log[e + f*x] - I*CoshIntegral[d*(e/f + x)]*Sinh[c - (d*e)/f] - I*Cosh[c -
(d*e)/f]*SinhIntegral[d*(e/f + x)])/(a*f)
```

fricas [A] time = 0.49, size = 79, normalized size = 1.04

$$\frac{i\,\text{Ei}\left(-\frac{dfx+de}{f}\right)e^{\left(\frac{de-cf}{f}\right)}-i\,\text{Ei}\left(\frac{dfx+de}{f}\right)e^{\left(-\frac{de-cf}{f}\right)}+2\,\log\left(\frac{fx+e}{f}\right)}{2\,af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(I*Ei(-(d*f*x + d*e)/f)*e^((d*e - c*f)/f) - I*Ei((d*f*x + d*e)/f)*e^(-(
d*e - c*f)/f) + 2*log((f*x + e)/f))/(a*f)
```

giac [A] time = 0.23, size = 81, normalized size = 1.07

$$-\frac{\left(i\,\mathrm{Ei}\left(\frac{dfx+de}{f}\right)e^{\left(2\,c-\frac{de}{f}\right)}-i\,\mathrm{Ei}\left(-\frac{dfx+de}{f}\right)e^{\left(\frac{de}{f}\right)}-2\,e^{c}\log\left(i\,fx+i\,e\right)\right)e^{(-c)}}{2\,af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(I*Ei((d*f*x + d*e)/f)*e^(2*c - d*e/f) - I*Ei(-(d*f*x + d*e)/f)*e^(d*e
/f) - 2*e^c*log(I*f*x + I*e))*e^(-c)/(a*f)
```

maple [A] time = 0.18, size = 103, normalized size = 1.36

$$\frac{\ln\left(fx+e\right)}{af}+\frac{i\mathrm{e}^{\frac{cf-de}{f}}\,\mathrm{Ei}\left(1,-dx-c-\frac{-cf+de}{f}\right)}{2af}-\frac{i\mathrm{e}^{-\frac{cf-de}{f}}\,\mathrm{Ei}\left(1,dx+c-\frac{cf-de}{f}\right)}{2af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] ln(f*x+e)/a/f+1/2*I/a/f*exp((c*f-d*e)/f)*Ei(1,-d*x-c-(-c*f+d*e)/f)-1/2*I/a/
f*exp(-(c*f-d*e)/f)*Ei(1,d*x+c-(c*f-d*e)/f)
```

maxima [A] time = 0.46, size = 76, normalized size = 1.00

$$-\frac{i\,e^{\left(-c+\frac{de}{f}\right)}E_1\left(\frac{(fx+e)d}{f}\right)}{2\,af}+\frac{i\,e^{\left(c-\frac{de}{f}\right)}E_1\left(-\frac{(fx+e)d}{f}\right)}{2\,af}+\frac{\log\left(fx+e\right)}{af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*I*e^(-c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(a*f) + 1/2*I*e^(c -
 d*e/f)*exp_integral_e(1, -(f*x + e)*d/f)/(a*f) + log(f*x + e)/(a*f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cosh(c+d\,x)^2}{\left(e+f\,x\right)\,\left(a+a\sinh(c+d\,x)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)^2/((e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
[Out] int(cosh(c + d*x)^2/((e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int \frac{\cosh^2(c+dx)}{e\sinh(c+dx)-ie+fx\sinh(c+dx)-ifx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
[Out] -I*Integral(cosh(c + d*x)**2/(e*sinh(c + d*x) - I*e + f*x*sinh(c + d*x) - I
*f*x), x)/a
```

3.264 $\int \frac{\cosh^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=103

$$-\frac{id\cosh\left(c-\frac{de}{f}\right)\mathrm{Chi}\left(\frac{de}{f}+dx\right)}{af^2}-\frac{id\sinh\left(c-\frac{de}{f}\right)\mathrm{Shi}\left(\frac{de}{f}+dx\right)}{af^2}+\frac{i\sinh(c+dx)}{af(e+fx)}-\frac{1}{af(e+fx)}$$

```
[Out] -1/a/f/(f*x+e)-I*d*Chi(d*e/f+d*x)*cosh(c-d*e/f)/a/f^2-I*d*Shi(d*e/f+d*x)*si
nh(c-d*e/f)/a/f^2+I*sinh(d*x+c)/a/f/(f*x+e)
```

Rubi [A] time = 0.22, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {5563, 32, 3297, 3303, 3298, 3301}

$$-\frac{id\cosh\left(c-\frac{de}{f}\right)\mathrm{Chi}\left(\frac{de}{f}+dx\right)}{af^2}-\frac{id\sinh\left(c-\frac{de}{f}\right)\mathrm{Shi}\left(\frac{de}{f}+dx\right)}{af^2}+\frac{i\sinh(c+dx)}{af(e+fx)}-\frac{1}{af(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Int[Cosh[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] -(1/(a*f*(e + f*x))) - (I*d*Cosh[c - (d*e)/f]*CoshIntegral[(d*e)/f + d*x])/
(a*f^2) + (I*Sinh[c + d*x])/(a*f*(e + f*x)) - (I*d*Sinh[c - (d*e)/f]*SinhIn
tegral[(d*e)/f + d*x])/(a*f^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 5563

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cosh[c
+ d*x]^(n - 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2)*Si
nh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ
[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{\cosh^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx = -\frac{i\int \frac{\sinh(c+dx)}{(e+fx)^2}\,dx}{a} + \frac{\int \frac{1}{(e+fx)^2}\,dx}{a}$$

$$= -\frac{1}{af(e+fx)} + \frac{i\sinh(c+dx)}{af(e+fx)} - \frac{(id)\int \frac{\cosh(c+dx)}{e+fx}\,dx}{af}$$

$$= -\frac{1}{af(e+fx)} + \frac{i\sinh(c+dx)}{af(e+fx)} - \frac{\left(id\cosh\left(c-\frac{de}{f}\right)\right)\int \frac{\cosh\left(\frac{de}{f}+dx\right)}{e+fx}\,dx}{af} - \frac{(id$$

$$= -\frac{1}{af(e+fx)} - \frac{id\cosh\left(c-\frac{de}{f}\right)\operatorname{Chi}\left(\frac{de}{f}+dx\right)}{af^2} + \frac{i\sinh(c+dx)}{af(e+fx)} - \frac{id\sinh$$

Mathematica [A] time = 0.51, size = 85, normalized size = 0.83

$$-\frac{i\left(d(e+fx)\cosh\left(c-\frac{de}{f}\right)\operatorname{Chi}\left(d\left(\frac{e}{f}+x\right)\right)+d(e+fx)\sinh\left(c-\frac{de}{f}\right)\operatorname{Shi}\left(d\left(\frac{e}{f}+x\right)\right)-f(\sinh(c+dx)+i)\right)}{af^2(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cosh[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] ((-I)*(d*(e + f*x)*Cosh[c - (d*e)/f]*CoshIntegral[d*(e/f + x)] - f*(I + Sin
h[c + d*x]) + d*(e + f*x)*Sinh[c - (d*e)/f]*SinhIntegral[d*(e/f + x)]))/(a*
f^2*(e + f*x))
```

fricas [A] time = 0.51, size = 129, normalized size = 1.25

$$\frac{\left(ife^{(2dx+2c)} + \left(\left(-idfx - ide\right)\mathrm{Ei}\left(-\frac{dfx+de}{f}\right)e^{\left(\frac{de-cf}{f}\right)} + \left(-idfx - ide\right)\mathrm{Ei}\left(\frac{dfx+de}{f}\right)e^{\left(-\frac{de-cf}{f}\right)} - 2f\right)e^{(dx+c)} - if\right)e^{(-dx-c)}}{2\left(af^3x + aef^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/2*(I*f*e^(2*d*x + 2*c) + ((-I*d*f*x - I*d*e)*Ei(-(d*f*x + d*e)/f)*e^((d*e
 - c*f)/f) + (-I*d*f*x - I*d*e)*Ei((d*f*x + d*e)/f)*e^(-(d*e - c*f)/f) - 2*
f)*e^(d*x + c) - I*f)*e^(-d*x - c)/(a*f^3*x + a*e*f^2)
```

giac [B] time = 0.37, size = 631, normalized size = 6.13

$$-\frac{\left(i\left(fx+e\right)\left(d + \frac{cf}{fx+e} - \frac{de}{fx+e}\right)d^2\mathrm{Ei}\left(\frac{\left(fx+e\right)\left(d+\frac{cf}{fx+e}-\frac{de}{fx+e}\right)-cf+de}{f}\right)e^{\left(\frac{cf-de}{f}\right)} - icd^2f\mathrm{Ei}\left(\frac{\left(fx+e\right)\left(d+\frac{cf}{fx+e}-\frac{de}{fx+e}\right)-cf+de}{f}\right)e^{\left(\frac{cf-de}{f}\right)} \cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(I*(f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e))*d^2*Ei(((f*x + e)*(d
+ c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e)/f)*e^((c*f - d*e)/f) - I*c*d^
2*f*Ei(((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e)/f)*e^((c
*f - d*e)/f) + I*(f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e))*d^2*Ei(-((f*
x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e)/f)*e^(-(c*f - d*e)/
f) - I*c*d^2*f*Ei(-((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d
*e)/f)*e^(-(c*f - d*e)/f) + I*d^3*Ei(((f*x + e)*(d + c*f/(f*x + e) - d*e/(f
*x + e)) - c*f + d*e)/f)*e^((c*f - d*e)/f + 1) + I*d^3*Ei(-((f*x + e)*(d +
c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e)/f)*e^(-(c*f - d*e)/f + 1) - I*d
^2*f*e^((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e))/f) + I*d^2*f*e^(-(f*x
 + e)*(d + c*f/(f*x + e) - d*e/(f*x + e))/f) + 2*d^2*f)*f^2/(((f*x + e)*a*(
d + c*f/(f*x + e) - d*e/(f*x + e))*f^4 - a*c*f^5 + a*d*f^4*e)*d)
```

maple [A] time = 0.18, size = 164, normalized size = 1.59

$$-\frac{1}{af\left(fx+e\right)}+\frac{id\,\mathrm{e}^{dx+c}}{2a\,f^{2}\left(\frac{de}{f}+dx\right)}+\frac{id\,\mathrm{e}^{\frac{cf-de}{f}}\,\mathrm{Ei}\left(1,-dx-c-\frac{-cf+de}{f}\right)}{2a\,f^{2}}-\frac{id\,\mathrm{e}^{-dx-c}}{2af\left(dfx+de\right)}+\frac{id\,\mathrm{e}^{-\frac{cf-de}{f}}\,\mathrm{Ei}\left(1,dx+c-\frac{cf-de}{f}\right)}{2a\,f^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/a/f/(f*x+e)+1/2*I*d/a/f^2*exp(d*x+c)/(d*e/f+d*x)+1/2*I*d/a/f^2*exp((c*f-
d*e)/f)*Ei(1,-d*x-c-(-c*f+d*e)/f)-1/2*I/a*d*exp(-d*x-c)/f/(d*f*x+d*e)+1/2*I
/a*d/f^2*exp(-(c*f-d*e)/f)*Ei(1,d*x+c-(c*f-d*e)/f)
```

maxima [A] time = 0.65, size = 92, normalized size = 0.89

$$-\frac{1}{af^{2}x+aef}-\frac{i\,e^{\left(-c+\frac{de}{f}\right)}E_{2}\left(\frac{\left(fx+e\right)d}{f}\right)}{2\left(fx+e\right)af}+\frac{i\,e^{\left(c-\frac{de}{f}\right)}E_{2}\left(-\frac{\left(fx+e\right)d}{f}\right)}{2\left(fx+e\right)af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -1/(a*f^2*x + a*e*f) - 1/2*I*e^(-c + d*e/f)*exp_integral_e(2, (f*x + e)*d/f
)/((f*x + e)*a*f) + 1/2*I*e^(c - d*e/f)*exp_integral_e(2, -(f*x + e)*d/f)/(
(f*x + e)*a*f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cosh\left(c+d\,x\right)^2}{{\left(e+f\,x\right)}^2\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)^2/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(cosh(c + d*x)^2/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int \frac{\cosh^{2}{\left(c+dx\right)}}{e^{2}\sinh{\left(c+dx\right)}-ie^{2}+2efx\sinh{\left(c+dx\right)}-2iefx+f^{2}x^{2}\sinh{\left(c+dx\right)}-if^{2}x^{2}}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(cosh(c + d*x)**2/(e**2*sinh(c + d*x) - I*e**2 + 2*e*f*x*sinh(c
+ d*x) - 2*I*e*f*x + f**2*x**2*sinh(c + d*x) - I*f**2*x**2), x)/a
```

3.265 $\int \frac{(e+fx)^3 \cosh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=231

$$-\frac{6f^3\cosh(c+dx)}{ad^4}+\frac{3if^3\sinh(c+dx)\cosh(c+dx)}{8ad^4}-\frac{3if^2(e+fx)\sinh^2(c+dx)}{4ad^3}+\frac{6f^2(e+fx)\sinh(c+dx)}{ad^3}-\frac{3f\ldots}{\ldots}$$

```
[Out] -3/8*I*f^3*x/a/d^3-1/4*I*(f*x+e)^3/a/d-6*f^3*cosh(d*x+c)/a/d^4-3*f*(f*x+e)^
2*cosh(d*x+c)/a/d^2+6*f^2*(f*x+e)*sinh(d*x+c)/a/d^3+(f*x+e)^3*sinh(d*x+c)/a
/d+3/8*I*f^3*cosh(d*x+c)*sinh(d*x+c)/a/d^4+3/4*I*f*(f*x+e)^2*cosh(d*x+c)*si
nh(d*x+c)/a/d^2-3/4*I*f^2*(f*x+e)*sinh(d*x+c)^2/a/d^3-1/2*I*(f*x+e)^3*sinh(
d*x+c)^2/a/d
```

Rubi [A] time = 0.26, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.258$, Rules used = {5563, 3296, 2638, 5446, 3311, 32, 2635, 8}

$$-\frac{3if^2(e+fx)\sinh^2(c+dx)}{4ad^3}+\frac{6f^2(e+fx)\sinh(c+dx)}{ad^3}-\frac{3f(e+fx)^2\cosh(c+dx)}{ad^2}+\frac{3if(e+fx)^2\sinh(c+dx)\,c\ldots}{4ad^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (((-3*I)/8)*f^3*x)/(a*d^3) - ((I/4)*(e + f*x)^3)/(a*d) - (6*f^3*Cosh[c + d*
x])/(a*d^4) - (3*f*(e + f*x)^2*Cosh[c + d*x])/(a*d^2) + (6*f^2*(e + f*x)*Si
nh[c + d*x])/(a*d^3) + ((e + f*x)^3*Sinh[c + d*x])/(a*d) + (((3*I)/8)*f^3*C
osh[c + d*x]*Sinh[c + d*x])/(a*d^4) + (((3*I)/4)*f*(e + f*x)^2*Cosh[c + d*x
]*Sinh[c + d*x])/(a*d^2) - (((3*I)/4)*f^2*(e + f*x)*Sinh[c + d*x]^2)/(a*d^3
) - ((I/2)*(e + f*x)^3*Sinh[c + d*x]^2)/(a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
```

]

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5563

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cosh[c
+ d*x]^(n - 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2)*Si
nh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ
[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)^3\cosh(c+dx)\sinh(c+dx)\,dx}{a} + \frac{\int (e+fx)^3\cosh(c+dx)\,dx}{a}$$

$$= \frac{(e+fx)^3\sinh(c+dx)}{ad} - \frac{i(e+fx)^3\sinh^2(c+dx)}{2ad} + \frac{(3if)\int (e+fx)^2\sinh^2(c+}{2ad}$$

$$= -\frac{3f(e+fx)^2\cosh(c+dx)}{ad^2} + \frac{(e+fx)^3\sinh(c+dx)}{ad} + \frac{3if(e+fx)^2\cosh(c+}{4ad^2}$$

$$= -\frac{i(e+fx)^3}{4ad} - \frac{3f(e+fx)^2\cosh(c+dx)}{ad^2} + \frac{6f^2(e+fx)\sinh(c+dx)}{ad^3} + \frac{(e+fx}{}$$

$$= -\frac{3if^3x}{8ad^3} - \frac{i(e+fx)^3}{4ad} - \frac{6f^3\cosh(c+dx)}{ad^4} - \frac{3f(e+fx)^2\cosh(c+dx)}{ad^2} + \frac{6f^2(e}{}$$

Mathematica [A] time = 1.29, size = 134, normalized size = 0.58

$$\frac{-96f\cosh(c+dx)\left(d^2(e+fx)^2+2f^2\right)-4id(e+fx)\cosh(2(c+dx))\left(2d^2(e+fx)^2+3f^2\right)+4\sinh(c+dx)\left(8a\right.}{32ad^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (-96*f*(2*f^2 + d^2*(e + f*x)^2)*Cosh[c + d*x] - (4*I)*d*(e + f*x)*(3*f^2 +
 2*d^2*(e + f*x)^2)*Cosh[2*(c + d*x)] + 4*(8*d*(e + f*x)*(6*f^2 + d^2*(e +
f*x)^2) + (3*I)*f*(f^2 + 2*d^2*(e + f*x)^2)*Cosh[c + d*x])*Sinh[c + d*x])/(
32*a*d^4)
```

fricas [A] time = 0.47, size = 401, normalized size = 1.74

$$\frac{\left(-4i\,d^3f^3x^3-4i\,d^3e^3-6i\,d^2e^2f-6i\,def^2-3i\,f^3+\left(-12i\,d^3ef^2-6i\,d^2f^3\right)x^2+\left(-12i\,d^3e^2f-12i\,d^2ef^2-6i\,df^3\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/32*(-4*I*d^3*f^3*x^3 - 4*I*d^3*e^3 - 6*I*d^2*e^2*f - 6*I*d*e*f^2 - 3*I*f^
3 + (-12*I*d^3*e*f^2 - 6*I*d^2*f^3)*x^2 + (-12*I*d^3*e^2*f - 12*I*d^2*e*f^2
 - 6*I*d*f^3)*x + (-4*I*d^3*f^3*x^3 - 4*I*d^3*e^3 + 6*I*d^2*e^2*f - 6*I*d*e
*f^2 + 3*I*f^3 + (-12*I*d^3*e*f^2 + 6*I*d^2*f^3)*x^2 + (-12*I*d^3*e^2*f + 1
2*I*d^2*e*f^2 - 6*I*d*f^3)*x)*e^(4*d*x + 4*c) + 16*(d^3*f^3*x^3 + d^3*e^3 -
 3*d^2*e^2*f + 6*d*e*f^2 - 6*f^3 + 3*(d^3*e*f^2 - d^2*f^3)*x^2 + 3*(d^3*e^2
```

```
*f - 2*d^2*e*f^2 + 2*d*f^3)*x)*e^(3*d*x + 3*c) - 16*(d^3*f^3*x^3 + d^3*e^3
+ 3*d^2*e^2*f + 6*d*e*f^2 + 6*f^3 + 3*(d^3*e*f^2 + d^2*f^3)*x^2 + 3*(d^3*e^
2*f + 2*d^2*e*f^2 + 2*d*f^3)*x)*e^(d*x + c))*e^(-2*d*x - 2*c)/(a*d^4)
```

giac [B] time = 1.69, size = 1005, normalized size = 4.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/32*(-4*I*d^3*f^3*x^3*e^(5*d*x + 6*c) + 12*d^3*f^3*x^3*e^(4*d*x + 5*c) - 1
6*I*d^3*f^3*x^3*e^(3*d*x + 4*c) - 16*d^3*f^3*x^3*e^(2*d*x + 3*c) + 12*I*d^3
*f^3*x^3*e^(d*x + 2*c) - 4*d^3*f^3*x^3*e^c - 12*I*d^3*f^2*x^2*e^(5*d*x + 6*
c + 1) + 6*I*d^2*f^3*x^2*e^(5*d*x + 6*c) + 36*d^3*f^2*x^2*e^(4*d*x + 5*c +
1) - 42*d^2*f^3*x^2*e^(4*d*x + 5*c) - 48*I*d^3*f^2*x^2*e^(3*d*x + 4*c + 1)
+ 48*I*d^2*f^3*x^2*e^(3*d*x + 4*c) - 48*d^3*f^2*x^2*e^(2*d*x + 3*c + 1) - 4
8*d^2*f^3*x^2*e^(2*d*x + 3*c) + 36*I*d^3*f^2*x^2*e^(d*x + 2*c + 1) + 42*I*d
^2*f^3*x^2*e^(d*x + 2*c) - 12*d^3*f^2*x^2*e^(c + 1) - 6*d^2*f^3*x^2*e^c - 1
2*I*d^3*f*x*e^(5*d*x + 6*c + 2) + 12*I*d^2*f^2*x*e^(5*d*x + 6*c + 1) - 6*I*
d*f^3*x*e^(5*d*x + 6*c) + 36*d^3*f*x*e^(4*d*x + 5*c + 2) - 84*d^2*f^2*x*e^(
4*d*x + 5*c + 1) + 90*d*f^3*x*e^(4*d*x + 5*c) - 48*I*d^3*f*x*e^(3*d*x + 4*c
 + 2) + 96*I*d^2*f^2*x*e^(3*d*x + 4*c + 1) - 96*I*d*f^3*x*e^(3*d*x + 4*c) -
 48*d^3*f*x*e^(2*d*x + 3*c + 2) - 96*d^2*f^2*x*e^(2*d*x + 3*c + 1) - 96*d*f
^3*x*e^(2*d*x + 3*c) + 36*I*d^3*f*x*e^(d*x + 2*c + 2) + 84*I*d^2*f^2*x*e^(d
*x + 2*c + 1) + 90*I*d*f^3*x*e^(d*x + 2*c) - 12*d^3*f*x*e^(c + 2) - 12*d^2*
f^2*x*e^(c + 1) - 6*d*f^3*x*e^c - 4*I*d^3*e^(5*d*x + 6*c + 3) + 6*I*d^2*f*e
^(5*d*x + 6*c + 2) - 6*I*d*f^2*e^(5*d*x + 6*c + 1) + 3*I*f^3*e^(5*d*x + 6*c
) + 12*d^3*e^(4*d*x + 5*c + 3) - 42*d^2*f*e^(4*d*x + 5*c + 2) + 90*d*f^2*e^
(4*d*x + 5*c + 1) - 93*f^3*e^(4*d*x + 5*c) - 16*I*d^3*e^(3*d*x + 4*c + 3) +
 48*I*d^2*f*e^(3*d*x + 4*c + 2) - 96*I*d*f^2*e^(3*d*x + 4*c + 1) + 96*I*f^3
*e^(3*d*x + 4*c) - 16*d^3*e^(2*d*x + 3*c + 3) - 48*d^2*f*e^(2*d*x + 3*c + 2
) - 96*d*f^2*e^(2*d*x + 3*c + 1) - 96*f^3*e^(2*d*x + 3*c) + 12*I*d^3*e^(d*x
 + 2*c + 3) + 42*I*d^2*f*e^(d*x + 2*c + 2) + 90*I*d*f^2*e^(d*x + 2*c + 1) +
 93*I*f^3*e^(d*x + 2*c) - 4*d^3*e^(c + 3) - 6*d^2*f*e^(c + 2) - 6*d*f^2*e^(
c + 1) - 3*f^3*e^c)/(a*d^4*e^(3*d*x + 4*c) - I*a*d^4*e^(2*d*x + 3*c))
```

maple [B] time = 0.14, size = 726, normalized size = 3.14

$$-\frac{\frac{3ic^2f^2ed\left(\cosh^2(dx+c)\right)}{2}-\frac{if^3c^3\left(\cosh^2(dx+c)\right)}{2}+3ife^2d^2\left(\frac{(dx+c)\left(\cosh^2(dx+c)\right)}{2}-\frac{\cosh(dx+c)\sinh(dx+c)}{4}-\frac{dx}{4}-\frac{c}{4}\right)-3icf^3\left(\frac{(dx+c)^2}{\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/d^4/a*(3/2*I*c^2*f^2*e*d*cosh(d*x+c)^2-1/2*I*f^3*c^3*cosh(d*x+c)^2+3*I*f
*e^2*d^2*(1/2*(d*x+c)*cosh(d*x+c)^2-1/4*cosh(d*x+c)*sinh(d*x+c)-1/4*d*x-1/4
*c)-3*I*c*f^3*(1/2*(d*x+c)^2*cosh(d*x+c)^2-1/2*(d*x+c)*cosh(d*x+c)*sinh(d*x
+c)-1/4*(d*x+c)^2+1/4*cosh(d*x+c)^2)+3*I*c^2*f^3*(1/2*(d*x+c)*cosh(d*x+c)^2
-1/4*cosh(d*x+c)*sinh(d*x+c)-1/4*d*x-1/4*c)-6*I*f^2*e*c*d*(1/2*(d*x+c)*cosh
(d*x+c)^2-1/4*cosh(d*x+c)*sinh(d*x+c)-1/4*d*x-1/4*c)+1/2*I*e^3*d^3*cosh(d*x
+c)^2-3/2*I*c*f*e^2*d^2*cosh(d*x+c)^2+I*f^3*(1/2*(d*x+c)^3*cosh(d*x+c)^2-3/
4*(d*x+c)^2*cosh(d*x+c)*sinh(d*x+c)-1/4*(d*x+c)^3+3/4*(d*x+c)*cosh(d*x+c)^2
-3/8*cosh(d*x+c)*sinh(d*x+c)-3/8*d*x-3/8*c)+3*I*f^2*e*d*(1/2*(d*x+c)^2*cosh
(d*x+c)^2-1/2*(d*x+c)*cosh(d*x+c)*sinh(d*x+c)-1/4*(d*x+c)^2+1/4*cosh(d*x+c)
^2)-f^3*((d*x+c)^3*sinh(d*x+c)-3*(d*x+c)^2*cosh(d*x+c)+6*(d*x+c)*sinh(d*x+c
)-6*cosh(d*x+c))+3*c*f^3*((d*x+c)^2*sinh(d*x+c)-2*(d*x+c)*cosh(d*x+c)+2*sin
h(d*x+c))-3*d*e*f^2*((d*x+c)^2*sinh(d*x+c)-2*(d*x+c)*cosh(d*x+c)+2*sinh(d*x
+c))-3*c^2*f^3*((d*x+c)*sinh(d*x+c)-cosh(d*x+c))+6*c*d*e*f^2*((d*x+c)*sinh(
d*x+c)-cosh(d*x+c))-3*d^2*e^2*f*((d*x+c)*sinh(d*x+c)-cosh(d*x+c))+f^3*c^3*s
inh(d*x+c)-3*c^2*f^2*e*d*sinh(d*x+c)+3*c*f*e^2*d^2*sinh(d*x+c)-e^3*d^3*sinh
(d*x+c))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [B] time = 1.28, size = 449, normalized size = 1.94

$$-e^{c+d\,x}\,\left(\frac{-d^3\,e^3+3\,d^2\,e^2\,f-6\,d\,e\,f^2+6\,f^3}{2\,a\,d^4}-\frac{f^3\,x^3}{2\,a\,d}+\frac{3\,f^2\,x^2\,\left(f-d\,e\right)}{2\,a\,d^2}-\frac{3\,f\,x\,\left(d^2\,e^2-2\,d\,e\,f+2\,f^2\right)}{2\,a\,d^3}\right)-e^{-2\,c-2\,\dots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*(e + f*x)^3)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] exp(2*c + 2*d*x)*(((3*f^3 - 4*d^3*e^3 + 6*d^2*e^2*f - 6*d*e*f^2)*1i)/(32*a*
d^4) - (f^3*x^3*1i)/(8*a*d) - (f*x*(f^2 + 2*d^2*e^2 - 2*d*e*f)*3i)/(16*a*d^
3) + (f^2*x^2*(f - 2*d*e)*3i)/(16*a*d^2)) - exp(- 2*c - 2*d*x)*(((3*f^3 + 4
*d^3*e^3 + 6*d^2*e^2*f + 6*d*e*f^2)*1i)/(32*a*d^4) + (f^3*x^3*1i)/(8*a*d) +
 (f*x*(f^2 + 2*d^2*e^2 + 2*d*e*f)*3i)/(16*a*d^3) + (f^2*x^2*(f + 2*d*e)*3i)
```

```
/(16*a*d^2)) - exp(c + d*x)*((6*f^3 - d^3*e^3 + 3*d^2*e^2*f - 6*d*e*f^2)/(2
*a*d^4) - (f^3*x^3)/(2*a*d) + (3*f^2*x^2*(f - d*e))/(2*a*d^2) - (3*f*x*(2*f
^2 + d^2*e^2 - 2*d*e*f))/(2*a*d^3)) - exp(- c - d*x)*((6*f^3 + d^3*e^3 + 3*
d^2*e^2*f + 6*d*e*f^2)/(2*a*d^4) + (f^3*x^3)/(2*a*d) + (3*f^2*x^2*(f + d*e)
)/(2*a*d^2) + (3*f*x*(2*f^2 + d^2*e^2 + 2*d*e*f))/(2*a*d^3))
```

sympy [A] time = 1.18, size = 1042, normalized size = 4.51

$$\begin{cases} \frac{((-2048a^3d^{15}e^3e^{2c}-6144a^3d^{15}e^2fxe^{2c}-6144a^3d^{15}ef^2x^2e^{2c}-2048a^3d^{15}f^3x^3e^{2c}-6144a^3d^{14}e^2fe^{2c}-12288a^3d^{14}ef^2xe^{2c}-6144a^3d^{14}f^3x^2e^{2c}-12288a^3d^{1}}{} \\ \frac{x^4(-if^3e^{4c}+2f^3e^{3c}+2f^3e^c+if^3)e^{-2c}}{16a}+\frac{x^3(-ief^2e^{4c}+2ef^2e^{3c}+2ef^2e^c+ief^2)e^{-2c}}{4a}+\frac{x^2(-3ie^2fe^{4c}+6e^2fe^{3c}+6e^2fe^c+3ie^2f)e^{-2c}}{8a}+\frac{x(-ie^3e^{4c}+2e^3e^{3c}}{4a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Piecewise((((-2048*a**3*d**15*e**3*exp(2*c) - 6144*a**3*d**15*e**2*f*x*exp(
2*c) - 6144*a**3*d**15*e*f**2*x**2*exp(2*c) - 2048*a**3*d**15*f**3*x**3*exp
(2*c) - 6144*a**3*d**14*e**2*f*exp(2*c) - 12288*a**3*d**14*e*f**2*x*exp(2*c
) - 6144*a**3*d**14*f**3*x**2*exp(2*c) - 12288*a**3*d**13*e*f**2*exp(2*c) -
 12288*a**3*d**13*f**3*x*exp(2*c) - 12288*a**3*d**12*f**3*exp(2*c))*exp(-d*
x) + (2048*a**3*d**15*e**3*exp(4*c) + 6144*a**3*d**15*e**2*f*x*exp(4*c) + 6
144*a**3*d**15*e*f**2*x**2*exp(4*c) + 2048*a**3*d**15*f**3*x**3*exp(4*c) -
6144*a**3*d**14*e**2*f*exp(4*c) - 12288*a**3*d**14*e*f**2*x*exp(4*c) - 6144
*a**3*d**14*f**3*x**2*exp(4*c) + 12288*a**3*d**13*e*f**2*exp(4*c) + 12288*a
**3*d**13*f**3*x*exp(4*c) - 12288*a**3*d**12*f**3*exp(4*c))*exp(d*x) + (-51
2*I*a**3*d**15*e**3*exp(c) - 1536*I*a**3*d**15*e**2*f*x*exp(c) - 1536*I*a**
3*d**15*e*f**2*x**2*exp(c) - 512*I*a**3*d**15*f**3*x**3*exp(c) - 768*I*a**3
*d**14*e**2*f*exp(c) - 1536*I*a**3*d**14*e*f**2*x*exp(c) - 768*I*a**3*d**14
*f**3*x**2*exp(c) - 768*I*a**3*d**13*e*f**2*exp(c) - 768*I*a**3*d**13*f**3*
x*exp(c) - 384*I*a**3*d**12*f**3*exp(c))*exp(-2*d*x) + (-512*I*a**3*d**15*e
**3*exp(5*c) - 1536*I*a**3*d**15*e**2*f*x*exp(5*c) - 1536*I*a**3*d**15*e*f*
*2*x**2*exp(5*c) - 512*I*a**3*d**15*f**3*x**3*exp(5*c) + 768*I*a**3*d**14*e
**2*f*exp(5*c) + 1536*I*a**3*d**14*e*f**2*x*exp(5*c) + 768*I*a**3*d**14*f**
3*x**2*exp(5*c) - 768*I*a**3*d**13*e*f**2*exp(5*c) - 768*I*a**3*d**13*f**3*
x*exp(5*c) + 384*I*a**3*d**12*f**3*exp(5*c))*exp(2*d*x))*exp(-3*c)/(4096*a*
*4*d**16), Ne(4096*a**4*d**16*exp(3*c), 0)), (x**4*(-I*f**3*exp(4*c) + 2*f*
*3*exp(3*c) + 2*f**3*exp(c) + I*f**3)*exp(-2*c)/(16*a) + x**3*(-I*e*f**2*ex
p(4*c) + 2*e*f**2*exp(3*c) + 2*e*f**2*exp(c) + I*e*f**2)*exp(-2*c)/(4*a) +
x**2*(-3*I*e**2*f*exp(4*c) + 6*e**2*f*exp(3*c) + 6*e**2*f*exp(c) + 3*I*e**2
*f)*exp(-2*c)/(8*a) + x*(-I*e**3*exp(4*c) + 2*e**3*exp(3*c) + 2*e**3*exp(c)
 + I*e**3)*exp(-2*c)/(4*a), True))
```

3.266 $\int \frac{(e+fx)^2 \cosh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=171

$$-\frac{if^2\sinh^2(c+dx)}{4ad^3}+\frac{2f^2\sinh(c+dx)}{ad^3}-\frac{2f(e+fx)\cosh(c+dx)}{ad^2}+\frac{if(e+fx)\sinh(c+dx)\cosh(c+dx)}{2ad^2}-\frac{i(e+f$$

```
[Out] -1/2*I*e*f*x/a/d-1/4*I*f^2*x^2/a/d-2*f*(f*x+e)*cosh(d*x+c)/a/d^2+2*f^2*sinh
(d*x+c)/a/d^3+(f*x+e)^2*sinh(d*x+c)/a/d+1/2*I*f*(f*x+e)*cosh(d*x+c)*sinh(d*
x+c)/a/d^2-1/4*I*f^2*sinh(d*x+c)^2/a/d^3-1/2*I*(f*x+e)^2*sinh(d*x+c)^2/a/d
```

Rubi [A] time = 0.19, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {5563, 3296, 2637, 5446, 3310}

$$-\frac{2f(e+fx)\cosh(c+dx)}{ad^2}+\frac{if(e+fx)\sinh(c+dx)\cosh(c+dx)}{2ad^2}-\frac{if^2\sinh^2(c+dx)}{4ad^3}+\frac{2f^2\sinh(c+dx)}{ad^3}-\frac{i(e+f$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I/2)*e*f*x)/(a*d) - ((I/4)*f^2*x^2)/(a*d) - (2*f*(e + f*x)*Cosh[c + d*x]
)/(a*d^2) + (2*f^2*Sinh[c + d*x])/(a*d^3) + ((e + f*x)^2*Sinh[c + d*x])/(a*
d) + ((I/2)*f*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(a*d^2) - ((I/4)*f^2*S
inh[c + d*x]^2)/(a*d^3) - ((I/2)*(e + f*x)^2*Sinh[c + d*x]^2)/(a*d)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
```

]

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5563

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cosh[c
+ d*x]^(n - 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2)*Si
nh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ
[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)^2\cosh(c+dx)\sinh(c+dx)\,dx}{a}+\frac{\int (e+fx)^2\cosh(c+dx)\,dx}{a}$$

$$= \frac{(e+fx)^2\sinh(c+dx)}{ad}-\frac{i(e+fx)^2\sinh^2(c+dx)}{2ad}+\frac{(if)\int (e+fx)\sinh^2(c+dx}{ad}$$

$$= -\frac{2f(e+fx)\cosh(c+dx)}{ad^2}+\frac{(e+fx)^2\sinh(c+dx)}{ad}+\frac{if(e+fx)\cosh(c+dx)\mathrm{si}}{2ad^2}$$

$$= -\frac{iefx}{2ad}-\frac{if^2x^2}{4ad}-\frac{2f(e+fx)\cosh(c+dx)}{ad^2}+\frac{2f^2\sinh(c+dx)}{ad^3}+\frac{(e+fx)^2\sinh(}{ad}$$

Mathematica [A] time = 0.87, size = 99, normalized size = 0.58

$$\frac{-2i\cosh(2(c+dx))\left(2d^2(e+fx)^2+f^2\right)+8\sinh(c+dx)\left(2\left(d^2(e+fx)^2+2f^2\right)+idf(e+fx)\cosh(c+dx)\right)-3}{16ad^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (-32*d*f*(e + f*x)*Cosh[c + d*x] - (2*I)*(f^2 + 2*d^2*(e + f*x)^2)*Cosh[2*(
c + d*x)] + 8*(2*(2*f^2 + d^2*(e + f*x)^2) + I*d*f*(e + f*x)*Cosh[c + d*x])
*Sinh[c + d*x])/(16*a*d^3)
```

fricas [A] time = 0.49, size = 225, normalized size = 1.32

$$\frac{\left(-2i\,d^2f^2x^2-2i\,d^2e^2-2i\,def-i\,f^2+\left(-4i\,d^2ef-2i\,df^2\right)x+\left(-2i\,d^2f^2x^2-2i\,d^2e^2+2i\,def-i\,f^2+\left(-4i\,d^2ef\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/16*(-2*I*d^2*f^2*x^2 - 2*I*d^2*e^2 - 2*I*d*e*f - I*f^2 + (-4*I*d^2*e*f -
2*I*d*f^2)*x + (-2*I*d^2*f^2*x^2 - 2*I*d^2*e^2 + 2*I*d*e*f - I*f^2 + (-4*I*
d^2*e*f + 2*I*d*f^2)*x)*e^(4*d*x + 4*c) + 8*(d^2*f^2*x^2 + d^2*e^2 - 2*d*e*
f + 2*f^2 + 2*(d^2*e*f - d*f^2)*x)*e^(3*d*x + 3*c) - 8*(d^2*f^2*x^2 + d^2*e
^2 + 2*d*e*f + 2*f^2 + 2*(d^2*e*f + d*f^2)*x)*e^(d*x + c))*e^(-2*d*x - 2*c)
/(a*d^3)
```

giac [B] time = 0.26, size = 566, normalized size = 3.31

$$\frac{-2i\,d^2f^2x^2e^{(5\,dx+6\,c)}+6\,d^2f^2x^2e^{(4\,dx+5\,c)}-8i\,d^2f^2x^2e^{(3\,dx+4\,c)}-8\,d^2f^2x^2e^{(2\,dx+3\,c)}+6i\,d^2f^2x^2e^{(dx+2\,c)}-2\,d^2f^2x^2e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/16*(-2*I*d^2*f^2*x^2*e^(5*d*x + 6*c) + 6*d^2*f^2*x^2*e^(4*d*x + 5*c) - 8*
I*d^2*f^2*x^2*e^(3*d*x + 4*c) - 8*d^2*f^2*x^2*e^(2*d*x + 3*c) + 6*I*d^2*f^2
*x^2*e^(d*x + 2*c) - 2*d^2*f^2*x^2*e^c - 4*I*d^2*f*x*e^(5*d*x + 6*c + 1) +
2*I*d*f^2*x*e^(5*d*x + 6*c) + 12*d^2*f*x*e^(4*d*x + 5*c + 1) - 14*d*f^2*x*e
^(4*d*x + 5*c) - 16*I*d^2*f*x*e^(3*d*x + 4*c + 1) + 16*I*d*f^2*x*e^(3*d*x +
 4*c) - 16*d^2*f*x*e^(2*d*x + 3*c + 1) - 16*d*f^2*x*e^(2*d*x + 3*c) + 12*I*
d^2*f*x*e^(d*x + 2*c + 1) + 14*I*d*f^2*x*e^(d*x + 2*c) - 4*d^2*f*x*e^(c + 1
) - 2*d*f^2*x*e^c - 2*I*d^2*e^(5*d*x + 6*c + 2) + 2*I*d*f*e^(5*d*x + 6*c +
1) - I*f^2*e^(5*d*x + 6*c) + 6*d^2*e^(4*d*x + 5*c + 2) - 14*d*f*e^(4*d*x +
5*c + 1) + 15*f^2*e^(4*d*x + 5*c) - 8*I*d^2*e^(3*d*x + 4*c + 2) + 16*I*d*f*
e^(3*d*x + 4*c + 1) - 16*I*f^2*e^(3*d*x + 4*c) - 8*d^2*e^(2*d*x + 3*c + 2)
- 16*d*f*e^(2*d*x + 3*c + 1) - 16*f^2*e^(2*d*x + 3*c) + 6*I*d^2*e^(d*x + 2*
c + 2) + 14*I*d*f*e^(d*x + 2*c + 1) + 15*I*f^2*e^(d*x + 2*c) - 2*d^2*e^(c +
 2) - 2*d*f*e^(c + 1) - f^2*e^c)/(a*d^3*e^(3*d*x + 4*c) - I*a*d^3*e^(2*d*x
+ 3*c))
```

maple [A] time = 0.24, size = 241, normalized size = 1.41

$$-\frac{i\left(2x^2f^2d^2+4d^2efx+2d^2e^2-2d\,f^2x-2def+f^2\right)\mathrm{e}^{2dx+2c}}{16a\,d^3}+\frac{\left(x^2f^2d^2+2d^2efx+d^2e^2-2d\,f^2x-2def+2f^2\right)}{2a\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/16*I*(2*d^2*f^2*x^2+4*d^2*e*f*x+2*d^2*e^2-2*d*f^2*x-2*d*e*f+f^2)/a/d^3*e
xp(2*d*x+2*c)+1/2*(d^2*f^2*x^2+2*d^2*e*f*x+d^2*e^2-2*d*f^2*x-2*d*e*f+2*f^2)
/a/d^3*exp(d*x+c)-1/2*(d^2*f^2*x^2+2*d^2*e*f*x+d^2*e^2+2*d*f^2*x+2*d*e*f+2*
f^2)/a/d^3*exp(-d*x-c)-1/16*I*(2*d^2*f^2*x^2+4*d^2*e*f*x+2*d^2*e^2+2*d*f^2*
x+2*d*e*f+f^2)/a/d^3*exp(-2*d*x-2*c)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [B] time = 0.94, size = 271, normalized size = 1.58

$$e^{c+d\,x}\,\left(\frac{d^2\,e^2-2\,d\,e\,f+2\,f^2}{2\,a\,d^3}+\frac{f^2\,x^2}{2\,a\,d}-\frac{f\,x\,\left(f-d\,e\right)}{a\,d^2}\right)-e^{-2\,c-2\,d\,x}\,\left(\frac{\left(2\,d^2\,e^2+2\,d\,e\,f+f^2\right)\,1\mathrm{i}}{16\,a\,d^3}+\frac{f^2\,x^2\,1\mathrm{i}}{8\,a\,d}+\frac{f\,x\,\left(f+\right.}{8\,a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*(e + f*x)^2)/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] exp(c + d*x)*((2*f^2 + d^2*e^2 - 2*d*e*f)/(2*a*d^3) + (f^2*x^2)/(2*a*d) - (
f*x*(f - d*e))/(a*d^2)) - exp(- 2*c - 2*d*x)*(((f^2 + 2*d^2*e^2 + 2*d*e*f)*
1i)/(16*a*d^3) + (f^2*x^2*1i)/(8*a*d) + (f*x*(f + 2*d*e)*1i)/(8*a*d^2)) - e
xp(2*c + 2*d*x)*(((f^2 + 2*d^2*e^2 - 2*d*e*f)*1i)/(16*a*d^3) + (f^2*x^2*1i)
/(8*a*d) - (f*x*(f - 2*d*e)*1i)/(8*a*d^2)) - exp(- c - d*x)*((2*f^2 + d^2*e
^2 + 2*d*e*f)/(2*a*d^3) + (f^2*x^2)/(2*a*d) + (f*x*(f + d*e))/(a*d^2))
```

sympy [A] time = 0.85, size = 632, normalized size = 3.70

$$\begin{cases} \frac{\left(\left(-512a^3d^{11}e^2e^{2c}-1024a^3d^{11}efxe^{2c}-512a^3d^{11}f^2x^2e^{2c}-1024a^3d^{10}efe^{2c}-1024a^3d^{10}f^2xe^{2c}-1024a^3d^9f^2e^{2c}\right)e^{-dx}+\left(512a^3d^{11}e^2e^{4c}+1024a^3d^{11}efxe^{4c}+\right.\right.}{} \\ \frac{x^3\left(-if^2e^{4c}+2f^2e^{3c}+2f^2e^c+if^2\right)e^{-2c}}{12a}+\frac{x^2\left(-iefe^{4c}+2efe^{3c}+2efe^c+ief\right)e^{-2c}}{4a}+\frac{x\left(-ie^2e^{4c}+2e^2e^{3c}+2e^2e^c+ie^2\right)e^{-2c}}{4a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Piecewise((((-512*a**3*d**11*e**2*exp(2*c) - 1024*a**3*d**11*e*f*x*exp(2*c)
 - 512*a**3*d**11*f**2*x**2*exp(2*c) - 1024*a**3*d**10*e*f*exp(2*c) - 1024*
a**3*d**10*f**2*x*exp(2*c) - 1024*a**3*d**9*f**2*exp(2*c))*exp(-d*x) + (512
*a**3*d**11*e**2*exp(4*c) + 1024*a**3*d**11*e*f*x*exp(4*c) + 512*a**3*d**11
*f**2*x**2*exp(4*c) - 1024*a**3*d**10*e*f*exp(4*c) - 1024*a**3*d**10*f**2*x
*exp(4*c) + 1024*a**3*d**9*f**2*exp(4*c))*exp(d*x) + (-128*I*a**3*d**11*e**
2*exp(c) - 256*I*a**3*d**11*e*f*x*exp(c) - 128*I*a**3*d**11*f**2*x**2*exp(c
) - 128*I*a**3*d**10*e*f*exp(c) - 128*I*a**3*d**10*f**2*x*exp(c) - 64*I*a**
3*d**9*f**2*exp(c))*exp(-2*d*x) + (-128*I*a**3*d**11*e**2*exp(5*c) - 256*I*
a**3*d**11*e*f*x*exp(5*c) - 128*I*a**3*d**11*f**2*x**2*exp(5*c) + 128*I*a**
3*d**10*e*f*exp(5*c) + 128*I*a**3*d**10*f**2*x*exp(5*c) - 64*I*a**3*d**9*f*
*2*exp(5*c))*exp(2*d*x))*exp(-3*c)/(1024*a**4*d**12), Ne(1024*a**4*d**12*ex
p(3*c), 0)), (x**3*(-I*f**2*exp(4*c) + 2*f**2*exp(3*c) + 2*f**2*exp(c) + I*
f**2)*exp(-2*c)/(12*a) + x**2*(-I*e*f*exp(4*c) + 2*e*f*exp(3*c) + 2*e*f*exp
(c) + I*e*f)*exp(-2*c)/(4*a) + x*(-I*e**2*exp(4*c) + 2*e**2*exp(3*c) + 2*e*
*2*exp(c) + I*e**2)*exp(-2*c)/(4*a), True))
```

3.267 $\int \frac{(e+fx)\cosh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=98

$$-\frac{f\cosh(c+dx)}{ad^2}+\frac{if\sinh(c+dx)\cosh(c+dx)}{4ad^2}-\frac{i(e+fx)\sinh^2(c+dx)}{2ad}+\frac{(e+fx)\sinh(c+dx)}{ad}-\frac{ifx}{4ad}$$

```
[Out] -1/4*I*f*x/a/d-f*cosh(d*x+c)/a/d^2+(f*x+e)*sinh(d*x+c)/a/d+1/4*I*f*cosh(d*x
+c)*sinh(d*x+c)/a/d^2-1/2*I*(f*x+e)*sinh(d*x+c)^2/a/d
```

Rubi [A] time = 0.10, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {5563, 3296, 2638, 5446, 2635, 8}

$$-\frac{f\cosh(c+dx)}{ad^2}+\frac{if\sinh(c+dx)\cosh(c+dx)}{4ad^2}-\frac{i(e+fx)\sinh^2(c+dx)}{2ad}+\frac{(e+fx)\sinh(c+dx)}{ad}-\frac{ifx}{4ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I/4)*f*x)/(a*d) - (f*Cosh[c + d*x])/(a*d^2) + ((e + f*x)*Sinh[c + d*x])/
(a*d) + ((I/4)*f*Cosh[c + d*x]*Sinh[c + d*x])/(a*d^2) - ((I/2)*(e + f*x)*Si
nh[c + d*x]^2)/(a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5563

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cosh[c
+ d*x]^(n - 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2)*Si
nh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ
[a^2 + b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(e+fx)\cosh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx &= -\frac{i\int (e+fx)\cosh(c+dx)\sinh(c+dx)\,dx}{a}+\frac{\int (e+fx)\cosh(c+dx)\,dx}{a}\\ &= \frac{(e+fx)\sinh(c+dx)}{ad}-\frac{i(e+fx)\sinh^2(c+dx)}{2ad}+\frac{(if)\int \sinh^2(c+dx)\,dx}{2ad}-\frac{f\int\\ &= -\frac{f\cosh(c+dx)}{ad^2}+\frac{(e+fx)\sinh(c+dx)}{ad}+\frac{if\cosh(c+dx)\sinh(c+dx)}{4ad^2}-\frac{i(e\\ &= -\frac{ifx}{4ad}-\frac{f\cosh(c+dx)}{ad^2}+\frac{(e+fx)\sinh(c+dx)}{ad}+\frac{if\cosh(c+dx)\sinh(c+dx)}{4ad^2}\end{aligned}$$

Mathematica [A] time = 1.09, size = 60, normalized size = 0.61

$$\frac{d(e+fx)(4\sinh(c+dx)-i\cosh(2(c+dx)))+if(\sinh(c+dx)+4i)\cosh(c+dx)}{4ad^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (I*f*Cosh[c + d*x]*(4*I + Sinh[c + d*x]) + d*(e + f*x)*((-I)*Cosh[2*(c + d*
x)] + 4*Sinh[c + d*x]))/(4*a*d^2)
```

fricas [A] time = 0.47, size = 92, normalized size = 0.94

$$\frac{\left(-2i\,dfx-2i\,de+\left(-2i\,dfx-2i\,de+i\,f\right)e^{(4\,dx+4\,c)}+8\left(dfx+de-f\right)e^{(3\,dx+3\,c)}-8\left(dfx+de+f\right)e^{(dx+c)}-i\,f\right)e^{(-}}{16\,ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/16*(-2*I*d*f*x - 2*I*d*e + (-2*I*d*f*x - 2*I*d*e + I*f)*e^(4*d*x + 4*c) +
 8*(d*f*x + d*e - f)*e^(3*d*x + 3*c) - 8*(d*f*x + d*e + f)*e^(d*x + c) - I*
f)*e^(-2*d*x - 2*c)/(a*d^2)
```

giac [B] time = 0.24, size = 246, normalized size = 2.51

$$\frac{-2i\,dfxe^{(5\,dx+6\,c)}+6\,dfxe^{(4\,dx+5\,c)}-8i\,dfxe^{(3\,dx+4\,c)}-8\,dfxe^{(2\,dx+3\,c)}+6i\,dfxe^{(dx+2\,c)}-2\,dfxe^{c}-2i\,de^{(5\,dx+6\,c+1)}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/16*(-2*I*d*f*x*e^(5*d*x + 6*c) + 6*d*f*x*e^(4*d*x + 5*c) - 8*I*d*f*x*e^(3
*d*x + 4*c) - 8*d*f*x*e^(2*d*x + 3*c) + 6*I*d*f*x*e^(d*x + 2*c) - 2*d*f*x*e
^c - 2*I*d*e^(5*d*x + 6*c + 1) + I*f*e^(5*d*x + 6*c) + 6*d*e^(4*d*x + 5*c +
 1) - 7*f*e^(4*d*x + 5*c) - 8*I*d*e^(3*d*x + 4*c + 1) + 8*I*f*e^(3*d*x + 4*
c) - 8*d*e^(2*d*x + 3*c + 1) - 8*f*e^(2*d*x + 3*c) + 6*I*d*e^(d*x + 2*c + 1
) + 7*I*f*e^(d*x + 2*c) - 2*d*e^(c + 1) - f*e^c)/(a*d^2*e^(3*d*x + 4*c) - I
*a*d^2*e^(2*d*x + 3*c))
```

maple [A] time = 0.11, size = 120, normalized size = 1.22

$$-\frac{if\left(\frac{(dx+c)\left(\cosh^2(dx+c)\right)}{2}-\frac{\cosh(dx+c)\sinh(dx+c)}{4}-\frac{dx}{4}-\frac{c}{4}\right)-\frac{icf\left(\cosh^2(dx+c)\right)}{2}+\frac{ide\left(\cosh^2(dx+c)\right)}{2}-f\left((dx+c)\sinh(dx+c)-\right.}{d^2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/d^2/a*(I*f*(1/2*(d*x+c)*cosh(d*x+c)^2-1/4*cosh(d*x+c)*sinh(d*x+c)-1/4*d*
x-1/4*c)-1/2*I*c*f*cosh(d*x+c)^2+1/2*I*d*e*cosh(d*x+c)^2-f*((d*x+c)*sinh(d*
x+c)-cosh(d*x+c))+c*f*sinh(d*x+c)-sinh(d*x+c)*d*e)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [B] time = 0.54, size = 144, normalized size = 1.47

$$-\mathrm{e}^{-c-d\,x}\,\left(\frac{f+d\,e}{2\,a\,d^2}+\frac{f\,x}{2\,a\,d}\right)-\mathrm{e}^{-2\,c-2\,d\,x}\,\left(\frac{\left(f+2\,d\,e\right)\,1\mathrm{i}}{16\,a\,d^2}+\frac{f\,x\,1\mathrm{i}}{8\,a\,d}\right)+\mathrm{e}^{2\,c+2\,d\,x}\,\left(\frac{\left(f-2\,d\,e\right)\,1\mathrm{i}}{16\,a\,d^2}-\frac{f\,x\,1\mathrm{i}}{8\,a\,d}\right)-\mathrm{e}^{c+d\,x}\,\left(\frac{f-d\,e}{2\,a\,d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*(e + f*x))/(a + a*sinh(c + d*x)*1i),x)
```

```
[Out] exp(2*c + 2*d*x)*(((f - 2*d*e)*1i)/(16*a*d^2) - (f*x*1i)/(8*a*d)) - exp(- 2
*c - 2*d*x)*(((f + 2*d*e)*1i)/(16*a*d^2) + (f*x*1i)/(8*a*d)) - exp(- c - d*
x)*((f + d*e)/(2*a*d^2) + (f*x)/(2*a*d)) - exp(c + d*x)*((f - d*e)/(2*a*d^2
) - (f*x)/(2*a*d))
```

sympy [A] time = 0.60, size = 323, normalized size = 3.30

$$\begin{cases} \frac{\left(\left(-512a^3d^7ee^{2c}-512a^3d^7fxe^{2c}-512a^3d^6fe^{2c}\right)e^{-dx}+\left(512a^3d^7ee^{4c}+512a^3d^7fxe^{4c}-512a^3d^6fe^{4c}\right)e^{dx}+\left(-128ia^3d^7ee^{c}-128ia^3d^7fxe^{c}-64ia^3d^6fe^{c}\right)e^{-2dx}\cdots}{1024a^4d^8} \\ \frac{x^2\left(-ife^{4c}+2fe^{3c}+2fe^{c}+if\right)e^{-2c}}{8a}+\frac{x\left(-iee^{4c}+2ee^{3c}+2ee^{c}+ie\right)e^{-2c}}{4a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Piecewise((((-512*a**3*d**7*e*exp(2*c) - 512*a**3*d**7*f*x*exp(2*c) - 512*a
**3*d**6*f*exp(2*c))*exp(-d*x) + (512*a**3*d**7*e*exp(4*c) + 512*a**3*d**7*
f*x*exp(4*c) - 512*a**3*d**6*f*exp(4*c))*exp(d*x) + (-128*I*a**3*d**7*e*exp
(c) - 128*I*a**3*d**7*f*x*exp(c) - 64*I*a**3*d**6*f*exp(c))*exp(-2*d*x) + (
-128*I*a**3*d**7*e*exp(5*c) - 128*I*a**3*d**7*f*x*exp(5*c) + 64*I*a**3*d**6
*f*exp(5*c))*exp(2*d*x))*exp(-3*c)/(1024*a**4*d**8), Ne(1024*a**4*d**8*exp(
3*c), 0)), (x**2*(-I*f*exp(4*c) + 2*f*exp(3*c) + 2*f*exp(c) + I*f)*exp(-2*c
)/(8*a) + x*(-I*e*exp(4*c) + 2*e*exp(3*c) + 2*e*exp(c) + I*e)*exp(-2*c)/(4*
a), True))
```

3.268 $\int \frac{\cosh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=34

$$\frac{\sinh(c+dx)}{ad}-\frac{i\sinh^2(c+dx)}{2ad}$$

```
[Out] sinh(d*x+c)/a/d-1/2*I*sinh(d*x+c)^2/a/d
```

Rubi [A] time = 0.05, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {2667}

$$\frac{\sinh(c+dx)}{ad}-\frac{i\sinh^2(c+dx)}{2ad}$$

Antiderivative was successfully verified.

```
[In] Int[Cosh[c + d*x]^3/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] Sinh[c + d*x]/(a*d) - ((I/2)*Sinh[c + d*x]^2)/(a*d)
```

Rule 2667

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^(m + (p - 1)/2)*(a - x)
^((p - 1)/2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && In
tegerQ[(p - 1)/2] && EqQ[a^2 - b^2, 0] && (GeQ[p, -1] ||  !IntegerQ[m + 1/2
])
```

Rubi steps

$$\begin{aligned}\int \frac{\cosh^3(c+dx)}{a+ia\sinh(c+dx)}\,dx &= -\frac{i\,\text{Subst}\left(\int (a-x)\,dx,x,ia\sinh(c+dx)\right)}{a^3d}\\ &= \frac{\sinh(c+dx)}{ad}-\frac{i\sinh^2(c+dx)}{2ad}\end{aligned}$$

Mathematica [A] time = 0.05, size = 28, normalized size = 0.82

$$\frac{(2-i\sinh(c+dx))\sinh(c+dx)}{2ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cosh[c + d*x]^3/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((2 - I*Sinh[c + d*x])*Sinh[c + d*x])/(2*a*d)
```

fricas [A] time = 0.52, size = 49, normalized size = 1.44

$$\frac{\left(-i\,e^{(4\,dx+4\,c)}+4\,e^{(3\,dx+3\,c)}-4\,e^{(dx+c)}-i\right)e^{(-2\,dx-2\,c)}}{8\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/8*(-I*e^(4*d*x + 4*c) + 4*e^(3*d*x + 3*c) - 4*e^(d*x + c) - I)*e^(-2*d*x
- 2*c)/(a*d)
```

giac [A] time = 0.23, size = 55, normalized size = 1.62

$$-\frac{\frac{\left(4\,e^{(dx+c)}+i\right)e^{(-2\,dx-2\,c)}}{a}+\frac{i\,ae^{(2\,dx+2\,c)}-4\,ae^{(dx+c)}}{a^{2}}}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/8*((4*e^(d*x + c) + I)*e^(-2*d*x - 2*c)/a + (I*a*e^(2*d*x + 2*c) - 4*a*e
^(d*x + c))/a^2)/d
```

maple [A] time = 0.04, size = 29, normalized size = 0.85

$$-\frac{\frac{i\left(\sinh^{2}(dx+c)\right)}{2}-\sinh\left(dx+c\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/a/d*(1/2*I*sinh(d*x+c)^2-sinh(d*x+c))
```

maxima [A] time = 0.31, size = 60, normalized size = 1.76

$$-\frac{i\left(4i\,e^{(-dx-c)}+1\right)e^{(2\,dx+2\,c)}}{8\,ad}-\frac{i\left(-4i\,e^{(-dx-c)}+e^{(-2\,dx-2\,c)}\right)}{8\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

[Out] -1/8*I*(4*I*e^(-d*x - c) + 1)*e^(2*d*x + 2*c)/(a*d) - 1/8*I*(-4*I*e^(-d*x - c) + e^(-2*d*x - 2*c))/(a*d)

mupad [B] time = 0.29, size = 29, normalized size = 0.85

$$\frac{4\sinh(c+d\,x)-\cosh(2\,c+2\,d\,x)\,1\mathrm{i}}{4\,a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(cosh(c + d*x)^3/(a + a*sinh(c + d*x)*1i),x)

[Out] (4*sinh(c + d*x) - cosh(2*c + 2*d*x)*1i)/(4*a*d)

sympy [A] time = 0.35, size = 134, normalized size = 3.94

$$\begin{cases} \frac{\left(-32ia^3d^3e^{5c}e^{2dx}+128a^3d^3e^{4c}e^{dx}-128a^3d^3e^{2c}e^{-dx}-32ia^3d^3e^{c}e^{-2dx}\right)e^{-3c}}{256a^4d^4} & \text{for } 256a^4d^4e^{3c} \neq 0 \\ \frac{x\left(-ie^{4c}+2e^{3c}+2e^{c}+i\right)e^{-2c}}{4a} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(cosh(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)

[Out] Piecewise(((-32*I*a**3*d**3*exp(5*c)*exp(2*d*x) + 128*a**3*d**3*exp(4*c)*exp(d*x) - 128*a**3*d**3*exp(2*c)*exp(-d*x) - 32*I*a**3*d**3*exp(c)*exp(-2*d*x))*exp(-3*c)/(256*a**4*d**4), Ne(256*a**4*d**4*exp(3*c), 0)), (x*(-I*exp(4*c) + 2*exp(3*c) + 2*exp(c) + I)*exp(-2*c)/(4*a), True))

3.269 $\int \frac{\cosh^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=131

$$-\frac{i\sinh\left(2c-\frac{2de}{f}\right)\text{Chi}\left(\frac{2de}{f}+2dx\right)}{2af}+\frac{\cosh\left(c-\frac{de}{f}\right)\text{Chi}\left(\frac{de}{f}+dx\right)}{af}+\frac{\sinh\left(c-\frac{de}{f}\right)\text{Shi}\left(\frac{de}{f}+dx\right)}{af}-\frac{i\cosh\left(2c-\frac{2de}{f}\right)}{2a}$$

```
[Out] Chi(d*e/f+d*x)*cosh(c-d*e/f)/a/f-1/2*I*cosh(2*c-2*d*e/f)*Shi(2*d*e/f+2*d*x)
/a/f-1/2*I*Chi(2*d*e/f+2*d*x)*sinh(2*c-2*d*e/f)/a/f+Shi(d*e/f+d*x)*sinh(c-d
*e/f)/a/f
```

Rubi [A] time = 0.32, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {5563, 3303, 3298, 3301, 5448, 12}

$$-\frac{i\sinh\left(2c-\frac{2de}{f}\right)\text{Chi}\left(\frac{2de}{f}+2dx\right)}{2af}+\frac{\cosh\left(c-\frac{de}{f}\right)\text{Chi}\left(\frac{de}{f}+dx\right)}{af}+\frac{\sinh\left(c-\frac{de}{f}\right)\text{Shi}\left(\frac{de}{f}+dx\right)}{af}-\frac{i\cosh\left(2c-\frac{2de}{f}\right)}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[Cosh[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] (Cosh[c - (d*e)/f]*CoshIntegral[(d*e)/f + d*x])/(a*f) - ((I/2)*CoshIntegral
[(2*d*e)/f + 2*d*x]*Sinh[2*c - (2*d*e)/f])/(a*f) + (Sinh[c - (d*e)/f]*SinhI
ntegral[(d*e)/f + d*x])/(a*f) - ((I/2)*Cosh[2*c - (2*d*e)/f]*SinhIntegral[(
2*d*e)/f + 2*d*x])/(a*f)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 5448

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sinh[a +
b*x]^n*Cosh[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] &
& IGtQ[p, 0]
```

Rule 5563

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cosh[c
+ d*x]^(n - 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2)*Si
nh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ
[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{\cosh^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx = -\frac{i\int \frac{\cosh(c+dx)\sinh(c+dx)}{e+fx}\,dx}{a} + \frac{\int \frac{\cosh(c+dx)}{e+fx}\,dx}{a}$$

$$= -\frac{i\int \frac{\sinh(2c+2dx)}{2(e+fx)}\,dx}{a} + \frac{\cosh\left(c-\frac{de}{f}\right)\int \frac{\cosh\left(\frac{de}{f}+dx\right)}{e+fx}\,dx}{a} + \frac{\sinh\left(c-\frac{de}{f}\right)\int \frac{\sinh(\ldots}{e+\ldots}}{a}$$

$$= \frac{\cosh\left(c-\frac{de}{f}\right)\text{Chi}\left(\frac{de}{f}+dx\right)}{af} + \frac{\sinh\left(c-\frac{de}{f}\right)\text{Shi}\left(\frac{de}{f}+dx\right)}{af} - \frac{i\int \frac{\sinh(2c+2dx)}{e+fx}\ldots}{2a}$$

$$= \frac{\cosh\left(c-\frac{de}{f}\right)\text{Chi}\left(\frac{de}{f}+dx\right)}{af} + \frac{\sinh\left(c-\frac{de}{f}\right)\text{Shi}\left(\frac{de}{f}+dx\right)}{af} - \frac{\left(i\cosh\left(2c-\ldots\right.\right.}{\ldots}$$

$$= \frac{\cosh\left(c-\frac{de}{f}\right)\text{Chi}\left(\frac{de}{f}+dx\right)}{af} - \frac{i\text{Chi}\left(\frac{2de}{f}+2dx\right)\sinh\left(2c-\frac{2de}{f}\right)}{2af} + \frac{\sinh\left(c-\ldots\right.}{\ldots}$$

Mathematica [A] time = 0.40, size = 112, normalized size = 0.85

$$\frac{2\cosh\left(c-\frac{de}{f}\right)\text{Chi}\left(d\left(\frac{e}{f}+x\right)\right)-i\left(\sinh\left(2c-\frac{2de}{f}\right)\text{Chi}\left(\frac{2d(e+fx)}{f}\right)+2i\sinh\left(c-\frac{de}{f}\right)\text{Shi}\left(d\left(\frac{e}{f}+x\right)\right)+\cosh\left(2c\right.\right.}{2af}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cosh[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] (2*Cosh[c - (d*e)/f]*CoshIntegral[d*(e/f + x)] - I*(CoshIntegral[(2*d*(e +
f*x))/f]*Sinh[2*c - (2*d*e)/f] + (2*I)*Sinh[c - (d*e)/f]*SinhIntegral[d*(e/
f + x)] + Cosh[2*c - (2*d*e)/f]*SinhIntegral[(2*d*(e + f*x))/f]))/(2*a*f)
```

fricas [A] time = 0.54, size = 127, normalized size = 0.97

$$\frac{i\,\text{Ei}\left(-\frac{2\left(dfx+de\right)}{f}\right)e^{\left(\frac{2\left(de-cf\right)}{f}\right)}+2\,\text{Ei}\left(-\frac{dfx+de}{f}\right)e^{\left(\frac{de-cf}{f}\right)}+2\,\text{Ei}\left(\frac{dfx+de}{f}\right)e^{\left(-\frac{de-cf}{f}\right)}-i\,\text{Ei}\left(\frac{2\left(dfx+de\right)}{f}\right)e^{\left(-\frac{2\left(de-cf\right)}{f}\right)}}{4\,af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(I*Ei(-2*(d*f*x + d*e)/f)*e^(2*(d*e - c*f)/f) + 2*Ei(-(d*f*x + d*e)/f)*
e^((d*e - c*f)/f) + 2*Ei((d*f*x + d*e)/f)*e^(-(d*e - c*f)/f) - I*Ei(2*(d*f*
x + d*e)/f)*e^(-2*(d*e - c*f)/f))/(a*f)
```

giac [A] time = 0.22, size = 154, normalized size = 1.18

$$-\frac{\left(i\,\text{Ei}\left(\frac{2\left(dfx+de\right)}{f}\right)e^{\left(4\,c-\frac{2\,de}{f}\right)}-2\,\text{Ei}\left(\frac{dfx+de}{f}\right)e^{\left(3\,c-\frac{de}{f}\right)}-2\,\text{Ei}\left(-\frac{dfx+de}{f}\right)e^{\left(c+\frac{de}{f}\right)}-i\,\text{Ei}\left(-\frac{2\left(dfx+de\right)}{f}\right)e^{\left(\frac{2\,de}{f}\right)}+3i\,e^{(2\,c)}\log\right.}{4\,af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/4*(I*Ei(2*(d*f*x + d*e)/f)*e^(4*c - 2*d*e/f) - 2*Ei((d*f*x + d*e)/f)*e^(
3*c - d*e/f) - 2*Ei(-(d*f*x + d*e)/f)*e^(c + d*e/f) - I*Ei(-2*(d*f*x + d*e)
/f)*e^(2*d*e/f) + 3*I*e^(2*c)*log(f*x + e) - 3*I*e^(2*c)*log(I*f*x + I*e))*
e^(-2*c)/(a*f)
```

maple [A] time = 0.19, size = 180, normalized size = 1.37

$$-\frac{e^{-\frac{cf-de}{f}}\,\text{Ei}\left(1,dx+c-\frac{cf-de}{f}\right)}{2af}-\frac{e^{\frac{cf-de}{f}}\,\text{Ei}\left(1,-dx-c-\frac{-cf+de}{f}\right)}{2af}+\frac{ie^{\frac{2cf-2de}{f}}\,\text{Ei}\left(1,-2dx-2c-\frac{2\left(-cf+de\right)}{f}\right)}{4af}-\frac{ie^{-\frac{2\left(cf-de\right)}{f}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/2/a/f*exp(-(c*f-d*e)/f)*Ei(1,d*x+c-(c*f-d*e)/f)-1/2/a/f*exp((c*f-d*e)/f)
*Ei(1,-d*x-c-(-c*f+d*e)/f)+1/4*I/a/f*exp(2*(c*f-d*e)/f)*Ei(1,-2*d*x-2*c-2*(
-c*f+d*e)/f)-1/4*I/a/f*exp(-2*(c*f-d*e)/f)*Ei(1,2*d*x+2*c-2*(c*f-d*e)/f)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cosh\left(c+d\,x\right)^3}{\left(e+f\,x\right)\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)^3/((e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(cosh(c + d*x)^3/((e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int \frac{\cosh^{3}\left(c+dx\right)}{e\sinh\left(c+dx\right)-ie+fx\sinh\left(c+dx\right)-ifx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(cosh(c + d*x)**3/(e*sinh(c + d*x) - I*e + f*x*sinh(c + d*x) - I
*f*x), x)/a
```

3.270 $\int \frac{\cosh^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=180

$$\frac{d\sinh\left(c-\frac{de}{f}\right)\text{Chi}\left(\frac{de}{f}+dx\right)}{af^2}-\frac{id\cosh\left(2c-\frac{2de}{f}\right)\text{Chi}\left(\frac{2de}{f}+2dx\right)}{af^2}-\frac{id\sinh\left(2c-\frac{2de}{f}\right)\text{Shi}\left(\frac{2de}{f}+2dx\right)}{af^2}+\frac{d\cosh\left(\right.}{}$$

```
[Out] -I*d*Chi(2*d*e/f+2*d*x)*cosh(2*c-2*d*e/f)/a/f^2-cosh(d*x+c)/a/f/(f*x+e)+d*c
osh(c-d*e/f)*Shi(d*e/f+d*x)/a/f^2-I*d*Shi(2*d*e/f+2*d*x)*sinh(2*c-2*d*e/f)/
a/f^2+d*Chi(d*e/f+d*x)*sinh(c-d*e/f)/a/f^2+1/2*I*sinh(2*d*x+2*c)/a/f/(f*x+e
)
```

Rubi [A] time = 0.39, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {5563, 3297, 3303, 3298, 3301, 5448, 12}

$$\frac{d\sinh\left(c-\frac{de}{f}\right)\text{Chi}\left(\frac{de}{f}+dx\right)}{af^2}-\frac{id\cosh\left(2c-\frac{2de}{f}\right)\text{Chi}\left(\frac{2de}{f}+2dx\right)}{af^2}-\frac{id\sinh\left(2c-\frac{2de}{f}\right)\text{Shi}\left(\frac{2de}{f}+2dx\right)}{af^2}+\frac{d\cosh\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cosh[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] -(Cosh[c + d*x]/(a*f*(e + f*x))) - (I*d*Cosh[2*c - (2*d*e)/f]*CoshIntegral[
(2*d*e)/f + 2*d*x])/(a*f^2) + (d*CoshIntegral[(d*e)/f + d*x]*Sinh[c - (d*e)
/f])/(a*f^2) + ((I/2)*Sinh[2*c + 2*d*x])/(a*f*(e + f*x)) + (d*Cosh[c - (d*e
)/f]*SinhIntegral[(d*e)/f + d*x])/(a*f^2) - (I*d*Sinh[2*c - (2*d*e)/f]*Sinh
Integral[(2*d*e)/f + 2*d*x])/(a*f^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3298

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[(I*SinhIntegral[(c*f*fz)/d + f*fz*x])/d, x] /; FreeQ[{c, d, e, f
, fz}, x] && EqQ[d*e - c*f*fz*I, 0]
```

Rule 3301

```
Int[sin[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbo
l] :> Simp[CoshIntegral[(c*f*fz)/d + f*fz*x]/d, x] /; FreeQ[{c, d, e, f, fz
}, x] && EqQ[d*(e - Pi/2) - c*f*fz*I, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 5448

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sinh[a +
b*x]^n*Cosh[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] &
& IGtQ[p, 0]
```

Rule 5563

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cosh[c
+ d*x]^(n - 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2)*Si
nh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ
[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{\cosh^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx = -\frac{i\int \frac{\cosh(c+dx)\sinh(c+dx)}{(e+fx)^2}\,dx}{a} + \frac{\int \frac{\cosh(c+dx)}{(e+fx)^2}\,dx}{a}$$

$$= -\frac{\cosh(c+dx)}{af(e+fx)} - \frac{i\int \frac{\sinh(2c+2dx)}{2(e+fx)^2}\,dx}{a} + \frac{d\int \frac{\sinh(c+dx)}{e+fx}\,dx}{af}$$

$$= -\frac{\cosh(c+dx)}{af(e+fx)} - \frac{i\int \frac{\sinh(2c+2dx)}{(e+fx)^2}\,dx}{2a} + \frac{\left(d\cosh\left(c-\frac{de}{f}\right)\right)\int \frac{\sinh\left(\frac{de}{f}+dx\right)}{e+fx}\,dx}{af}$$

$$= -\frac{\cosh(c+dx)}{af(e+fx)} + \frac{d\text{Chi}\left(\frac{de}{f}+dx\right)\sinh\left(c-\frac{de}{f}\right)}{af^2} + \frac{i\sinh(2c+2dx)}{2af(e+fx)} + \frac{d\,\text{c}}{}$$

$$= -\frac{\cosh(c+dx)}{af(e+fx)} + \frac{d\text{Chi}\left(\frac{de}{f}+dx\right)\sinh\left(c-\frac{de}{f}\right)}{af^2} + \frac{i\sinh(2c+2dx)}{2af(e+fx)} + \frac{d\,\text{c}}{}$$

$$= -\frac{\cosh(c+dx)}{af(e+fx)} - \frac{id\cosh\left(2c-\frac{2de}{f}\right)\text{Chi}\left(\frac{2de}{f}+2dx\right)}{af^2} + \frac{d\text{Chi}\left(\frac{de}{f}+dx\right)\text{si}}{af^2}$$

Mathematica [A] time = 0.63, size = 212, normalized size = 1.18

$$\frac{2d(e+fx)\sinh\left(c-\frac{de}{f}\right)\text{Chi}\left(d\left(\frac{e}{f}+x\right)\right) - 2id(e+fx)\cosh\left(2c-\frac{2de}{f}\right)\text{Chi}\left(\frac{2d(e+fx)}{f}\right) - 2ide\sinh\left(2c-\frac{2de}{f}\right)\text{Shi}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cosh[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] (-2*f*Cosh[c + d*x] - (2*I)*d*(e + f*x)*Cosh[2*c - (2*d*e)/f]*CoshIntegral[
(2*d*(e + f*x))/f] + 2*d*(e + f*x)*CoshIntegral[d*(e/f + x)]*Sinh[c - (d*e)
/f] + I*f*Sinh[2*(c + d*x)] + 2*d*e*Cosh[c - (d*e)/f]*SinhIntegral[d*(e/f +
 x)] + 2*d*f*x*Cosh[c - (d*e)/f]*SinhIntegral[d*(e/f + x)] - (2*I)*d*e*Sinh
[2*c - (2*d*e)/f]*SinhIntegral[(2*d*(e + f*x))/f] - (2*I)*d*f*x*Sinh[2*c -
(2*d*e)/f]*SinhIntegral[(2*d*(e + f*x))/f])/(2*a*f^2*(e + f*x))
```

fricas [A] time = 0.52, size = 226, normalized size = 1.26

$$\frac{\left(i\,fe^{(4\,dx+4\,c)} - 2\,fe^{(3\,dx+3\,c)} + \left(\left(-2i\,dfx - 2i\,de\right)\text{Ei}\left(-\frac{2\left(dfx+de\right)}{f}\right)e^{\left(\frac{2\left(de-cf\right)}{f}\right)} - 2\left(dfx+de\right)\text{Ei}\left(-\frac{dfx+de}{f}\right)e^{\left(\frac{de-cf}{f}\right)} + 2\right.\right.}{4\left(af^3x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/4*(I*f*e^(4*d*x + 4*c) - 2*f*e^(3*d*x + 3*c) + ((-2*I*d*f*x - 2*I*d*e)*Ei
(-2*(d*f*x + d*e)/f)*e^(2*(d*e - c*f)/f) - 2*(d*f*x + d*e)*Ei(-(d*f*x + d*e
)/f)*e^((d*e - c*f)/f) + 2*(d*f*x + d*e)*Ei((d*f*x + d*e)/f)*e^(-(d*e - c*f
)/f) + (-2*I*d*f*x - 2*I*d*e)*Ei(2*(d*f*x + d*e)/f)*e^(-2*(d*e - c*f)/f))*e
^(2*d*x + 2*c) - 2*f*e^(d*x + c) - I*f)*e^(-2*d*x - 2*c)/(a*f^3*x + a*e*f^2
)
```

giac [B] time = 0.40, size = 1193, normalized size = 6.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/4*(2*I*(f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e))*d^2*Ei(2*((f*x + e)
*(d + c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e)/f)*e^(2*(c*f - d*e)/f) -
2*I*c*d^2*f*Ei(2*((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e
)/f)*e^(2*(c*f - d*e)/f) - 2*(f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e))*
d^2*Ei(((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e)/f)*e^((c
*f - d*e)/f) + 2*c*d^2*f*Ei(((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e))
- c*f + d*e)/f)*e^((c*f - d*e)/f) + 2*(f*x + e)*(d + c*f/(f*x + e) - d*e/(f
*x + e))*d^2*Ei(-((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e
)/f)*e^(-(c*f - d*e)/f) - 2*c*d^2*f*Ei(-((f*x + e)*(d + c*f/(f*x + e) - d*e
/(f*x + e)) - c*f + d*e)/f)*e^(-(c*f - d*e)/f) + 2*I*(f*x + e)*(d + c*f/(f*
x + e) - d*e/(f*x + e))*d^2*Ei(-2*((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x
+ e)) - c*f + d*e)/f)*e^(-2*(c*f - d*e)/f) - 2*I*c*d^2*f*Ei(-2*((f*x + e)*(
d + c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e)/f)*e^(-2*(c*f - d*e)/f) + 2
*I*d^3*Ei(2*((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e)/f)*
e^(2*(c*f - d*e)/f + 1) - 2*d^3*Ei(((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x
 + e)) - c*f + d*e)/f)*e^((c*f - d*e)/f + 1) + 2*d^3*Ei(-((f*x + e)*(d + c*
f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e)/f)*e^(-(c*f - d*e)/f + 1) + 2*I*d
^3*Ei(-2*((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e)) - c*f + d*e)/f)*e^(
-2*(c*f - d*e)/f + 1) - I*d^2*f*e^(2*(f*x + e)*(d + c*f/(f*x + e) - d*e/(f*
x + e))/f) + 2*d^2*f*e^((f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e))/f) +
2*d^2*f*e^(-(f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e))/f) + I*d^2*f*e^(-
2*(f*x + e)*(d + c*f/(f*x + e) - d*e/(f*x + e))/f))*f^2/(((f*x + e)*a*(d +
c*f/(f*x + e) - d*e/(f*x + e))*f^4 - a*c*f^5 + a*d*f^4*e)*d)
```

maple [A] time = 0.21, size = 299, normalized size = 1.66

$$-\frac{d\,\mathrm{e}^{-dx-c}}{2af\left(dfx+de\right)}+\frac{d\,\mathrm{e}^{-\frac{cf-de}{f}}\,\mathrm{Ei}\left(1,dx+c-\frac{cf-de}{f}\right)}{2a\,f^{2}}-\frac{d\,\mathrm{e}^{dx+c}}{2a\,f^{2}\left(\frac{de}{f}+dx\right)}-\frac{d\,\mathrm{e}^{\frac{cf-de}{f}}\,\mathrm{Ei}\left(1,-dx-c-\frac{-cf+de}{f}\right)}{2a\,f^{2}}+\frac{id\,\mathrm{e}^{2dx+}}{4a\,f^{2}\left(\frac{de}{f}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -1/2*d/a*exp(-d*x-c)/f/(d*f*x+d*e)+1/2*d/a/f^2*exp(-(c*f-d*e)/f)*Ei(1,d*x+c
-(c*f-d*e)/f)-1/2*d/a/f^2*exp(d*x+c)/(d*e/f+d*x)-1/2*d/a/f^2*exp((c*f-d*e)/
f)*Ei(1,-d*x-c-(-c*f+d*e)/f)+1/4*I*d/a/f^2*exp(2*d*x+2*c)/(d*e/f+d*x)+1/2*I
*d/a/f^2*exp(2*(c*f-d*e)/f)*Ei(1,-2*d*x-2*c-2*(-c*f+d*e)/f)-1/4*I/a*d*exp(-
2*d*x-2*c)/f/(d*f*x+d*e)+1/2*I/a*d/f^2*exp(-2*(c*f-d*e)/f)*Ei(1,2*d*x+2*c-2
*(c*f-d*e)/f)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cosh\left(c+d\,x\right)^3}{{\left(e+f\,x\right)}^2\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)^3/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(cosh(c + d*x)^3/((e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**3/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.271 $\int \frac{(e+fx)^3\mathbf{sech}(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=463

$$\frac{3if^3\text{Li}_2\left(-ie^{c+dx}\right)}{ad^4}-\frac{3if^3\text{Li}_2\left(ie^{c+dx}\right)}{ad^4}+\frac{3if^3\text{Li}_2\left(-e^{2(c+dx)}\right)}{2ad^4}-\frac{3if^3\text{Li}_4\left(-ie^{c+dx}\right)}{ad^4}+\frac{3if^3\text{Li}_4\left(ie^{c+dx}\right)}{ad^4}+\frac{3if^2(e+fx)\text{Li}_3\left(-\right.}{ad^3}$$

```
[Out] 3*I*f^2*(f*x+e)*polylog(3,-I*exp(d*x+c))/a/d^3-6*f^2*(f*x+e)*arctan(exp(d*x
+c))/a/d^3+(f*x+e)^3*arctan(exp(d*x+c))/a/d-3*I*f^2*(f*x+e)*polylog(3,I*exp
(d*x+c))/a/d^3+1/2*I*(f*x+e)^3*sech(d*x+c)^2/a/d-3*I*f^3*polylog(2,I*exp(d*
x+c))/a/d^4+3*I*f^3*polylog(2,-I*exp(d*x+c))/a/d^4+3*I*f^2*(f*x+e)*ln(1+exp
(2*d*x+2*c))/a/d^3+3/2*I*f^3*polylog(2,-exp(2*d*x+2*c))/a/d^4-3*I*f^3*polyl
og(4,-I*exp(d*x+c))/a/d^4-3/2*I*f*(f*x+e)^2/a/d^2-3/2*I*f*(f*x+e)^2*polylog
(2,-I*exp(d*x+c))/a/d^2-3/2*I*f*(f*x+e)^2*tanh(d*x+c)/a/d^2+3/2*f*(f*x+e)^2
*sech(d*x+c)/a/d^2+3/2*I*f*(f*x+e)^2*polylog(2,I*exp(d*x+c))/a/d^2+3*I*f^3*
polylog(4,I*exp(d*x+c))/a/d^4+1/2*(f*x+e)^3*sech(d*x+c)*tanh(d*x+c)/a/d
```

Rubi [A] time = 0.48, antiderivative size = 463, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 13, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.448, Rules used = {5571, 4186, 4180, 2279, 2391, 2531, 6609, 2282, 6589, 5451, 4184, 3718, 2190}

$$\frac{3if^2(e+fx)\text{PolyLog}\left(3,-ie^{c+dx}\right)}{ad^3}-\frac{3if^2(e+fx)\text{PolyLog}\left(3,ie^{c+dx}\right)}{ad^3}-\frac{3if(e+fx)^2\text{PolyLog}\left(2,-ie^{c+dx}\right)}{2ad^2}+\frac{3if(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sech[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (((-3*I)/2)*f*(e + f*x)^2)/(a*d^2) - (6*f^2*(e + f*x)*ArcTan[E^(c + d*x)])/
(a*d^3) + ((e + f*x)^3*ArcTan[E^(c + d*x)])/(a*d) + ((3*I)*f^2*(e + f*x)*Lo
g[1 + E^(2*(c + d*x))])/(a*d^3) + ((3*I)*f^3*PolyLog[2, (-I)*E^(c + d*x)])/
(a*d^4) - (((3*I)/2)*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^2) -
((3*I)*f^3*PolyLog[2, I*E^(c + d*x)])/(a*d^4) + (((3*I)/2)*f*(e + f*x)^2*Po
lyLog[2, I*E^(c + d*x)])/(a*d^2) + (((3*I)/2)*f^3*PolyLog[2, -E^(2*(c + d*x
))])/(a*d^4) + ((3*I)*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/(a*d^3) -
 ((3*I)*f^2*(e + f*x)*PolyLog[3, I*E^(c + d*x)])/(a*d^3) - ((3*I)*f^3*PolyL
og[4, (-I)*E^(c + d*x)])/(a*d^4) + ((3*I)*f^3*PolyLog[4, I*E^(c + d*x)])/(a
*d^4) + (3*f*(e + f*x)^2*Sech[c + d*x])/(2*a*d^2) + ((I/2)*(e + f*x)^3*Sech
[c + d*x]^2)/(a*d) - (((3*I)/2)*f*(e + f*x)^2*Tanh[c + d*x])/(a*d^2) + ((e
+ f*x)^3*Sech[c + d*x]*Tanh[c + d*x])/(2*a*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
```

```
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5571

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sech[c
 + d*x]^(n + 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(n + 1)*T
anh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && Eq
Q[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
```

```
d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\operatorname{sech}(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)^3\operatorname{sech}^2(c+dx)\tanh(c+dx)\,dx}{a}+\frac{\int (e+fx)^3\operatorname{sech}^3(c+dx)\,dx}{a}$$

$$= \frac{3f(e+fx)^2\operatorname{sech}(c+dx)}{2ad^2}+\frac{i(e+fx)^3\operatorname{sech}^2(c+dx)}{2ad}+\frac{(e+fx)^3\operatorname{sech}(c+dx)\tan}{2ad}$$

$$= -\frac{6f^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{ad}+\frac{3f(e+fx)^2\operatorname{sech}(c+dx)}{2ad^2}$$

$$= -\frac{3if(e+fx)^2}{2ad^2}-\frac{6f^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{ad}-\frac{3if(e+f}{}$$

$$= -\frac{3if(e+fx)^2}{2ad^2}-\frac{6f^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{ad}+\frac{3if^2(e+}{}$$

$$= -\frac{3if(e+fx)^2}{2ad^2}-\frac{6f^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{ad}+\frac{3if^2(e+}{}$$

$$= -\frac{3if(e+fx)^2}{2ad^2}-\frac{6f^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^3}+\frac{(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{ad}+\frac{3if^2(e+}{}$$

Mathematica [A] time = 11.22, size = 767, normalized size = 1.66

$$-\frac{3i\left(e^2f\sinh\left(\frac{dx}{2}\right)+2ef^2x\sinh\left(\frac{dx}{2}\right)+f^3x^2\sinh\left(\frac{dx}{2}\right)\right)}{ad^2\left(\cosh\left(\frac{c}{2}\right)+i\sinh\left(\frac{c}{2}\right)\right)\left(\cosh\left(\frac{c}{2}+\frac{dx}{2}\right)+i\sinh\left(\frac{c}{2}+\frac{dx}{2}\right)\right)}-\frac{\frac{12i(e^c+i)f\left(d^2(e+fx)^2\operatorname{Li}_2\left(-ie^{-c-dx}\right)+2f\left(d(e+fx)\operatorname{Li}_3\left(-ie^{-c-dx}\right)\right.\right.}{d^4}}{8a}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sech[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] -1/8*((e + f*x)^4/f + (4*(1 - I*E^c)*(e + f*x)^3*Log[1 + I*E^(-c - d*x)])/d
 + ((12*I)*(I + E^c)*f*(d^2*(e + f*x)^2*PolyLog[2, (-I)*E^(-c - d*x)] + 2*f
*(d*(e + f*x)*PolyLog[3, (-I)*E^(-c - d*x)] + f*PolyLog[4, (-I)*E^(-c - d*x
)])))/d^4)/(a*(I + E^c)) - ((-12*f^2 + d^2*(e + f*x)^2)^2 + 12*d*(1 + I*E^c
)*f^2*(d^2*e^2 - 4*f^2)*x*Log[1 - I*E^(-c - d*x)] + 12*d^3*e*(1 + I*E^c)*f^
3*x^2*Log[1 - I*E^(-c - d*x)] + 4*d^3*(1 + I*E^c)*f^4*x^3*Log[1 - I*E^(-c -
 d*x)] - 4*d*e*(1 + I*E^c)*f*(d^2*e^2 - 12*f^2)*(d*x - Log[I - E^(c + d*x)]
) + 12*(1 + I*E^c)*f^2*(-(d^2*e^2) + 4*f^2)*PolyLog[2, I*E^(-c - d*x)] - 24
```

```
*d*e*(1 + I*E^c)*f^3*(d*x*PolyLog[2, I*E^(-c - d*x)] + PolyLog[3, I*E^(-c -
 d*x)]) - 12*(1 + I*E^c)*f^4*(d^2*x^2*PolyLog[2, I*E^(-c - d*x)] + 2*(d*x*P
olyLog[3, I*E^(-c - d*x)] + PolyLog[4, I*E^(-c - d*x)])))/(8*a*d^4*(-I + E^
c)*f) + (x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3))/(8*a*(Cosh[c/2] - I
*Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])) + ((I/2)*(e + f*x)^3)/(a*d*(Cosh[c/2
 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2])^2) - ((3*I)*(e^2*f*Sinh[(d*x)/2] + 2*e
*f^2*x*Sinh[(d*x)/2] + f^3*x^2*Sinh[(d*x)/2]))/(a*d^2*(Cosh[c/2] + I*Sinh[c
/2])*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2]))
```

fricas [C] time = 0.55, size = 1450, normalized size = 3.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (-6*I*d^2*e^2*f + 12*I*c*d*e*f^2 - 6*I*c^2*f^3 + (-3*I*d^2*f^3*x^2 - 6*I*d^
2*e*f^2*x - 3*I*d^2*e^2*f + (3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^
2*f)*e^(2*d*x + 2*c) + 6*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f)*e^(d*x +
 c))*dilog(I*e^(d*x + c)) + (3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^
2*f - 12*I*f^3 + (-3*I*d^2*f^3*x^2 - 6*I*d^2*e*f^2*x - 3*I*d^2*e^2*f + 12*I
*f^3)*e^(2*d*x + 2*c) - 6*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f - 4*f^3)
*e^(d*x + c))*dilog(-I*e^(d*x + c)) + (-6*I*d^2*f^3*x^2 - 12*I*d^2*e*f^2*x
- 12*I*c*d*e*f^2 + 6*I*c^2*f^3)*e^(2*d*x + 2*c) + 2*(d^3*f^3*x^3 + d^3*e^3
+ 3*d^2*e^2*f - 12*c*d*e*f^2 + 6*c^2*f^3 + 3*(d^3*e*f^2 - d^2*f^3)*x^2 + 3*
(d^3*e^2*f - 2*d^2*e*f^2)*x)*e^(d*x + c) + (-I*d^3*e^3 + 3*I*c*d^2*e^2*f -
3*I*c^2*d*e*f^2 + I*c^3*f^3 + (I*d^3*e^3 - 3*I*c*d^2*e^2*f + 3*I*c^2*d*e*f^
2 - I*c^3*f^3)*e^(2*d*x + 2*c) + 2*(d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2
 - c^3*f^3)*e^(d*x + c))*log(e^(d*x + c) + I) + (I*d^3*e^3 - 3*I*c*d^2*e^2*
f + (3*I*c^2 - 12*I)*d*e*f^2 + (-I*c^3 + 12*I*c)*f^3 + (-I*d^3*e^3 + 3*I*c*
d^2*e^2*f + (-3*I*c^2 + 12*I)*d*e*f^2 + (I*c^3 - 12*I*c)*f^3)*e^(2*d*x + 2*
c) - 2*(d^3*e^3 - 3*c*d^2*e^2*f + 3*(c^2 - 4)*d*e*f^2 - (c^3 - 12*c)*f^3)*e
^(d*x + c))*log(e^(d*x + c) - I) + (I*d^3*f^3*x^3 + 3*I*d^3*e*f^2*x^2 + 3*I
*c*d^2*e^2*f - 3*I*c^2*d*e*f^2 + (I*c^3 - 12*I*c)*f^3 + (3*I*d^3*e^2*f - 12
*I*d*f^3)*x + (-I*d^3*f^3*x^3 - 3*I*d^3*e*f^2*x^2 - 3*I*c*d^2*e^2*f + 3*I*c
^2*d*e*f^2 + (-I*c^3 + 12*I*c)*f^3 + (-3*I*d^3*e^2*f + 12*I*d*f^3)*x)*e^(2*
d*x + 2*c) - 2*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*c^2*d*e*f
^2 + (c^3 - 12*c)*f^3 + 3*(d^3*e^2*f - 4*d*f^3)*x)*e^(d*x + c))*log(I*e^(d*
x + c) + 1) + (-I*d^3*f^3*x^3 - 3*I*d^3*e*f^2*x^2 - 3*I*d^3*e^2*f*x - 3*I*c
*d^2*e^2*f + 3*I*c^2*d*e*f^2 - I*c^3*f^3 + (I*d^3*f^3*x^3 + 3*I*d^3*e*f^2*x
^2 + 3*I*d^3*e^2*f*x + 3*I*c*d^2*e^2*f - 3*I*c^2*d*e*f^2 + I*c^3*f^3)*e^(2*
d*x + 2*c) + 2*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2
*f - 3*c^2*d*e*f^2 + c^3*f^3)*e^(d*x + c))*log(-I*e^(d*x + c) + 1) + (6*I*f
^3*e^(2*d*x + 2*c) + 12*f^3*e^(d*x + c) - 6*I*f^3)*polylog(4, I*e^(d*x + c)
) + (-6*I*f^3*e^(2*d*x + 2*c) - 12*f^3*e^(d*x + c) + 6*I*f^3)*polylog(4, -I
```

```
*e^(d*x + c)) + (6*I*d*f^3*x + 6*I*d*e*f^2 + (-6*I*d*f^3*x - 6*I*d*e*f^2)*e
^(2*d*x + 2*c) - 12*(d*f^3*x + d*e*f^2)*e^(d*x + c))*polylog(3, I*e^(d*x +
c)) + (-6*I*d*f^3*x - 6*I*d*e*f^2 + (6*I*d*f^3*x + 6*I*d*e*f^2)*e^(2*d*x +
2*c) + 12*(d*f^3*x + d*e*f^2)*e^(d*x + c))*polylog(3, -I*e^(d*x + c)))/(2*a
*d^4*e^(2*d*x + 2*c) - 4*I*a*d^4*e^(d*x + c) - 2*a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{sech}\left(dx+c\right)}{i\,a \sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sech(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.36, size = 1152, normalized size = 2.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -3*I*f^3*polylog(4,-I*exp(d*x+c))/a/d^4+3*I*f^3*polylog(4,I*exp(d*x+c))/a/d
^4-3/2*I/a/d*ln(1+I*exp(d*x+c))*e*f^2*x^2-3*I/a/d^2*polylog(2,-I*exp(d*x+c)
)*e*f^2*x+3/2*I/a/d*ln(1-I*exp(d*x+c))*e^2*f*x+3/2*I/a/d^2*ln(1-I*exp(d*x+c
))*c*e^2*f-3/2*I/a/d*ln(1+I*exp(d*x+c))*e^2*f*x-3/2*I/a/d^2*ln(1+I*exp(d*x+
c))*c*e^2*f+3/2*I/a/d*ln(1-I*exp(d*x+c))*e*f^2*x^2+3*I/a/d^2*polylog(2,I*ex
p(d*x+c))*e*f^2*x-3/2*I/a/d^3*e*f^2*c^2*ln(exp(d*x+c)-I)+3/2*I/a/d^3*e*f^2*
c^2*ln(exp(d*x+c)+I)+3/2*I/a/d^2*e^2*f*c*ln(exp(d*x+c)-I)-3/2*I/a/d^2*e^2*f
*c*ln(exp(d*x+c)+I)+3/2*I/a/d^3*ln(1+I*exp(d*x+c))*c^2*e*f^2-3/2*I/a/d^3*ln
(1-I*exp(d*x+c))*c^2*e*f^2-6*I/a/d^3*e*f^2*ln(exp(d*x+c))-6*I/a/d^3*f^3*c*x
-1/2*I/a/d^4*f^3*c^3*ln(exp(d*x+c)+I)+6*I/a/d^4*f^3*c*ln(exp(d*x+c))+1/2*I/
a/d^4*f^3*c^3*ln(exp(d*x+c)-I)+3*I/a/d^3*e*f^2*polylog(3,-I*exp(d*x+c))-3*I
/a/d^3*e*f^2*polylog(3,I*exp(d*x+c))+6*I/a/d^3*e*f^2*ln(exp(d*x+c)-I)-1/2*I
/a/d*f^3*ln(1+I*exp(d*x+c))*x^3-1/2*I/a/d^4*f^3*ln(1+I*exp(d*x+c))*c^3-3/2*
I/a/d^2*f^3*polylog(2,-I*exp(d*x+c))*x^2+3*I/a/d^3*f^3*polylog(3,-I*exp(d*x
+c))*x+1/2*I/a/d*f^3*ln(1-I*exp(d*x+c))*x^3+1/2*I/a/d^4*f^3*ln(1-I*exp(d*x+
c))*c^3+3/2*I/a/d^2*f^3*polylog(2,I*exp(d*x+c))*x^2-3*I/a/d^3*f^3*polylog(3
,I*exp(d*x+c))*x+6*I/a/d^3*f^3*ln(1+I*exp(d*x+c))*x-6*I/a/d^4*f^3*c*ln(exp(
d*x+c)-I)-1/2*I/a/d*e^3*ln(exp(d*x+c)-I)+1/2*I/a/d*e^3*ln(exp(d*x+c)+I)-3*I
/a/d^2*f^3*x^2-3*I/a/d^4*f^3*c^2+6*I/a/d^4*f^3*polylog(2,-I*exp(d*x+c))+(d*
x^3*f^3*exp(d*x+c)+3*d*e*f^2*x^2*exp(d*x+c)+3*d*e^2*f*x*exp(d*x+c)+d*e^3*ex
p(d*x+c)+3*f^3*x^2*exp(d*x+c)-3*I*f^3*x^2+6*e*f^2*x*exp(d*x+c)-6*I*e*f^2*x+
```

3*e^2*f*exp(d*x+c)-3*I*e^2*f)/(exp(d*x+c)-I)^2/d^2/a-3/2*I/a/d^2*e^2*f*poly log(2,-I*exp(d*x+c))+3/2*I/a/d^2*e^2*f*polylog(2,I*exp(d*x+c))+6*I/a/d^4*f^ 3*c*ln(1+I*exp(d*x+c))

maxima [A] time = 0.63, size = 684, normalized size = 1.48

$$-\frac{1}{2}e^3\left(\frac{4\,e^{(-dx-c)}}{-2\left(-2i\,ae^{(-dx-c)}-ae^{(-2\,dx-2\,c)}+a\right)d}+\frac{i\,\log\left(e^{(-dx-c)}+i\right)}{ad}-\frac{i\,\log\left(i\,e^{(-dx-c)}+1\right)}{ad}\right)+\frac{3i\left(dx\log\left(-i\,e^{(dx+c)}+1\right.\right.}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*e^3*(4*e^(-d*x - c)/((4*I*a*e^(-d*x - c) + 2*a*e^(-2*d*x - 2*c) - 2*a)
*d) + I*log(e^(-d*x - c) + I)/(a*d) - I*log(I*e^(-d*x - c) + 1)/(a*d)) + 3/
2*I*(d*x*log(-I*e^(d*x + c) + 1) + dilog(I*e^(d*x + c)))*e^2*f/(a*d^2) - 6*
I*e*f^2*x/(a*d^2) + (-3*I*f^3*x^2 - 6*I*e*f^2*x - 3*I*e^2*f + (d*f^3*x^3*e^
c + 3*e^2*f*e^c + 3*(d*e*f^2 + f^3)*x^2*e^c + 3*(d*e^2*f + 2*e*f^2)*x*e^c)*
e^(d*x))/(a*d^2*e^(2*d*x + 2*c) - 2*I*a*d^2*e^(d*x + c) - a*d^2) - 3/2*I*(d
^2*x^2*log(I*e^(d*x + c) + 1) + 2*d*x*dilog(-I*e^(d*x + c)) - 2*polylog(3,
-I*e^(d*x + c)))*e*f^2/(a*d^3) + 3/2*I*(d^2*x^2*log(-I*e^(d*x + c) + 1) + 2
*d*x*dilog(I*e^(d*x + c)) - 2*polylog(3, I*e^(d*x + c)))*e*f^2/(a*d^3) + 6*
I*e*f^2*log(I*e^(d*x + c) + 1)/(a*d^3) - 1/2*I*(d^3*x^3*log(I*e^(d*x + c) +
 1) + 3*d^2*x^2*dilog(-I*e^(d*x + c)) - 6*d*x*polylog(3, -I*e^(d*x + c)) +
6*polylog(4, -I*e^(d*x + c)))*f^3/(a*d^4) + 1/2*I*(d^3*x^3*log(-I*e^(d*x +
c) + 1) + 3*d^2*x^2*dilog(I*e^(d*x + c)) - 6*d*x*polylog(3, I*e^(d*x + c))
+ 6*polylog(4, I*e^(d*x + c)))*f^3/(a*d^4) - 3/2*I*(d^2*e^2*f - 4*f^3)*(d*x
*log(I*e^(d*x + c) + 1) + dilog(-I*e^(d*x + c)))/(a*d^4) - 1/8*(I*d^4*f^3*x
^4 + 4*I*d^4*e*f^2*x^3 + 6*I*d^4*e^2*f*x^2)/(a*d^4) + 1/8*(I*d^4*f^3*x^4 +
4*I*d^4*e*f^2*x^3 + (6*I*d^2*e^2*f - 24*I*f^3)*d^2*x^2)/(a*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(e+f\,x\right)}^3}{\mathrm{cosh}\left(c+d\,x\right)\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cosh(c + d*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)^3/(cosh(c + d*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e^{3}\operatorname{sech}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx+\int \frac{f^{3}x^{3}\operatorname{sech}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx+\int \frac{3ef^{2}x^{2}\operatorname{sech}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx+\int \frac{3e^{2}fx\operatorname{sech}{\left(c+dx\right)}}{\sinh{\left(c+dx\right)}-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e**3*sech(c + d*x)/(sinh(c + d*x) - I), x) + Integral(f**3*x**
3*sech(c + d*x)/(sinh(c + d*x) - I), x) + Integral(3*e*f**2*x**2*sech(c + d
*x)/(sinh(c + d*x) - I), x) + Integral(3*e**2*f*x*sech(c + d*x)/(sinh(c + d
*x) - I), x))/a
```

3.272 $\int \frac{(e+fx)^2\textbf{sech}(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=268

$$\frac{if^2\text{Li}_3\left(-ie^{c+dx}\right)}{ad^3}-\frac{if^2\text{Li}_3\left(ie^{c+dx}\right)}{ad^3}-\frac{f^2\tan^{-1}(\sinh(c+dx))}{ad^3}+\frac{if^2\log(\cosh(c+dx))}{ad^3}-\frac{if(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2}+\frac{if(e\cdot$$

```
[Out] (f*x+e)^2*arctan(exp(d*x+c))/a/d-f^2*arctan(sinh(d*x+c))/a/d^3+I*f^2*ln(cos
h(d*x+c))/a/d^3-I*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/a/d^2+I*f*(f*x+e)*poly
log(2,I*exp(d*x+c))/a/d^2+I*f^2*polylog(3,-I*exp(d*x+c))/a/d^3-I*f^2*polylo
g(3,I*exp(d*x+c))/a/d^3+f*(f*x+e)*sech(d*x+c)/a/d^2+1/2*I*(f*x+e)^2*sech(d*
x+c)^2/a/d-I*f*(f*x+e)*tanh(d*x+c)/a/d^2+1/2*(f*x+e)^2*sech(d*x+c)*tanh(d*x
+c)/a/d
```

Rubi [A] time = 0.26, antiderivative size = 268, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.345, Rules used = {5571, 4186, 3770, 4180, 2531, 2282, 6589, 5451, 4184, 3475}

$$-\frac{if(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^2}+\frac{if(e+fx)\text{PolyLog}\left(2,ie^{c+dx}\right)}{ad^2}+\frac{if^2\text{PolyLog}\left(3,-ie^{c+dx}\right)}{ad^3}-\frac{if^2\text{PolyLog}\left(3,ie^{c+d\cdot}\right.}{ad^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sech[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((e + f*x)^2*ArcTan[E^(c + d*x)])/(a*d) - (f^2*ArcTan[Sinh[c + d*x]])/(a*d^
3) + (I*f^2*Log[Cosh[c + d*x]])/(a*d^3) - (I*f*(e + f*x)*PolyLog[2, (-I)*E^
(c + d*x)])/(a*d^2) + (I*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(a*d^2) + (
I*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(a*d^3) - (I*f^2*PolyLog[3, I*E^(c + d*
x)])/(a*d^3) + (f*(e + f*x)*Sech[c + d*x])/(a*d^2) + ((I/2)*(e + f*x)^2*Sec
h[c + d*x]^2)/(a*d) - (I*f*(e + f*x)*Tanh[c + d*x])/(a*d^2) + ((e + f*x)^2*
Sech[c + d*x]*Tanh[c + d*x])/(2*a*d)
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
```

```
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5571

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sech[c
 + d*x]^(n + 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(n + 1)*T
anh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && Eq
Q[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\operatorname{sech}(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)^2\operatorname{sech}^2(c+dx)\tanh(c+dx)\,dx}{a}+\frac{\int (e+fx)^2\operatorname{sech}^3(c+dx)\,dx}{a}$$
$$= \frac{f(e+fx)\operatorname{sech}(c+dx)}{ad^2}+\frac{i(e+fx)^2\operatorname{sech}^2(c+dx)}{2ad}+\frac{(e+fx)^2\operatorname{sech}(c+dx)\tanh(c}{2ad}$$
$$= \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tan^{-1}(\sinh(c+dx))}{ad^3}+\frac{f(e+fx)\operatorname{sech}(c+dx)}{ad^2}+\frac{i(e+}{}$$
$$= \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tan^{-1}(\sinh(c+dx))}{ad^3}+\frac{if^2\log(\cosh(c+dx))}{ad^3}-\frac{if(e}{}$$
$$= \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tan^{-1}(\sinh(c+dx))}{ad^3}+\frac{if^2\log(\cosh(c+dx))}{ad^3}-\frac{if(e}{}$$
$$= \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad}-\frac{f^2\tan^{-1}(\sinh(c+dx))}{ad^3}+\frac{if^2\log(\cosh(c+dx))}{ad^3}-\frac{if(e}{}$$

Mathematica [A] time = 11.70, size = 501, normalized size = 1.87

$$-\frac{\frac{\frac{6i(e^c+i)f\left(d(e+fx)\mathrm{Li}_2\left(-ie^{-c-dx}\right)+f\mathrm{Li}_3\left(-ie^{-c-dx}\right)\right)}{d^3}+\frac{3(1-ie^c)(e+fx)^2\log\left(1+ie^{-c-dx}\right)}{d}+\frac{(e+fx)^3}{f}}{e^c+i}+\frac{-\frac{3(1+ie^c)\left(d^2e^2-4f^2\right)\left(dx-\log\left(-e^{c+dx}+i\right)\right)}{d}-6(1+ie^c)ef\mathrm{Li}_2\left(ie^{-c-dx}\right)}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sech[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] -1/6*(((e + f*x)^3/f + (3*(1 - I*E^c)*(e + f*x)^2*Log[1 + I*E^(-c - d*x)])/
d + ((6*I)*(I + E^c)*f*(d*(e + f*x)*PolyLog[2, (-I)*E^(-c - d*x)] + f*PolyL
og[3, (-I)*E^(-c - d*x)]))/d^3)/(I + E^c) + (3*(d^2*e^2 - 4*f^2)*x + 3*d^2*
e*f*x^2 + d^2*f^2*x^3 + 6*d*e*(1 + I*E^c)*f*x*Log[1 - I*E^(-c - d*x)] + 3*d
*(1 + I*E^c)*f^2*x^2*Log[1 - I*E^(-c - d*x)] - (3*(1 + I*E^c)*(d^2*e^2 - 4*
f^2)*(d*x - Log[I - E^(c + d*x)]))/d - 6*e*(1 + I*E^c)*f*PolyLog[2, I*E^(-c
 - d*x)] - 6*(1 + I*E^c)*f^2*(x*PolyLog[2, I*E^(-c - d*x)] + PolyLog[3, I*E
^(-c - d*x)]/d))/(d^2*(-I + E^c)) - x*(3*e^2 + 3*e*f*x + f^2*x^2)*Sech[c] -
 ((3*I)*(e + f*x)^2)/(d*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2) + ((12
*I)*f*(e + f*x)*Sinh[(d*x)/2])/(d^2*(Cosh[c/2] + I*Sinh[c/2])*(Cosh[(c + d*
x)/2] + I*Sinh[(c + d*x)/2])))/a
```

fricas [C] time = 0.61, size = 800, normalized size = 2.99

$$\frac{-4i\,def + 4i\,cf^2 + \left(-2i\,df^2x - 2i\,def + \left(2i\,df^2x + 2i\,def\right)e^{(2\,dx+2\,c)} + 4\left(df^2x + def\right)e^{(dx+c)}\right)\mathrm{Li}_2\left(i\,e^{(dx+c)}\right) + \left(2i\,d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (-4*I*d*e*f + 4*I*c*f^2 + (-2*I*d*f^2*x - 2*I*d*e*f + (2*I*d*f^2*x + 2*I*d*
e*f)*e^(2*d*x + 2*c) + 4*(d*f^2*x + d*e*f)*e^(d*x + c))*dilog(I*e^(d*x + c)
) + (2*I*d*f^2*x + 2*I*d*e*f + (-2*I*d*f^2*x - 2*I*d*e*f)*e^(2*d*x + 2*c) -
 4*(d*f^2*x + d*e*f)*e^(d*x + c))*dilog(-I*e^(d*x + c)) + (-4*I*d*f^2*x - 4
*I*c*f^2)*e^(2*d*x + 2*c) + 2*(d^2*f^2*x^2 + d^2*e^2 + 2*d*e*f - 4*c*f^2 +
2*(d^2*e*f - d*f^2)*x)*e^(d*x + c) + (-I*d^2*e^2 + 2*I*c*d*e*f - I*c^2*f^2
+ (I*d^2*e^2 - 2*I*c*d*e*f + I*c^2*f^2)*e^(2*d*x + 2*c) + 2*(d^2*e^2 - 2*c*
d*e*f + c^2*f^2)*e^(d*x + c))*log(e^(d*x + c) + I) + (I*d^2*e^2 - 2*I*c*d*e
*f + (I*c^2 - 4*I)*f^2 + (-I*d^2*e^2 + 2*I*c*d*e*f + (-I*c^2 + 4*I)*f^2)*e^
(2*d*x + 2*c) - 2*(d^2*e^2 - 2*c*d*e*f + (c^2 - 4)*f^2)*e^(d*x + c))*log(e^
(d*x + c) - I) + (I*d^2*f^2*x^2 + 2*I*d^2*e*f*x + 2*I*c*d*e*f - I*c^2*f^2 +
 (-I*d^2*f^2*x^2 - 2*I*d^2*e*f*x - 2*I*c*d*e*f + I*c^2*f^2)*e^(2*d*x + 2*c)
 - 2*(d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*e^(d*x + c))*log(I*e
^(d*x + c) + 1) + (-I*d^2*f^2*x^2 - 2*I*d^2*e*f*x - 2*I*c*d*e*f + I*c^2*f^2
 + (I*d^2*f^2*x^2 + 2*I*d^2*e*f*x + 2*I*c*d*e*f - I*c^2*f^2)*e^(2*d*x + 2*c
) + 2*(d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*e^(d*x + c))*log(-I
*e^(d*x + c) + 1) + (-2*I*f^2*e^(2*d*x + 2*c) - 4*f^2*e^(d*x + c) + 2*I*f^2
)*polylog(3, I*e^(d*x + c)) + (2*I*f^2*e^(2*d*x + 2*c) + 4*f^2*e^(d*x + c)
- 2*I*f^2)*polylog(3, -I*e^(d*x + c)))/(2*a*d^3*e^(2*d*x + 2*c) - 4*I*a*d^3
*e^(d*x + c) - 2*a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \operatorname{sech}(dx+c)}{i\,a\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sech(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.23, size = 613, normalized size = 2.29

$$\frac{d\,f^2x^2\mathrm{e}^{dx+c}+2defx\,\mathrm{e}^{dx+c}+d\,e^2\mathrm{e}^{dx+c}-2if^2x+2f^2x\,\mathrm{e}^{dx+c}-2ief+2ef\,\mathrm{e}^{dx+c}}{\left(\mathrm{e}^{dx+c}-i\right)^2d^2a}-\frac{if^2\operatorname{polylog}\left(3,i\mathrm{e}^{dx+c}\right)}{a\,d^3}+\frac{i\ln\left(1-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] (d*f^2*x^2*exp(d*x+c)+2*d*e*f*x*exp(d*x+c)+d*e^2*exp(d*x+c)-2*I*f^2*x+2*f^2
*x*exp(d*x+c)-2*I*e*f+2*e*f*exp(d*x+c))/(exp(d*x+c)-I)^2/d^2/a+1/2*I/d/a*ln
(1-I*exp(d*x+c))*f^2*x^2-1/2*I/d^3/a*c^2*f^2*ln(exp(d*x+c)-I)+1/2*I/d^3/a*c
^2*f^2*ln(exp(d*x+c)+I)+I/d^2/a*e*f*c*ln(exp(d*x+c)-I)-I*f^2*polylog(3,I*ex
p(d*x+c))/a/d^3+I/d^2/a*polylog(2,I*exp(d*x+c))*f^2*x-I/d^2/a*ln(1+I*exp(d*
x+c))*c*e*f+2*I/d^3/a*f^2*ln(exp(d*x+c)-I)+I/d^2/a*ln(1-I*exp(d*x+c))*c*e*f
-2*I/d^3/a*f^2*ln(exp(d*x+c))-I/d^2/a*polylog(2,-I*exp(d*x+c))*f^2*x+I*f^2*
polylog(3,-I*exp(d*x+c))/a/d^3-1/2*I/d/a*e^2*ln(exp(d*x+c)-I)+I/d^2/a*e*f*p
olylog(2,I*exp(d*x+c))+1/2*I/d/a*e^2*ln(exp(d*x+c)+I)-1/2*I/d^3/a*ln(1-I*ex
p(d*x+c))*c^2*f^2+1/2*I/d^3/a*ln(1+I*exp(d*x+c))*c^2*f^2-I/d^2/a*e*f*polylo
g(2,-I*exp(d*x+c))-I/d/a*ln(1+I*exp(d*x+c))*e*f*x-1/2*I/d/a*ln(1+I*exp(d*x+
c))*f^2*x^2+I/d/a*ln(1-I*exp(d*x+c))*e*f*x-I/d^2/a*e*f*c*ln(exp(d*x+c)+I)
```

maxima [A] time = 0.62, size = 387, normalized size = 1.44

$$-\frac{1}{2}e^2\left(\frac{4\,e^{(-dx-c)}}{-2\left(-2i\,ae^{(-dx-c)}-ae^{(-2\,dx-2\,c)}+a\right)d}+\frac{i\,\log\left(e^{(-dx-c)}+i\right)}{ad}-\frac{i\,\log\left(i\,e^{(-dx-c)}+1\right)}{ad}\right)+\frac{-2i\,f^2x-2i\,ef+\left(df^2x\right.}{ad^2e^{(2\,dx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*e^2*(4*e^(-d*x - c)/((4*I*a*e^(-d*x - c) + 2*a*e^(-2*d*x - 2*c) - 2*a)
*d) + I*log(e^(-d*x - c) + I)/(a*d) - I*log(I*e^(-d*x - c) + 1)/(a*d)) + (-
2*I*f^2*x - 2*I*e*f + (d*f^2*x^2*e^c + 2*e*f*e^c + 2*(d*e*f + f^2)*x*e^c)*e
```

```
^(d*x))/(a*d^2*e^(2*d*x + 2*c) - 2*I*a*d^2*e^(d*x + c) - a*d^2) - I*(d*x*lo
g(I*e^(d*x + c) + 1) + dilog(-I*e^(d*x + c)))*e*f/(a*d^2) + I*(d*x*log(-I*e
^(d*x + c) + 1) + dilog(I*e^(d*x + c)))*e*f/(a*d^2) - 2*I*f^2*x/(a*d^2) - 1
/2*I*(d^2*x^2*log(I*e^(d*x + c) + 1) + 2*d*x*dilog(-I*e^(d*x + c)) - 2*poly
log(3, -I*e^(d*x + c)))*f^2/(a*d^3) + 1/2*I*(d^2*x^2*log(-I*e^(d*x + c) + 1
) + 2*d*x*dilog(I*e^(d*x + c)) - 2*polylog(3, I*e^(d*x + c)))*f^2/(a*d^3) +
 2*I*f^2*log(I*e^(d*x + c) + 1)/(a*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(e+f\,x\right)}^2}{\mathrm{cosh}\left(c+d\,x\right)\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cosh(c + d*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)^2/(cosh(c + d*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$- \frac{i \left(\int \frac{e^{2} \operatorname{sech}{\left(c + d x \right)}}{\sinh{\left(c + d x \right)} - i}\, dx + \int \frac{f^{2} x^{2} \operatorname{sech}{\left(c + d x \right)}}{\sinh{\left(c + d x \right)} - i}\, dx + \int \frac{2 e f x \operatorname{sech}{\left(c + d x \right)}}{\sinh{\left(c + d x \right)} - i}\, dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e**2*sech(c + d*x)/(sinh(c + d*x) - I), x) + Integral(f**2*x**
2*sech(c + d*x)/(sinh(c + d*x) - I), x) + Integral(2*e*f*x*sech(c + d*x)/(s
inh(c + d*x) - I), x))/a
```

3.273 $\int \frac{(e+fx)\mathbf{sech}(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=161

$$-\frac{if\text{Li}_2\left(-ie^{c+dx}\right)}{2ad^2}+\frac{if\text{Li}_2\left(ie^{c+dx}\right)}{2ad^2}-\frac{if\tanh(c+dx)}{2ad^2}+\frac{f\text{sech}(c+dx)}{2ad^2}+\frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad}+\frac{i(e+fx)\text{sech}^2(c+dx}{2ad}$$

```
[Out] (f*x+e)*arctan(exp(d*x+c))/a/d-1/2*I*f*polylog(2,-I*exp(d*x+c))/a/d^2+1/2*I
*f*polylog(2,I*exp(d*x+c))/a/d^2+1/2*f*sech(d*x+c)/a/d^2+1/2*I*(f*x+e)*sech
(d*x+c)^2/a/d-1/2*I*f*tanh(d*x+c)/a/d^2+1/2*(f*x+e)*sech(d*x+c)*tanh(d*x+c)
/a/d
```

Rubi [A] time = 0.14, antiderivative size = 161, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {5571, 4185, 4180, 2279, 2391, 5451, 3767, 8}

$$-\frac{if\text{PolyLog}\left(2,-ie^{c+dx}\right)}{2ad^2}+\frac{if\text{PolyLog}\left(2,ie^{c+dx}\right)}{2ad^2}-\frac{if\tanh(c+dx)}{2ad^2}+\frac{f\text{sech}(c+dx)}{2ad^2}+\frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad}+\frac{i(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sech[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((e + f*x)*ArcTan[E^(c + d*x)])/(a*d) - ((I/2)*f*PolyLog[2, (-I)*E^(c + d*x
)])/(a*d^2) + ((I/2)*f*PolyLog[2, I*E^(c + d*x)])/(a*d^2) + (f*Sech[c + d*x
])/(2*a*d^2) + ((I/2)*(e + f*x)*Sech[c + d*x]^2)/(a*d) - ((I/2)*f*Tanh[c +
d*x])/(a*d^2) + ((e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(2*a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5571

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sech[c
 + d*x]^(n + 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(n + 1)*T
anh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && Eq
Q[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)\operatorname{sech}(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)\operatorname{sech}^2(c+dx)\tanh(c+dx)\,dx}{a} + \frac{\int (e+fx)\operatorname{sech}^3(c+dx)\,dx}{a}$$
$$= \frac{f\operatorname{sech}(c+dx)}{2ad^2} + \frac{i(e+fx)\operatorname{sech}^2(c+dx)}{2ad} + \frac{(e+fx)\operatorname{sech}(c+dx)\tanh(c+dx)}{2ad} + \int$$
$$= \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{f\operatorname{sech}(c+dx)}{2ad^2} + \frac{i(e+fx)\operatorname{sech}^2(c+dx)}{2ad} + \frac{(e+fx)\operatorname{sech}(c}{}$$
$$= \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{f\operatorname{sech}(c+dx)}{2ad^2} + \frac{i(e+fx)\operatorname{sech}^2(c+dx)}{2ad} - \frac{if\tanh(c+dx}{2ad^2}$$
$$= \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad} - \frac{if\operatorname{Li}_2\left(-ie^{c+dx}\right)}{2ad^2} + \frac{if\operatorname{Li}_2\left(ie^{c+dx}\right)}{2ad^2} + \frac{f\operatorname{sech}(c+dx)}{2ad^2} + \frac{i(e+}{}$$

Mathematica [B] time = 3.33, size = 710, normalized size = 4.41

$$-\frac{(c+dx)(cf-d(2e+fx))\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)^2 + de\left(\cosh\left(\frac{1}{2}(c+dx)\right)+i\sinh\left(\frac{1}{2}(c+dx)\right)\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sech[c + d*x])/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] -1/4*((-2*I)*d*(e + f*x) + (c + d*x)*(c*f - d*(2*e + f*x))*(Cosh[(c + d*x)/
2] + I*Sinh[(c + d*x)/2])^2 + d*e*(c + d*x - (2*I)*Log[Cosh[(c + d*x)/2] -
I*Sinh[(c + d*x)/2]])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2 - c*f*(c
+ d*x - (2*I)*Log[Cosh[(c + d*x)/2] - I*Sinh[(c + d*x)/2]])*(Cosh[(c + d*x)
/2] + I*Sinh[(c + d*x)/2])^2 + d*e*(c + d*x + (2*I)*Log[Cosh[(c + d*x)/2] +
 I*Sinh[(c + d*x)/2]])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2 - c*f*(c
 + d*x + (2*I)*Log[Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2]])*(Cosh[(c + d*x
)/2] + I*Sinh[(c + d*x)/2])^2 + (f*(-2*(-1)^(3/4)*(c + d*x)^2 + Sqrt[2]*(2*
((-2*I)*c + Pi - (2*I)*d*x)*Log[1 + I*E^(-c - d*x)] + Pi*(3*c + 3*d*x - 4*L
og[1 + E^(c + d*x)] + 4*Log[Cosh[(c + d*x)/2]] - 2*Log[-Sin[(Pi - (2*I)*(c
+ d*x))/4]]) + (4*I)*PolyLog[2, (-I)*E^(-c - d*x)]))*(Cosh[(c + d*x)/2] + I
*Sinh[(c + d*x)/2])^2)/(2*Sqrt[2]) + (f*(2*(-1)^(1/4)*(c + d*x)^2 + Sqrt[2]
*(2*((2*I)*c + Pi + (2*I)*d*x)*Log[1 - I*E^(-c - d*x)] - Pi*(c + d*x - 4*Lo
g[1 + E^(c + d*x)] + 4*Log[Cosh[(c + d*x)/2]] + 2*Log[Sin[(Pi + (2*I)*(c +
d*x))/4]]) - (4*I)*PolyLog[2, I*E^(-c - d*x)]))*(Cosh[(c + d*x)/2] + I*Sinh
[(c + d*x)/2])^2)/(2*Sqrt[2]) - 4*f*Sinh[(c + d*x)/2]*((-I)*Cosh[(c + d*x)/
2] + Sinh[(c + d*x)/2]))/(d^2*(a + I*a*Sinh[c + d*x]))
```

fricas [B] time = 0.51, size = 352, normalized size = 2.19

$$\frac{\left(i\,fe^{(2\,dx+2\,c)}+2\,fe^{(dx+c)}-i\,f\right)\mathrm{Li}_2\left(i\,e^{(dx+c)}\right)+\left(-i\,fe^{(2\,dx+2\,c)}-2\,fe^{(dx+c)}+i\,f\right)\mathrm{Li}_2\left(-i\,e^{(dx+c)}\right)+2\left(dfx+de+f\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((I*f*e^(2*d*x + 2*c) + 2*f*e^(d*x + c) - I*f)*dilog(I*e^(d*x + c)) + (-I*f
*e^(2*d*x + 2*c) - 2*f*e^(d*x + c) + I*f)*dilog(-I*e^(d*x + c)) + 2*(d*f*x
+ d*e + f)*e^(d*x + c) + (-I*d*e + I*c*f + (I*d*e - I*c*f)*e^(2*d*x + 2*c)
+ 2*(d*e - c*f)*e^(d*x + c))*log(e^(d*x + c) + I) + (I*d*e - I*c*f + (-I*d*
e + I*c*f)*e^(2*d*x + 2*c) - 2*(d*e - c*f)*e^(d*x + c))*log(e^(d*x + c) - I
) + (I*d*f*x + I*c*f + (-I*d*f*x - I*c*f)*e^(2*d*x + 2*c) - 2*(d*f*x + c*f)
*e^(d*x + c))*log(I*e^(d*x + c) + 1) + (-I*d*f*x - I*c*f + (I*d*f*x + I*c*f
)*e^(2*d*x + 2*c) + 2*(d*f*x + c*f)*e^(d*x + c))*log(-I*e^(d*x + c) + 1) -
2*I*f)/(2*a*d^2*e^(2*d*x + 2*c) - 4*I*a*d^2*e^(d*x + c) - 2*a*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\operatorname{sech}\left(dx+c\right)}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sech(d*x + c)/(I*a*sinh(d*x + c) + a), x)
```

maple [A] time = 0.26, size = 268, normalized size = 1.66

$$\frac{dfx\,\mathrm{e}^{dx+c}+de\,\mathrm{e}^{dx+c}+f\,\mathrm{e}^{dx+c}-if}{\left(\mathrm{e}^{dx+c}-i\right)^2 d^2a}-\frac{i\ln\left(\mathrm{e}^{dx+c}-i\right)e}{2da}+\frac{ie\ln\left(\mathrm{e}^{dx+c}+i\right)}{2ad}-\frac{if\ln\left(1+i\mathrm{e}^{dx+c}\right)x}{2da}-\frac{if\ln\left(1+i\mathrm{e}^{dx+c}\right)c}{2d^2a}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] (d*f*x*exp(d*x+c)+d*e*exp(d*x+c)+f*exp(d*x+c)-I*f)/(exp(d*x+c)-I)^2/d^2/a-1
/2*I/a/d*e*ln(exp(d*x+c)-I)+1/2*I/a/d*e*ln(exp(d*x+c)+I)-1/2*I/a/d*f*ln(1+I
*exp(d*x+c))*x-1/2*I/a/d^2*f*ln(1+I*exp(d*x+c))*c-1/2*I*f*polylog(2,-I*exp(
d*x+c))/a/d^2+1/2*I/a/d*f*ln(1-I*exp(d*x+c))*x+1/2*I/a/d^2*f*ln(1-I*exp(d*x
+c))*c+1/2*I*f*polylog(2,I*exp(d*x+c))/a/d^2+1/2*I/a/d^2*f*c*ln(exp(d*x+c)-
I)-1/2*I/a/d^2*f*c*ln(exp(d*x+c)+I)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,f\left(\frac{(dxe^{c}+e^{c})e^{(dx)}-i}{2\,ad^{2}e^{(2\,dx+2\,c)}-4i\,ad^{2}e^{(dx+c)}-2\,ad^{2}}+\int\frac{x}{4\,ae^{(dx+c)}+4i\,a}\,dx+\int\frac{x}{4\,ae^{(dx+c)}-4i\,a}\,dx\right)-\frac{1}{2}\,e\left(\frac{4\,e^{(}}{-2\left(-2i\,ae^{(-dx-c)}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 2*f*(((d*x*e^c + e^c)*e^(d*x) - I)/(2*a*d^2*e^(2*d*x + 2*c) - 4*I*a*d^2*e^(
d*x + c) - 2*a*d^2) + integrate(x/(4*a*e^(d*x + c) + 4*I*a), x) + integrate
(x/(4*a*e^(d*x + c) - 4*I*a), x)) - 1/2*e*(4*e^(-d*x - c)/((4*I*a*e^(-d*x -
 c) + 2*a*e^(-2*d*x - 2*c) - 2*a)*d) + I*log(e^(-d*x - c) + I)/(a*d) - I*lo
g(I*e^(-d*x - c) + 1)/(a*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{e+f\,x}{\cosh\left(c+d\,x\right)\,\left(a+a\,\sinh\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int\frac{e\operatorname{sech}(c+dx)}{\sinh(c+dx)-i}\,dx+\int\frac{fx\operatorname{sech}(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e*sech(c + d*x)/(sinh(c + d*x) - I), x) + Integral(f*x*sech(c
+ d*x)/(sinh(c + d*x) - I), x))/a
```

3.274 $\int \frac{\operatorname{sech}(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=42

$$\frac{\tan^{-1}(\sinh(c+dx))}{2ad}+\frac{i}{2d(a+ia\sinh(c+dx))}$$

```
[Out] 1/2*arctan(sinh(d*x+c))/a/d+1/2*I/d/(a+I*a*sinh(d*x+c))
```

Rubi [A] time = 0.06, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2667, 44, 206}

$$\frac{\tan^{-1}(\sinh(c+dx))}{2ad}+\frac{i}{2d(a+ia\sinh(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[Sech[c + d*x]/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ArcTan[Sinh[c + d*x]]/(2*a*d) + (I/2)/(d*(a + I*a*Sinh[c + d*x]))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2667

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^(m + (p - 1)/2)*(a - x)
^((p - 1)/2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && In
tegerQ[(p - 1)/2] && EqQ[a^2 - b^2, 0] && (GeQ[p, -1] ||  !IntegerQ[m + 1/2
])
```

Rubi steps

$$\int \frac{\operatorname{sech}(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{(ia)\operatorname{Subst}\left(\int \frac{1}{(a-x)(a+x)^2}\,dx, x, ia\sinh(c+dx)\right)}{d}$$
$$= -\frac{(ia)\operatorname{Subst}\left(\int \left(\frac{1}{2a(a+x)^2}+\frac{1}{2a\left(a^2-x^2\right)}\right)dx, x, ia\sinh(c+dx)\right)}{d}$$
$$= \frac{i}{2d(a+ia\sinh(c+dx))} - \frac{i\operatorname{Subst}\left(\int \frac{1}{a^2-x^2}\,dx, x, ia\sinh(c+dx)\right)}{2d}$$
$$= \frac{\tan^{-1}(\sinh(c+dx))}{2ad} + \frac{i}{2d(a+ia\sinh(c+dx))}$$

Mathematica [A] time = 0.05, size = 30, normalized size = 0.71

$$\frac{\tan^{-1}(\sinh(c+dx)) + \frac{1}{\sinh(c+dx)-i}}{2ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sech[c + d*x]/(a + I*a*Sinh[c + d*x]),x]
[Out] (ArcTan[Sinh[c + d*x]] + (-I + Sinh[c + d*x])^(-1))/(2*a*d)
```

fricas [B] time = 0.46, size = 102, normalized size = 2.43

$$\frac{\left(i\,e^{(2\,dx+2\,c)}+2\,e^{(dx+c)}-i\right)\log\left(e^{(dx+c)}+i\right)+\left(-i\,e^{(2\,dx+2\,c)}-2\,e^{(dx+c)}+i\right)\log\left(e^{(dx+c)}-i\right)+2\,e^{(dx+c)}}{2\,ade^{(2\,dx+2\,c)}-4i\,ade^{(dx+c)}-2\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
[Out] ((I*e^(2*d*x + 2*c) + 2*e^(d*x + c) - I)*log(e^(d*x + c) + I) + (-I*e^(2*d*
x + 2*c) - 2*e^(d*x + c) + I)*log(e^(d*x + c) - I) + 2*e^(d*x + c))/(2*a*d*
e^(2*d*x + 2*c) - 4*I*a*d*e^(d*x + c) - 2*a*d)
```

giac [B] time = 0.96, size = 104, normalized size = 2.48

$$-\frac{\frac{i\log\left(e^{(dx+c)}-e^{(-dx-c)}-2i\right)}{a}-\frac{i\log\left(i\,e^{(dx+c)}-i\,e^{(-dx-c)}-2\right)}{a}+\frac{-i\,e^{(dx+c)}+i\,e^{(-dx-c)}-6}{a\left(e^{(dx+c)}-e^{(-dx-c)}-2i\right)}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/4*(I*log(e^(d*x + c) - e^(-d*x - c) - 2*I)/a - I*log(I*e^(d*x + c) - I*e
^(-d*x - c) - 2)/a + (-I*e^(d*x + c) + I*e^(-d*x - c) - 6)/(a*(e^(d*x + c)
- e^(-d*x - c) - 2*I)))/d
```

maple [B] time = 0.08, size = 91, normalized size = 2.17

$$\frac{i\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+i\right)}{2da}-\frac{i}{da\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^{2}}-\frac{i\ln\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{2da}-\frac{1}{da\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 1/2*I/d/a*ln(tanh(1/2*d*x+1/2*c)+I)-I/d/a/(-I+tanh(1/2*d*x+1/2*c))^2-1/2*I/
d/a*ln(-I+tanh(1/2*d*x+1/2*c))-1/d/a/(-I+tanh(1/2*d*x+1/2*c))
```

maxima [B] time = 0.35, size = 87, normalized size = 2.07

$$-\frac{2\,e^{(-dx-c)}}{-2\left(-2i\,ae^{(-dx-c)}-ae^{(-2\,dx-2\,c)}+a\right)d}-\frac{i\,\log\left(e^{(-dx-c)}+i\right)}{2\,ad}+\frac{i\,\log\left(i\,e^{(-dx-c)}+1\right)}{2\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*e^(-d*x - c)/((4*I*a*e^(-d*x - c) + 2*a*e^(-2*d*x - 2*c) - 2*a)*d) - 1/2
*I*log(e^(-d*x - c) + I)/(a*d) + 1/2*I*log(I*e^(-d*x - c) + 1)/(a*d)
```

mupad [B] time = 1.10, size = 74, normalized size = 1.76

$$\frac{\mathrm{atan}\left(\frac{\mathrm{e}^{d\,x}\,\mathrm{e}^{c}\,\sqrt{a^2\,d^2}}{a\,d}\right)}{\sqrt{a^2\,d^2}}+\frac{1}{a\,d\,\left(\mathrm{e}^{c+d\,x}-\mathrm{i}\right)}-\frac{1\mathrm{i}}{a\,d\,{\left(1+\mathrm{e}^{c+d\,x}\,1\mathrm{i}\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] atan((exp(d*x)*exp(c)*(a^2*d^2)^(1/2))/(a*d))/(a^2*d^2)^(1/2) + 1/(a*d*(exp
(c + d*x) - 1i)) - 1i/(a*d*(exp(c + d*x)*1i + 1)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int\frac{\operatorname{sech}(c+dx)}{\sinh(c+dx)-i}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(sech(c + d*x)/(sinh(c + d*x) - I), x)/a
```

3.275 $\int \frac{\text{sech}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{\text{sech}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{sech}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sech[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
[Out] Defer[Int][Sech[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\text{sech}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx=\int \frac{\text{sech}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Mathematica [A] time = 66.36, size = 0, normalized size = 0.00

$$\int \frac{\text{sech}(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sech[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
[Out] Integrate[Sech[c + d*x]/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$-\frac{\left(dfx+de-f\right)e^{(dx+c)}-\left(ad^2f^2x^2+2\,ad^2efx+ad^2e^2-\left(ad^2f^2x^2+2\,ad^2efx+ad^2e^2\right)e^{(2\,dx+2\,c)}-\left(-2i\,ad^2f^2x^2\right.\right.}{ad^2f^2x^2+2\,ad^2efx+ad^2e^2-\left(ad^2f^2x^2+2\,ad^2efx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -((d*f*x + d*e - f)*e^(d*x + c) - (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^
2 - (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*e^(2*d*x + 2*c) - (-2*I*a*d
^2*f^2*x^2 - 4*I*a*d^2*e*f*x - 2*I*a*d^2*e^2)*e^(d*x + c))*integral((-2*I*f
^2 + (d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2 - 2*f^2)*e^(d*x + c))/(a*d^2*f^3*
x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3 + (a*d^2*f^3*x^3 + 3*
a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*e^(2*d*x + 2*c)), x) + I*f)/
(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2 - (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x
 + a*d^2*e^2)*e^(2*d*x + 2*c) - (-2*I*a*d^2*f^2*x^2 - 4*I*a*d^2*e*f*x - 2*I
*a*d^2*e^2)*e^(d*x + c))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)}{(fx+e)(ia\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sech(d*x + c)/((f*x + e)*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.92, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)}{(fx+e)(a+ia\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\left(dfxe^{c}+\left(de-f\right)e^{c}\right)e^{(dx)}+if\right)}{2\,ad^{2}f^{2}x^{2}+4\,ad^{2}efx+2\,ad^{2}e^{2}-2\left(ad^{2}f^{2}x^{2}e^{(2c)}+2\,ad^{2}efxe^{(2c)}+ad^{2}e^{2}e^{(2c)}\right)e^{(2dx)}-\left(-4i\,ad^{2}f^{2}x^{2}e^{c}-8i\,ad^{2}ef\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*((d*f*x*e^c + (d*e - f)*e^c)*e^(d*x) + I*f)/(2*a*d^2*f^2*x^2 + 4*a*d^2*e
*f*x + 2*a*d^2*e^2 - 2*(a*d^2*f^2*x^2*e^(2*c) + 2*a*d^2*e*f*x*e^(2*c) + a*d
```

```
^2*e^2*e^(2*c))*e^(2*d*x) - (-4*I*a*d^2*f^2*x^2*e^c - 8*I*a*d^2*e*f*x*e^c -
 4*I*a*d^2*e^2*e^c)*e^(d*x)) + 2*integrate((d^2*f^2*x^2 + 2*d^2*e*f*x + d^2
*e^2 - 4*f^2)/(-4*I*a*d^2*f^3*x^3 - 12*I*a*d^2*e*f^2*x^2 - 12*I*a*d^2*e^2*f
*x - 4*I*a*d^2*e^3 + 4*(a*d^2*f^3*x^3*e^c + 3*a*d^2*e*f^2*x^2*e^c + 3*a*d^2
*e^2*f*x*e^c + a*d^2*e^3*e^c)*e^(d*x)), x) + 2*integrate(1/(4*I*a*f*x + 4*I
*a*e + 4*(a*f*x*e^c + a*e*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh\left(c+d\,x\right)\,\left(e+f\,x\right)\,\left(a+a\,\sinh\left(c+d\,x\right)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*(e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(1/(cosh(c + d*x)*(e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int\frac{\operatorname{sech}\left(c+dx\right)}{e\sinh\left(c+dx\right)-ie+fx\sinh\left(c+dx\right)-ifx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(sech(c + d*x)/(e*sinh(c + d*x) - I*e + f*x*sinh(c + d*x) - I*f*
x), x)/a
```

3.276 $\int \frac{\text{sech}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{\text{sech}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{sech}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sech[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] Defer[Int][Sech[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\text{sech}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx=\int \frac{\text{sech}(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.01, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is Not applicable to the result.

```
[In] Integrate[Sech[c + d*x]/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] $Aborted
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$-\frac{\left(dfx+de-2f\right)e^{(dx+c)}-\left(ad^2f^3x^3+3ad^2ef^2x^2+3ad^2e^2fx+ad^2e^3-\left(ad^2f^3x^3+3ad^2ef^2x^2+3ad^2e^2fx+a\right.\right.}{ad^2f^3x^3+3ad^2ef^2x^2+3ad^2e^2fx+ad^2e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -((d*f*x + d*e - 2*f)*e^(d*x + c) - (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*
a*d^2*e^2*f*x + a*d^2*e^3 - (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^
2*f*x + a*d^2*e^3)*e^(2*d*x + 2*c) - (-2*I*a*d^2*f^3*x^3 - 6*I*a*d^2*e*f^2*
x^2 - 6*I*a*d^2*e^2*f*x - 2*I*a*d^2*e^3)*e^(d*x + c))*integral((-6*I*f^2 +
(d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2 - 6*f^2)*e^(d*x + c))/(a*d^2*f^4*x^4 +
 4*a*d^2*e*f^3*x^3 + 6*a*d^2*e^2*f^2*x^2 + 4*a*d^2*e^3*f*x + a*d^2*e^4 + (a
*d^2*f^4*x^4 + 4*a*d^2*e*f^3*x^3 + 6*a*d^2*e^2*f^2*x^2 + 4*a*d^2*e^3*f*x +
a*d^2*e^4)*e^(2*d*x + 2*c)), x) + 2*I*f)/(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2
 + 3*a*d^2*e^2*f*x + a*d^2*e^3 - (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d
^2*e^2*f*x + a*d^2*e^3)*e^(2*d*x + 2*c) - (-2*I*a*d^2*f^3*x^3 - 6*I*a*d^2*e
*f^2*x^2 - 6*I*a*d^2*e^2*f*x - 2*I*a*d^2*e^3)*e^(d*x + c))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)}{(fx+e)^2 (i\,a\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sech(d*x + c)/((f*x + e)^2*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 1.35, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)}{(fx+e)^2 (a+ia\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\left(dfxe^{c}+\left(de-2f\right)e^{c}\right)e^{(dx)}+2if\right.}{2\,ad^2f^3x^3+6\,ad^2ef^2x^2+6\,ad^2e^2fx+2\,ad^2e^3-2\left(ad^2f^3x^3e^{(2c)}+3\,ad^2ef^2x^2e^{(2c)}+3\,ad^2e^2fxe^{(2c)}+ad^2e^3e^{(2c}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*((d*f*x*e^c + (d*e - 2*f)*e^c)*e^(d*x) + 2*I*f)/(2*a*d^2*f^3*x^3 + 6*a*d
^2*e*f^2*x^2 + 6*a*d^2*e^2*f*x + 2*a*d^2*e^3 - 2*(a*d^2*f^3*x^3*e^(2*c) + 3
```

```
*a*d^2*e*f^2*x^2*e^(2*c) + 3*a*d^2*e^2*f*x*e^(2*c) + a*d^2*e^3*e^(2*c))*e^(
2*d*x) - (-4*I*a*d^2*f^3*x^3*e^c - 12*I*a*d^2*e*f^2*x^2*e^c - 12*I*a*d^2*e^
2*f*x*e^c - 4*I*a*d^2*e^3*e^c)*e^(d*x)) + 2*integrate((d^2*f^2*x^2 + 2*d^2*
e*f*x + d^2*e^2 - 12*f^2)/(-4*I*a*d^2*f^4*x^4 - 16*I*a*d^2*e*f^3*x^3 - 24*I
*a*d^2*e^2*f^2*x^2 - 16*I*a*d^2*e^3*f*x - 4*I*a*d^2*e^4 + 4*(a*d^2*f^4*x^4*
e^c + 4*a*d^2*e*f^3*x^3*e^c + 6*a*d^2*e^2*f^2*x^2*e^c + 4*a*d^2*e^3*f*x*e^c
 + a*d^2*e^4*e^c)*e^(d*x)), x) + 2*integrate(1/(4*I*a*f^2*x^2 + 8*I*a*e*f*x
 + 4*I*a*e^2 + 4*(a*f^2*x^2*e^c + 2*a*e*f*x*e^c + a*e^2*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(1/(cosh(c + d*x)*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int \frac{\operatorname{sech}{\left(c+dx \right)}}{e^{2}\sinh{\left(c+dx \right)}-ie^{2}+2efx\sinh{\left(c+dx \right)}-2iefx+f^{2}x^{2}\sinh{\left(c+dx \right)}-if^{2}x^{2}}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(sech(c + d*x)/(e**2*sinh(c + d*x) - I*e**2 + 2*e*f*x*sinh(c + d
*x) - 2*I*e*f*x + f**2*x**2*sinh(c + d*x) - I*f**2*x**2), x)/a
```

3.277 $\int \frac{(e+fx)^3\mathbf{sech}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=450

$$\frac{f^3\text{Li}_3\left(-ie^{c+dx}\right)}{ad^4}-\frac{f^3\text{Li}_3\left(ie^{c+dx}\right)}{ad^4}+\frac{f^3\text{Li}_3\left(-e^{2(c+dx)}\right)}{ad^4}+\frac{if^3\tan^{-1}(\sinh(c+dx))}{ad^4}+\frac{f^3\log(\cosh(c+dx))}{ad^4}-\frac{f^2(e+fx)}{a}$$

```
[Out] 2/3*(f*x+e)^3/a/d-I*f*(f*x+e)^2*arctan(exp(d*x+c))/a/d^2-I*f^2*(f*x+e)*sech
(d*x+c)/a/d^3-2*f*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/a/d^2+f^3*ln(cosh(d*x+c))/
a/d^4-f^2*(f*x+e)*polylog(2,-I*exp(d*x+c))/a/d^3+f^2*(f*x+e)*polylog(2,I*ex
p(d*x+c))/a/d^3-2*f^2*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/a/d^3+f^3*polylog(
3,-I*exp(d*x+c))/a/d^4-f^3*polylog(3,I*exp(d*x+c))/a/d^4+f^3*polylog(3,-exp
(2*d*x+2*c))/a/d^4+1/3*I*(f*x+e)^3*sech(d*x+c)^3/a/d+1/2*f*(f*x+e)^2*sech(d
*x+c)^2/a/d^2+I*f^3*arctan(sinh(d*x+c))/a/d^4-f^2*(f*x+e)*tanh(d*x+c)/a/d^3
+2/3*(f*x+e)^3*tanh(d*x+c)/a/d-1/2*I*f*(f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/a/
d^2+1/3*(f*x+e)^3*sech(d*x+c)^2*tanh(d*x+c)/a/d
```

Rubi [A] time = 0.59, antiderivative size = 450, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.387, Rules used = {5571, 4186, 4184, 3475, 3718, 2190, 2531, 2282, 6589, 5451, 3770, 4180}

$$-\frac{f^2(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^3}+\frac{f^2(e+fx)\text{PolyLog}\left(2,ie^{c+dx}\right)}{ad^3}-\frac{2f^2(e+fx)\text{PolyLog}\left(2,-e^{2(c+dx)}\right)}{ad^3}+\frac{f^3\text{PolyL}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sech[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (2*(e + f*x)^3)/(3*a*d) - (I*f*(e + f*x)^2*ArcTan[E^(c + d*x)])/(a*d^2) + (
I*f^3*ArcTan[Sinh[c + d*x]])/(a*d^4) - (2*f*(e + f*x)^2*Log[1 + E^(2*(c + d
*x))])/(a*d^2) + (f^3*Log[Cosh[c + d*x]])/(a*d^4) - (f^2*(e + f*x)*PolyLog[
2, (-I)*E^(c + d*x)])/(a*d^3) + (f^2*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(
a*d^3) - (2*f^2*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/(a*d^3) + (f^3*Poly
Log[3, (-I)*E^(c + d*x)])/(a*d^4) - (f^3*PolyLog[3, I*E^(c + d*x)])/(a*d^4)
 + (f^3*PolyLog[3, -E^(2*(c + d*x))])/(a*d^4) - (I*f^2*(e + f*x)*Sech[c + d
*x])/(a*d^3) + (f*(e + f*x)^2*Sech[c + d*x]^2)/(2*a*d^2) + ((I/3)*(e + f*x)
^3*Sech[c + d*x]^3)/(a*d) - (f^2*(e + f*x)*Tanh[c + d*x])/(a*d^3) + (2*(e +
 f*x)^3*Tanh[c + d*x])/(3*a*d) - ((I/2)*f*(e + f*x)^2*Sech[c + d*x]*Tanh[c
+ d*x])/(a*d^2) + ((e + f*x)^3*Sech[c + d*x]^2*Tanh[c + d*x])/(3*a*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
```

```
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5571

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sech[c
 + d*x]^(n + 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(n + 1)*T
anh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && Eq
Q[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{sech}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)^3\text{sech}^3(c+dx)\tanh(c+dx)\,dx}{a} + \frac{\int (e+fx)^3\text{sech}^4(c+dx)\,dx}{a}$$
$$= \frac{f(e+fx)^2\text{sech}^2(c+dx)}{2ad^2} + \frac{i(e+fx)^3\text{sech}^3(c+dx)}{3ad} + \frac{(e+fx)^3\text{sech}^2(c+dx)\tan}{3ad}$$
$$= -\frac{if^2(e+fx)\text{sech}(c+dx)}{ad^3} + \frac{f(e+fx)^2\text{sech}^2(c+dx)}{2ad^2} + \frac{i(e+fx)^3\text{sech}^3(c+dx)}{3ad}$$
$$= \frac{2(e+fx)^3}{3ad} - \frac{if(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{if^3\tan^{-1}(\sinh(c+dx))}{ad^4} + \frac{f^3\log(\cosh}{ad^4}$$
$$= \frac{2(e+fx)^3}{3ad} - \frac{if(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{if^3\tan^{-1}(\sinh(c+dx))}{ad^4} - \frac{2f(e+fx)^2}{}$$
$$= \frac{2(e+fx)^3}{3ad} - \frac{if(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{if^3\tan^{-1}(\sinh(c+dx))}{ad^4} - \frac{2f(e+fx)^2}{}$$
$$= \frac{2(e+fx)^3}{3ad} - \frac{if(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{if^3\tan^{-1}(\sinh(c+dx))}{ad^4} - \frac{2f(e+fx)^2}{}$$
$$= \frac{2(e+fx)^3}{3ad} - \frac{if(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{if^3\tan^{-1}(\sinh(c+dx))}{ad^4} - \frac{2f(e+fx)^2}{}$$

Mathematica [B] time = 12.40, size = 1049, normalized size = 2.33

$$-\frac{if\left(\frac{(e+fx)^3}{f} + \frac{3(1-ie^c)\log\left(1+ie^{-c-dx}\right)(e+fx)^2}{d} + \frac{6i(i+e^c)f\left(d(e+fx)\text{Li}_2\left(-ie^{-c-dx}\right)+f\text{Li}_3\left(-ie^{-c-dx}\right)\right)}{d^3}\right)}{2ad\,(i+e^c)} + \frac{if\left(5d^2f^2x^3+15d^2efx^2+15d\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sech[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-1/2*I)*f*((e + f*x)^3/f + (3*(1 - I*E^c)*(e + f*x)^2*Log[1 + I*E^(-c - d
*x)])/d + ((6*I)*(I + E^c)*f*(d*(e + f*x)*PolyLog[2, (-I)*E^(-c - d*x)] + f
*PolyLog[3, (-I)*E^(-c - d*x)]))/d^3))/(a*d*(I + E^c)) + ((I/6)*f*(3*(5*d^2
*e^2 - 4*f^2)*x + 15*d^2*e*f*x^2 + 5*d^2*f^2*x^3 + 30*d*e*(1 + I*E^c)*f*x*L
og[1 - I*E^(-c - d*x)] + 15*d*(1 + I*E^c)*f^2*x^2*Log[1 - I*E^(-c - d*x)] -
 (3*(1 + I*E^c)*(5*d^2*e^2 - 4*f^2)*(d*x - Log[I - E^(c + d*x)]))/d - 30*e*
(1 + I*E^c)*f*PolyLog[2, I*E^(-c - d*x)] - 30*(1 + I*E^c)*f^2*(x*PolyLog[2,
 I*E^(-c - d*x)] + PolyLog[3, I*E^(-c - d*x)]/d)))/(a*d^3*(-I + E^c)) + (e^
3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(d*x)/2] + 3*e*f^2*x^2*Sinh[(d*x)/2] + f^3
```

```
*x^3*Sinh[(d*x)/2])/(2*a*d*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2 + (d*x)/2] -
 I*Sinh[c/2 + (d*x)/2])) + (e^3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(d*x)/2] + 3
*e*f^2*x^2*Sinh[(d*x)/2] + f^3*x^3*Sinh[(d*x)/2])/(3*a*d*(Cosh[c/2] + I*Sin
h[c/2])*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2])^3) + (I*d*e^3*Cosh[c/
2] + 3*e^2*f*Cosh[c/2] + (3*I)*d*e^2*f*x*Cosh[c/2] + 6*e*f^2*x*Cosh[c/2] +
(3*I)*d*e*f^2*x^2*Cosh[c/2] + 3*f^3*x^2*Cosh[c/2] + I*d*f^3*x^3*Cosh[c/2] +
 d*e^3*Sinh[c/2] + (3*I)*e^2*f*Sinh[c/2] + 3*d*e^2*f*x*Sinh[c/2] + (6*I)*e*
f^2*x*Sinh[c/2] + 3*d*e*f^2*x^2*Sinh[c/2] + (3*I)*f^3*x^2*Sinh[c/2] + d*f^3
*x^3*Sinh[c/2])/(6*a*d^2*(Cosh[c/2] + I*Sinh[c/2])*(Cosh[c/2 + (d*x)/2] + I
*Sinh[c/2 + (d*x)/2])^2) + (5*d^2*e^3*Sinh[(d*x)/2] - 12*e*f^2*Sinh[(d*x)/2
] + 15*d^2*e^2*f*x*Sinh[(d*x)/2] - 12*f^3*x*Sinh[(d*x)/2] + 15*d^2*e*f^2*x^
2*Sinh[(d*x)/2] + 5*d^2*f^3*x^3*Sinh[(d*x)/2])/(6*a*d^3*(Cosh[c/2] + I*Sinh
[c/2])*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2]))
```

fricas [C] time = 0.50, size = 1385, normalized size = 3.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (8*d^3*e^3 - 24*c*d^2*e^2*f + 12*(2*c^2 - 1)*d*e*f^2 - 4*(2*c^3 - 3*c)*f^3
+ (18*d*f^3*x + 18*d*e*f^2 - 18*(d*f^3*x + d*e*f^2)*e^(4*d*x + 4*c) + (36*I
*d*f^3*x + 36*I*d*e*f^2)*e^(3*d*x + 3*c) + (36*I*d*f^3*x + 36*I*d*e*f^2)*e^
(d*x + c))*dilog(I*e^(d*x + c)) + (30*d*f^3*x + 30*d*e*f^2 - 30*(d*f^3*x +
d*e*f^2)*e^(4*d*x + 4*c) + (60*I*d*f^3*x + 60*I*d*e*f^2)*e^(3*d*x + 3*c) +
(60*I*d*f^3*x + 60*I*d*e*f^2)*e^(d*x + c))*dilog(-I*e^(d*x + c)) + 4*(2*d^3
*f^3*x^3 + 6*d^3*e*f^2*x^2 + 6*c*d^2*e^2*f - 6*c^2*d*e*f^2 + (2*c^3 - 3*c)*
f^3 + 3*(2*d^3*e^2*f - d*f^3)*x)*e^(4*d*x + 4*c) + (-16*I*d^3*f^3*x^3 + (-4
8*I*c - 6*I)*d^2*e^2*f + (48*I*c^2 - 12*I)*d*e*f^2 + (-16*I*c^3 + 24*I*c)*f
^3 + (-48*I*d^3*e*f^2 - 6*I*d^2*f^3)*x^2 + (-48*I*d^3*e^2*f - 12*I*d^2*e*f^
2 + 12*I*d*f^3)*x)*e^(3*d*x + 3*c) - 12*(d*f^3*x + d*e*f^2)*e^(2*d*x + 2*c)
 + (-6*I*d^2*f^3*x^2 + 16*I*d^3*e^3 + (-48*I*c - 6*I)*d^2*e^2*f + (48*I*c^2
 - 12*I)*d*e*f^2 + (-16*I*c^3 + 24*I*c)*f^3 + (-12*I*d^2*e*f^2 + 12*I*d*f^3
)*x)*e^(d*x + c) + (9*d^2*e^2*f - 18*c*d*e*f^2 + 9*c^2*f^3 - 9*(d^2*e^2*f -
 2*c*d*e*f^2 + c^2*f^3)*e^(4*d*x + 4*c) + (18*I*d^2*e^2*f - 36*I*c*d*e*f^2
+ 18*I*c^2*f^3)*e^(3*d*x + 3*c) + (18*I*d^2*e^2*f - 36*I*c*d*e*f^2 + 18*I*c
^2*f^3)*e^(d*x + c))*log(e^(d*x + c) + I) + (15*d^2*e^2*f - 30*c*d*e*f^2 +
3*(5*c^2 - 4)*f^3 - 3*(5*d^2*e^2*f - 10*c*d*e*f^2 + (5*c^2 - 4)*f^3)*e^(4*d
*x + 4*c) + (30*I*d^2*e^2*f - 60*I*c*d*e*f^2 + (30*I*c^2 - 24*I)*f^3)*e^(3*
d*x + 3*c) + (30*I*d^2*e^2*f - 60*I*c*d*e*f^2 + (30*I*c^2 - 24*I)*f^3)*e^(d
*x + c))*log(e^(d*x + c) - I) + (15*d^2*f^3*x^2 + 30*d^2*e*f^2*x + 30*c*d*e
*f^2 - 15*c^2*f^3 - 15*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3
)*e^(4*d*x + 4*c) + (30*I*d^2*f^3*x^2 + 60*I*d^2*e*f^2*x + 60*I*c*d*e*f^2 -
```

```
30*I*c^2*f^3)*e^(3*d*x + 3*c) + (30*I*d^2*f^3*x^2 + 60*I*d^2*e*f^2*x + 60*
I*c*d*e*f^2 - 30*I*c^2*f^3)*e^(d*x + c))*log(I*e^(d*x + c) + 1) + (9*d^2*f^
3*x^2 + 18*d^2*e*f^2*x + 18*c*d*e*f^2 - 9*c^2*f^3 - 9*(d^2*f^3*x^2 + 2*d^2*
e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*e^(4*d*x + 4*c) + (18*I*d^2*f^3*x^2 + 36*I
*d^2*e*f^2*x + 36*I*c*d*e*f^2 - 18*I*c^2*f^3)*e^(3*d*x + 3*c) + (18*I*d^2*f
^3*x^2 + 36*I*d^2*e*f^2*x + 36*I*c*d*e*f^2 - 18*I*c^2*f^3)*e^(d*x + c))*log
(-I*e^(d*x + c) + 1) + (18*f^3*e^(4*d*x + 4*c) - 36*I*f^3*e^(3*d*x + 3*c) -
 36*I*f^3*e^(d*x + c) - 18*f^3)*polylog(3, I*e^(d*x + c)) + (30*f^3*e^(4*d*
x + 4*c) - 60*I*f^3*e^(3*d*x + 3*c) - 60*I*f^3*e^(d*x + c) - 30*f^3)*polylo
g(3, -I*e^(d*x + c)))/(6*a*d^4*e^(4*d*x + 4*c) - 12*I*a*d^4*e^(3*d*x + 3*c)
 - 12*I*a*d^4*e^(d*x + c) - 6*a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{sech}\left(dx+c\right)^{2}}{i\,a \sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sech(d*x + c)^2/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.35, size = 1001, normalized size = 2.22

$$-\frac{5f^2e\ln\left(1+i\mathrm{e}^{dx+c}\right)x}{a\,d^2}-\frac{5f^2e\ln\left(1+i\mathrm{e}^{dx+c}\right)c}{a\,d^3}+\frac{5f^2ec\ln\left(\mathrm{e}^{dx+c}-i\right)}{a\,d^3}-\frac{8f^2ec\ln\left(\mathrm{e}^{dx+c}\right)}{a\,d^3}+\frac{8f^2ecx}{a\,d^2}-\frac{3f^2\ln\left(1-i\mathrm{e}^{dx+c}\right.}{a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -8/a/d^3*f^2*e*c*ln(exp(d*x+c))-5/a/d^2*f^2*e*ln(1+I*exp(d*x+c))*x-5/a/d^3*
f^2*e*ln(1+I*exp(d*x+c))*c+8/a/d^2*f^2*e*c*x+5/a/d^3*f^2*e*c*ln(exp(d*x+c)-
I)+5*f^3*polylog(3,-I*exp(d*x+c))/a/d^4+3*f^3*polylog(3,I*exp(d*x+c))/a/d^4
-3/a/d^2*f^2*ln(1-I*exp(d*x+c))*e*x-3/a/d^3*f^2*ln(1-I*exp(d*x+c))*c*e+3/a/
d^3*f^2*e*c*ln(exp(d*x+c)+I)+4/3/a/d*f^3*x^3-8/3/a/d^4*f^3*c^3-3/2/a/d^4*f^
3*c^2*ln(exp(d*x+c)+I)-3/2/a/d^2*f*e^2*ln(exp(d*x+c)+I)-3/2/a/d^2*f^3*ln(1-
I*exp(d*x+c))*x^2-3/a/d^3*f^3*polylog(2,I*exp(d*x+c))*x+3/2/a/d^4*f^3*ln(1-
I*exp(d*x+c))*c^2-3/a/d^3*f^2*e*polylog(2,I*exp(d*x+c))+2/a/d^4*f^3*ln(exp(
d*x+c)-I)-2/a/d^4*f^3*ln(exp(d*x+c))-5/a/d^3*f^3*polylog(2,-I*exp(d*x+c))*x
-5/2/a/d^4*f^3*c^2*ln(exp(d*x+c)-I)+4/a/d^2*f*ln(exp(d*x+c))*e^2-4/a/d^3*f^
3*c^2*x-5/2/a/d^2*f*ln(exp(d*x+c)-I)*e^2+4/a/d^3*f^2*e*c^2+4/a/d*f^2*e*x^2-
5/a/d^3*f^2*e*polylog(2,-I*exp(d*x+c))+4/a/d^4*f^3*c^2*ln(exp(d*x+c))-5/2/a
/d^2*f^3*ln(1+I*exp(d*x+c))*x^2+5/2/a/d^4*f^3*ln(1+I*exp(d*x+c))*c^2+1/3*I*
```

```
(6*I*f^3*x+8*d^2*x^3*f^3*exp(d*x+c)-3*d*f^3*x^2*exp(3*d*x+3*c)+6*I*e*f^2+24
*d^2*e*f^2*x^2*exp(d*x+c)-6*d*e*f^2*x*exp(3*d*x+3*c)-12*I*d^2*e*f^2*x^2+6*I
*f^3*x*exp(2*d*x+2*c)+24*d^2*e^2*f*x*exp(d*x+c)-3*d*e^2*f*exp(3*d*x+3*c)-3*
d*f^3*x^2*exp(d*x+c)-6*f^3*x*exp(3*d*x+3*c)-4*I*d^2*e^3-4*I*d^2*f^3*x^3+8*d
^2*e^3*exp(d*x+c)-6*d*e*f^2*x*exp(d*x+c)-6*e*f^2*exp(3*d*x+3*c)-12*I*d^2*e^
2*f*x-3*d*e^2*f*exp(d*x+c)-6*f^3*x*exp(d*x+c)+6*I*e*f^2*exp(2*d*x+2*c)-6*e*
f^2*exp(d*x+c))/(exp(d*x+c)+I)/(exp(d*x+c)-I)^3/d^3/a
```

maxima [A] time = 0.77, size = 729, normalized size = 1.62

$$\frac{1}{2}e^2f\left(\frac{24\left(4i\,dxe^{(4\,dx+4\,c)}+\left(8\,dxe^{(3\,c)}+e^{(3\,c)}\right)e^{(3\,dx)}+e^{(dx+c)}\right)}{12i\,ad^2e^{(4\,dx+4\,c)}+24\,ad^2e^{(3\,dx+3\,c)}+24\,ad^2e^{(dx+c)}-12i\,ad^2}-\frac{3\,\log\left(\left(e^{(dx+c)}+i\right)e^{(-c)}\right)}{ad^2}-\frac{5\,\log\left(-i\left(i\,e^{(dx+c}\right.\right.}{ad^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] 1/2*e^2*f*(24*(4*I*d*x*e^(4*d*x + 4*c) + (8*d*x*e^(3*c) + e^(3*c))*e^(3*d*x
) + e^(d*x + c))/(12*I*a*d^2*e^(4*d*x + 4*c) + 24*a*d^2*e^(3*d*x + 3*c) + 2
4*a*d^2*e^(d*x + c) - 12*I*a*d^2) - 3*log((e^(d*x + c) + I)*e^(-c))/(a*d^2)
 - 5*log(-I*(I*e^(d*x + c) + 1)*e^(-c))/(a*d^2)) + 4*e^3*(2*e^(-d*x - c)/((
6*a*e^(-d*x - c) + 6*a*e^(-3*d*x - 3*c) - 3*I*a*e^(-4*d*x - 4*c) + 3*I*a)*d
) + I/((6*a*e^(-d*x - c) + 6*a*e^(-3*d*x - 3*c) - 3*I*a*e^(-4*d*x - 4*c) +
3*I*a)*d)) + (4*I*d^2*f^3*x^3 + 12*I*d^2*e*f^2*x^2 - 6*I*f^3*x - 6*I*e*f^2
+ 3*(d*f^3*x^2*e^(3*c) + 2*e*f^2*e^(3*c) + 2*(d*e*f^2 + f^3)*x*e^(3*c))*e^(
3*d*x) + (-6*I*f^3*x*e^(2*c) - 6*I*e*f^2*e^(2*c))*e^(2*d*x) - (8*d^2*f^3*x^
3*e^c - 6*e*f^2*e^c + 3*(8*d^2*e*f^2 - d*f^3)*x^2*e^c - 6*(d*e*f^2 + f^3)*x
*e^c)*e^(d*x))/(3*I*a*d^3*e^(4*d*x + 4*c) + 6*a*d^3*e^(3*d*x + 3*c) + 6*a*d
^3*e^(d*x + c) - 3*I*a*d^3) - 5*(d*x*log(I*e^(d*x + c) + 1) + dilog(-I*e^(d
*x + c)))*e*f^2/(a*d^3) - 3*(d*x*log(-I*e^(d*x + c) + 1) + dilog(I*e^(d*x +
 c)))*e*f^2/(a*d^3) - 2*f^3*x/(a*d^3) - 5/2*(d^2*x^2*log(I*e^(d*x + c) + 1)
 + 2*d*x*dilog(-I*e^(d*x + c)) - 2*polylog(3, -I*e^(d*x + c)))*f^3/(a*d^4)
- 3/2*(d^2*x^2*log(-I*e^(d*x + c) + 1) + 2*d*x*dilog(I*e^(d*x + c)) - 2*pol
ylog(3, I*e^(d*x + c)))*f^3/(a*d^4) + 2*f^3*log(e^(d*x + c) - I)/(a*d^4) +
4/3*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2)/(a*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{{\cosh\left(c+d\,x\right)}^2\,\left(a+a\,\sinh\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cosh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)^3/(cosh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e^3\operatorname{sech}^2(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{f^3x^3\operatorname{sech}^2(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{3ef^2x^2\operatorname{sech}^2(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{3e^2fx\operatorname{sech}^2(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sech(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e**3*sech(c + d*x)**2/(sinh(c + d*x) - I), x) + Integral(f**3*
x**3*sech(c + d*x)**2/(sinh(c + d*x) - I), x) + Integral(3*e*f**2*x**2*sech
(c + d*x)**2/(sinh(c + d*x) - I), x) + Integral(3*e**2*f*x*sech(c + d*x)**2
/(sinh(c + d*x) - I), x))/a
```

3.278 $\int \frac{(e+fx)^2\text{sech}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=325

$$-\frac{f^2\text{Li}_2\left(-ie^{c+dx}\right)}{3ad^3}+\frac{f^2\text{Li}_2\left(ie^{c+dx}\right)}{3ad^3}-\frac{2f^2\text{Li}_2\left(-e^{2(c+dx)}\right)}{3ad^3}-\frac{f^2\tanh(c+dx)}{3ad^3}-\frac{if^2\text{sech}(c+dx)}{3ad^3}-\frac{4f(e+fx)\log\left(e^{2(c+}\right.}{3ad^2}$$

```
[Out] 2/3*(f*x+e)^2/a/d-2/3*I*f*(f*x+e)*arctan(exp(d*x+c))/a/d^2-4/3*f*(f*x+e)*ln
(1+exp(2*d*x+2*c))/a/d^2-1/3*f^2*polylog(2,-I*exp(d*x+c))/a/d^3+1/3*f^2*pol
ylog(2,I*exp(d*x+c))/a/d^3-2/3*f^2*polylog(2,-exp(2*d*x+2*c))/a/d^3-1/3*I*f
^2*sech(d*x+c)/a/d^3+1/3*f*(f*x+e)*sech(d*x+c)^2/a/d^2+1/3*I*(f*x+e)^2*sech
(d*x+c)^3/a/d-1/3*f^2*tanh(d*x+c)/a/d^3+2/3*(f*x+e)^2*tanh(d*x+c)/a/d-1/3*I
*f*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/a/d^2+1/3*(f*x+e)^2*sech(d*x+c)^2*tanh(d
*x+c)/a/d
```

Rubi [A] time = 0.39, antiderivative size = 325, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.387, Rules used = {5571, 4186, 3767, 8, 4184, 3718, 2190, 2279, 2391, 5451, 4185, 4180}

$$-\frac{f^2\text{PolyLog}\left(2,-ie^{c+dx}\right)}{3ad^3}+\frac{f^2\text{PolyLog}\left(2,ie^{c+dx}\right)}{3ad^3}-\frac{2f^2\text{PolyLog}\left(2,-e^{2(c+dx)}\right)}{3ad^3}-\frac{4f(e+fx)\log\left(e^{2(c+dx)}+1\right)}{3ad^2}-\frac{2i}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sech[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (2*(e + f*x)^2)/(3*a*d) - (((2*I)/3)*f*(e + f*x)*ArcTan[E^(c + d*x)])/(a*d^
2) - (4*f*(e + f*x)*Log[1 + E^(2*(c + d*x))])/(3*a*d^2) - (f^2*PolyLog[2, (
-I)*E^(c + d*x)])/(3*a*d^3) + (f^2*PolyLog[2, I*E^(c + d*x)])/(3*a*d^3) - (
2*f^2*PolyLog[2, -E^(2*(c + d*x))])/(3*a*d^3) - ((I/3)*f^2*Sech[c + d*x])/(
a*d^3) + (f*(e + f*x)*Sech[c + d*x]^2)/(3*a*d^2) + ((I/3)*(e + f*x)^2*Sech[
c + d*x]^3)/(a*d) - (f^2*Tanh[c + d*x])/(3*a*d^3) + (2*(e + f*x)^2*Tanh[c +
 d*x])/(3*a*d) - ((I/3)*f*(e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(a*d^2) +
((e + f*x)^2*Sech[c + d*x]^2*Tanh[c + d*x])/(3*a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5571

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sech[c
 + d*x]^(n + 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(n + 1)*T
anh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && Eq
Q[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{sech}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int(e+fx)^2\text{sech}^3(c+dx)\tanh(c+dx)\,dx}{a}+\frac{\int(e+fx)^2\text{sech}^4(c+dx)\,dx}{a}$$

$$= \frac{f(e+fx)\text{sech}^2(c+dx)}{3ad^2}+\frac{i(e+fx)^2\text{sech}^3(c+dx)}{3ad}+\frac{(e+fx)^2\text{sech}^2(c+dx)\tan}{3ad}$$

$$= -\frac{if^2\text{sech}(c+dx)}{3ad^3}+\frac{f(e+fx)\text{sech}^2(c+dx)}{3ad^2}+\frac{i(e+fx)^2\text{sech}^3(c+dx)}{3ad}+\frac{2(e+}{}$$

$$= \frac{2(e+fx)^2}{3ad}-\frac{2if(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{3ad^2}-\frac{if^2\text{sech}(c+dx)}{3ad^3}+\frac{f(e+fx)\text{sech}^2(c+}{3ad^2}$$

$$= \frac{2(e+fx)^2}{3ad}-\frac{2if(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{3ad^2}-\frac{4f(e+fx)\log\left(1+e^{2(c+dx)}\right)}{3ad^2}-\frac{if^2\text{sech}}{3a}$$

$$= \frac{2(e+fx)^2}{3ad}-\frac{2if(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{3ad^2}-\frac{4f(e+fx)\log\left(1+e^{2(c+dx)}\right)}{3ad^2}-\frac{f^2\text{Li}_2\left(-\right.}{3a}$$

$$= \frac{2(e+fx)^2}{3ad}-\frac{2if(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{3ad^2}-\frac{4f(e+fx)\log\left(1+e^{2(c+dx)}\right)}{3ad^2}-\frac{f^2\text{Li}_2\left(-\right.}{3a}$$

Mathematica [A] time = 8.13, size = 564, normalized size = 1.74

$$\frac{d^2e^2\sinh(2(c+dx))-2id^2e^2\cosh(c+dx)+4id^2e^2\cosh(c+2dx)+2d^2efx\sinh(2(c+dx))-4id^2efx\cosh(c+dx)+8id^2efx\cosh(c+2dx)+d^2f^2x^2\sinh(2(c+dx))}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sech[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (((10*I)*d*(e + f*x)*(d*(e + f*x) + 2*(1 + I*E^c)*f*Log[1 - I*E^(-c - d*x)]
))/(-I + E^c) - ((6*I)*d*(e + f*x)*(d*(e + f*x) + 2*(1 - I*E^c)*f*Log[1 + I
*E^(-c - d*x)]))/(I + E^c) + 12*f^2*PolyLog[2, (-I)*E^(-c - d*x)] + 20*f^2*
PolyLog[2, I*E^(-c - d*x)] + ((-2*I)*f^2*Cosh[c] + 2*d*f*(e + f*x)*Cosh[d*x
] - (2*I)*d^2*e^2*Cosh[c + d*x] + (4*I)*f^2*Cosh[c + d*x] - (4*I)*d^2*e*f*x
*Cosh[c + d*x] - (2*I)*d^2*f^2*x^2*Cosh[c + d*x] + 2*d*e*f*Cosh[2*c + d*x]
+ 2*d*f^2*x*Cosh[2*c + d*x] + (4*I)*d^2*e^2*Cosh[c + 2*d*x] - (2*I)*f^2*Cos
h[c + 2*d*x] + (8*I)*d^2*e*f*x*Cosh[c + 2*d*x] + (4*I)*d^2*f^2*x^2*Cosh[c +
 2*d*x] + 8*d^2*e^2*Sinh[d*x] - 2*f^2*Sinh[d*x] + 16*d^2*e*f*x*Sinh[d*x] +
8*d^2*f^2*x^2*Sinh[d*x] + d^2*e^2*Sinh[2*(c + d*x)] - 2*f^2*Sinh[2*(c + d*x
)] + 2*d^2*e*f*x*Sinh[2*(c + d*x)] + d^2*f^2*x^2*Sinh[2*(c + d*x)] + 2*f^2*
Sinh[2*c + d*x])/((Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])*(Cosh
```

```
[(c + d*x)/2] - I*Sinh[(c + d*x)/2])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/
2])^3))/(12*a*d^3)
```

fricas [B] time = 0.48, size = 708, normalized size = 2.18

$$\frac{4\,d^2e^2 - 8\,cdef + 2\left(2\,c^2-1\right)f^2 - 2\,f^2e^{(2\,dx+2\,c)} - \left(3\,f^2e^{(4\,dx+4\,c)} - 6i\,f^2e^{(3\,dx+3\,c)} - 6i\,f^2e^{(dx+c)} - 3\,f^2\right)\mathrm{Li}_2\left(i\,e^{(dx+c)}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (4*d^2*e^2 - 8*c*d*e*f + 2*(2*c^2 - 1)*f^2 - 2*f^2*e^(2*d*x + 2*c) - (3*f^2
*e^(4*d*x + 4*c) - 6*I*f^2*e^(3*d*x + 3*c) - 6*I*f^2*e^(d*x + c) - 3*f^2)*d
ilog(I*e^(d*x + c)) - (5*f^2*e^(4*d*x + 4*c) - 10*I*f^2*e^(3*d*x + 3*c) - 1
0*I*f^2*e^(d*x + c) - 5*f^2)*dilog(-I*e^(d*x + c)) + 4*(d^2*f^2*x^2 + 2*d^2
*e*f*x + 2*c*d*e*f - c^2*f^2)*e^(4*d*x + 4*c) + (-8*I*d^2*f^2*x^2 + (-16*I*
c - 2*I)*d*e*f + (8*I*c^2 - 2*I)*f^2 + (-16*I*d^2*e*f - 2*I*d*f^2)*x)*e^(3*
d*x + 3*c) + (8*I*d^2*e^2 + (-16*I*c - 2*I)*d*e*f - 2*I*d*f^2*x + (8*I*c^2
- 2*I)*f^2)*e^(d*x + c) + (3*d*e*f - 3*c*f^2 - 3*(d*e*f - c*f^2)*e^(4*d*x +
 4*c) + (6*I*d*e*f - 6*I*c*f^2)*e^(3*d*x + 3*c) + (6*I*d*e*f - 6*I*c*f^2)*e
^(d*x + c))*log(e^(d*x + c) + I) + (5*d*e*f - 5*c*f^2 - 5*(d*e*f - c*f^2)*e
^(4*d*x + 4*c) + (10*I*d*e*f - 10*I*c*f^2)*e^(3*d*x + 3*c) + (10*I*d*e*f -
10*I*c*f^2)*e^(d*x + c))*log(e^(d*x + c) - I) + (5*d*f^2*x + 5*c*f^2 - 5*(d
*f^2*x + c*f^2)*e^(4*d*x + 4*c) + (10*I*d*f^2*x + 10*I*c*f^2)*e^(3*d*x + 3*
c) + (10*I*d*f^2*x + 10*I*c*f^2)*e^(d*x + c))*log(I*e^(d*x + c) + 1) + (3*d
*f^2*x + 3*c*f^2 - 3*(d*f^2*x + c*f^2)*e^(4*d*x + 4*c) + (6*I*d*f^2*x + 6*I
*c*f^2)*e^(3*d*x + 3*c) + (6*I*d*f^2*x + 6*I*c*f^2)*e^(d*x + c))*log(-I*e^(
d*x + c) + 1))/(3*a*d^3*e^(4*d*x + 4*c) - 6*I*a*d^3*e^(3*d*x + 3*c) - 6*I*a
*d^3*e^(d*x + c) - 3*a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \operatorname{sech}\left(dx+c\right)^2}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sech(d*x + c)^2/(I*a*sinh(d*x + c) + a), x)
```

maple [A] time = 0.26, size = 509, normalized size = 1.57

$$\frac{2i\left(-2id^2f^2x^2 + 4d^2f^2x^2\mathrm{e}^{dx+c} - d\,f^2x\,\mathrm{e}^{3dx+3c} - 4id^2efx + 8d^2efx\,\mathrm{e}^{dx+c} - def\,\mathrm{e}^{3dx+3c} - 2id^2e^2 + if^2\mathrm{e}^{2dx+2c} + 4d\right.}{3\left(\mathrm{e}^{dx+c}+i\right)\left(\mathrm{e}^{dx+c}-i\right)^3 d^3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 2/3*I*(-2*I*d^2*f^2*x^2+4*d^2*f^2*x^2*exp(d*x+c)-d*f^2*x*exp(3*d*x+3*c)-4*I
*d^2*e*f*x+8*d^2*e*f*x*exp(d*x+c)-d*e*f*exp(3*d*x+3*c)-2*I*d^2*e^2+I*f^2*ex
p(2*d*x+2*c)+4*d^2*e^2*exp(d*x+c)-d*f^2*x*exp(d*x+c)-f^2*exp(3*d*x+3*c)-d*e
*f*exp(d*x+c)+I*f^2-f^2*exp(d*x+c))/(exp(d*x+c)+I)/(exp(d*x+c)-I)^3/d^3/a-5
/3/a/d^2*f*ln(exp(d*x+c)-I)*e-1/a/d^2*f*e*ln(exp(d*x+c)+I)+8/3/a/d^2*f*ln(e
xp(d*x+c))*e+5/3/a/d^3*f^2*c*ln(exp(d*x+c)-I)+1/a/d^3*f^2*c*ln(exp(d*x+c)+I
)-8/3/a/d^3*f^2*c*ln(exp(d*x+c))+4/3*f^2*x^2/a/d+8/3/a/d^2*f^2*c*x+4/3/a/d^
3*f^2*c^2-5/3/a/d^2*f^2*ln(1+I*exp(d*x+c))*x-5/3/a/d^3*f^2*ln(1+I*exp(d*x+c
))*c-5/3*f^2*polylog(2,-I*exp(d*x+c))/a/d^3-1/a/d^2*f^2*ln(1-I*exp(d*x+c))*
x-1/a/d^3*f^2*ln(1-I*exp(d*x+c))*c-f^2*polylog(2,I*exp(d*x+c))/a/d^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$4\,f^2\left(\frac{2i\,d^2x^2+\left(dxe^{(3\,c)}+e^{(3\,c)}\right)e^{(3\,dx)}-\left(4\,d^2x^2e^c-dxe^c-e^c\right)e^{(dx)}-i\,e^{(2\,dx+2\,c)}-i}{6i\,ad^3e^{(4\,dx+4\,c)}+12\,ad^3e^{(3\,dx+3\,c)}+12\,ad^3e^{(dx+c)}-6i\,ad^3}+i\int\frac{x}{4\left(ade^{(dx+c)}+i\,ad\right)}\,dx-5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] 4*f^2*((2*I*d^2*x^2 + (d*x*e^(3*c) + e^(3*c))*e^(3*d*x) - (4*d^2*x^2*e^c -
d*x*e^c - e^c)*e^(d*x) - I*e^(2*d*x + 2*c) - I)/(6*I*a*d^3*e^(4*d*x + 4*c)
+ 12*a*d^3*e^(3*d*x + 3*c) + 12*a*d^3*e^(d*x + c) - 6*I*a*d^3) + I*integrat
e(1/4*x/(a*d*e^(d*x + c) + I*a*d), x) - 5*I*integrate(1/12*x/(a*d*e^(d*x +
c) - I*a*d), x)) + 1/3*e*f*(24*(4*I*d*x*e^(4*d*x + 4*c) + (8*d*x*e^(3*c) +
e^(3*c))*e^(3*d*x) + e^(d*x + c))/(12*I*a*d^2*e^(4*d*x + 4*c) + 24*a*d^2*e^
(3*d*x + 3*c) + 24*a*d^2*e^(d*x + c) - 12*I*a*d^2) - 3*log((e^(d*x + c) + I
)*e^(-c))/(a*d^2) - 5*log(-I*(I*e^(d*x + c) + 1)*e^(-c))/(a*d^2)) + 4*e^2*(
2*e^(-d*x - c)/((6*a*e^(-d*x - c) + 6*a*e^(-3*d*x - 3*c) - 3*I*a*e^(-4*d*x
- 4*c) + 3*I*a)*d) + I/((6*a*e^(-d*x - c) + 6*a*e^(-3*d*x - 3*c) - 3*I*a*e^
(-4*d*x - 4*c) + 3*I*a)*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(e+f\,x\right)^2}{{\mathrm{cosh}\left(c+d\,x\right)}^2\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cosh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)^2/(cosh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e^2 \operatorname{sech}^2(c+dx)}{\sinh(c+dx)-i}\,dx + \int \frac{f^2x^2 \operatorname{sech}^2(c+dx)}{\sinh(c+dx)-i}\,dx + \int \frac{2efx \operatorname{sech}^2(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sech(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e**2*sech(c + d*x)**2/(sinh(c + d*x) - I), x) + Integral(f**2*
x**2*sech(c + d*x)**2/(sinh(c + d*x) - I), x) + Integral(2*e*f*x*sech(c + d
*x)**2/(sinh(c + d*x) - I), x))/a
```

3.279 $\int \frac{(e+fx)\text{sech}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=158

$$\frac{f\text{sech}^2(c+dx)}{6ad^2}-\frac{if\tan^{-1}(\sinh(c+dx))}{6ad^2}-\frac{2f\log(\cosh(c+dx))}{3ad^2}-\frac{if\tanh(c+dx)\text{sech}(c+dx)}{6ad^2}+\frac{2(e+fx)\tanh(c+dx)}{3ad}$$

```
[Out] -1/6*I*f*arctan(sinh(d*x+c))/a/d^2-2/3*f*ln(cosh(d*x+c))/a/d^2+1/6*f*sech(d
*x+c)^2/a/d^2+1/3*I*(f*x+e)*sech(d*x+c)^3/a/d+2/3*(f*x+e)*tanh(d*x+c)/a/d-1
/6*I*f*sech(d*x+c)*tanh(d*x+c)/a/d^2+1/3*(f*x+e)*sech(d*x+c)^2*tanh(d*x+c)/
a/d
```

Rubi [A] time = 0.16, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {5571, 4185, 4184, 3475, 5451, 3768, 3770}

$$\frac{f\text{sech}^2(c+dx)}{6ad^2}-\frac{if\tan^{-1}(\sinh(c+dx))}{6ad^2}-\frac{2f\log(\cosh(c+dx))}{3ad^2}-\frac{if\tanh(c+dx)\text{sech}(c+dx)}{6ad^2}+\frac{2(e+fx)\tanh(c+dx)}{3ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sech[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I/6)*f*ArcTan[Sinh[c + d*x]])/(a*d^2) - (2*f*Log[Cosh[c + d*x]])/(3*a*d^
2) + (f*Sech[c + d*x]^2)/(6*a*d^2) + ((I/3)*(e + f*x)*Sech[c + d*x]^3)/(a*d
) + (2*(e + f*x)*Tanh[c + d*x])/(3*a*d) - ((I/6)*f*Sech[c + d*x]*Tanh[c + d
*x])/(a*d^2) + ((e + f*x)*Sech[c + d*x]^2*Tanh[c + d*x])/(3*a*d)
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3768

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Csc[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[(b^2*(n - 2))/(n - 1), I
nt[(b*Csc[c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] &&
IntegerQ[2*n]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5571

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sech[c
 + d*x]^(n + 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(n + 1)*T
anh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && Eq
Q[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)\text{sech}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)\text{sech}^3(c+dx)\tanh(c+dx)\,dx}{a}+\frac{\int (e+fx)\text{sech}^4(c+dx)\,dx}{a}$$

$$= \frac{f\text{sech}^2(c+dx)}{6ad^2}+\frac{i(e+fx)\text{sech}^3(c+dx)}{3ad}+\frac{(e+fx)\text{sech}^2(c+dx)\tanh(c+dx)}{3ad}$$

$$= \frac{f\text{sech}^2(c+dx)}{6ad^2}+\frac{i(e+fx)\text{sech}^3(c+dx)}{3ad}+\frac{2(e+fx)\tanh(c+dx)}{3ad}-\frac{if\text{sech}(c}{}$$

$$= -\frac{if\tan^{-1}(\sinh(c+dx))}{6ad^2}-\frac{2f\log(\cosh(c+dx))}{3ad^2}+\frac{f\text{sech}^2(c+dx)}{6ad^2}+\frac{i(e+fx)\text{s}}{3}$$

Mathematica [A] time = 1.12, size = 194, normalized size = 1.23

$$\frac{2d(e+fx)(\cosh(2(c+dx))-2i\sinh(c+dx))+\cosh(c+dx)\left(-i\sinh(c+dx)\left(2f\tan^{-1}\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)-4i\right.\right.}{6ad^2(\sinh(c+dx)-i)\left(\cosh\left(\frac{1}{2}(c+dx)\right)-i\sinh\left(\frac{1}{2}(c+\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sech[c + d*x]^2)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (2*d*(e + f*x)*(Cosh[2*(c + d*x)] - (2*I)*Sinh[c + d*x]) + Cosh[c + d*x]*(-
(d*e) - I*f + c*f - 2*f*ArcTan[Tanh[(c + d*x)/2]] + (4*I)*f*Log[Cosh[c + d*
x]] - I*(d*e - c*f + 2*f*ArcTan[Tanh[(c + d*x)/2]] - (4*I)*f*Log[Cosh[c + d
*x]])*Sinh[c + d*x]))/(6*a*d^2*(Cosh[(c + d*x)/2] - I*Sinh[(c + d*x)/2])*(C
osh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*(-I + Sinh[c + d*x]))
```

fricas [A] time = 0.49, size = 201, normalized size = 1.27

$$\frac{8\,dfxe^{(4\,dx+4\,c)}+8\,de+\left(-16i\,dfx-2i\,f\right)e^{(3\,dx+3\,c)}+\left(16i\,de-2i\,f\right)e^{(dx+c)}-\left(3\,fe^{(4\,dx+4\,c)}-6i\,fe^{(3\,dx+3\,c)}-6i\,fe^{(dx+}\right.}{6\,ad^2e^{(4\,dx+4\,c)}-12i\,ad^2e^{(3\,dx+3\,c)}-12i\,}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (8*d*f*x*e^(4*d*x + 4*c) + 8*d*e + (-16*I*d*f*x - 2*I*f)*e^(3*d*x + 3*c) +
(16*I*d*e - 2*I*f)*e^(d*x + c) - (3*f*e^(4*d*x + 4*c) - 6*I*f*e^(3*d*x + 3*
c) - 6*I*f*e^(d*x + c) - 3*f)*log(e^(d*x + c) + I) - (5*f*e^(4*d*x + 4*c) -
 10*I*f*e^(3*d*x + 3*c) - 10*I*f*e^(d*x + c) - 5*f)*log(e^(d*x + c) - I))/(
6*a*d^2*e^(4*d*x + 4*c) - 12*I*a*d^2*e^(3*d*x + 3*c) - 12*I*a*d^2*e^(d*x +
c) - 6*a*d^2)
```

giac [A] time = 0.27, size = 261, normalized size = 1.65

$$\frac{8\,dfxe^{(4\,dx+4\,c)}-16i\,dfxe^{(3\,dx+3\,c)}-3\,fe^{(4\,dx+4\,c)}\log\left(e^{(dx+c)}+i\right)+6i\,fe^{(3\,dx+3\,c)}\log\left(e^{(dx+c)}+i\right)+6i\,fe^{(dx+c)}\log\left(e^{\right.}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (8*d*f*x*e^(4*d*x + 4*c) - 16*I*d*f*x*e^(3*d*x + 3*c) - 3*f*e^(4*d*x + 4*c)
*log(e^(d*x + c) + I) + 6*I*f*e^(3*d*x + 3*c)*log(e^(d*x + c) + I) + 6*I*f*
e^(d*x + c)*log(e^(d*x + c) + I) - 5*f*e^(4*d*x + 4*c)*log(e^(d*x + c) - I)
 + 10*I*f*e^(3*d*x + 3*c)*log(e^(d*x + c) - I) + 10*I*f*e^(d*x + c)*log(e^(
d*x + c) - I) + 8*d*e - 2*I*f*e^(3*d*x + 3*c) + 16*I*d*e^(d*x + c + 1) - 2*
```

```
I*f*e^(d*x + c) + 3*f*log(e^(d*x + c) + I) + 5*f*log(e^(d*x + c) - I))/(6*a
*d^2*e^(4*d*x + 4*c) - 12*I*a*d^2*e^(3*d*x + 3*c) - 12*I*a*d^2*e^(d*x + c)
- 6*a*d^2)
```

maple [A] time = 0.27, size = 143, normalized size = 0.91

$$\frac{4fx}{3ad}+\frac{4fc}{3a\,d^2}-\frac{i\left(-8dfx\,\mathrm{e}^{dx+c}+f\,\mathrm{e}^{3dx+3c}-8de\,\mathrm{e}^{dx+c}+f\,\mathrm{e}^{dx+c}+4idfx+4ide\right)}{3\left(\mathrm{e}^{dx+c}+i\right)\left(\mathrm{e}^{dx+c}-i\right)^3d^2a}-\frac{f\ln\left(\mathrm{e}^{dx+c}+i\right)}{2a\,d^2}-\frac{5f\ln\left(\mathrm{e}^{dx+c}-i\right.}{6a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 4/3*f*x/a/d+4/3*f/a/d^2*c-1/3*I*(-8*d*f*x*exp(d*x+c)+f*exp(3*d*x+3*c)-8*d*e
*exp(d*x+c)+f*exp(d*x+c)+4*I*d*f*x+4*I*d*e)/(exp(d*x+c)+I)/(exp(d*x+c)-I)^3
/d^2/a-1/2*f/a/d^2*ln(exp(d*x+c)+I)-5/6*f/a/d^2*ln(exp(d*x+c)-I)
```

maxima [A] time = 0.39, size = 251, normalized size = 1.59

$$\frac{1}{6}f\left(\frac{24\left(4i\,dxe^{(4\,dx+4\,c)}+\left(8\,dxe^{(3\,c)}+e^{(3\,c)}\right)e^{(3\,dx)}+e^{(dx+c)}\right)}{12i\,ad^2e^{(4\,dx+4\,c)}+24\,ad^2e^{(3\,dx+3\,c)}+24\,ad^2e^{(dx+c)}-12i\,ad^2}-\frac{3\,\log\left(\left(e^{(dx+c)}+i\right)e^{(-c)}\right)}{ad^2}-\frac{5\,\log\left(-i\left(i\,e^{(dx+c)}\right.\right.}{ad^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/6*f*(24*(4*I*d*x*e^(4*d*x + 4*c) + (8*d*x*e^(3*c) + e^(3*c))*e^(3*d*x) +
e^(d*x + c))/(12*I*a*d^2*e^(4*d*x + 4*c) + 24*a*d^2*e^(3*d*x + 3*c) + 24*a*
d^2*e^(d*x + c) - 12*I*a*d^2) - 3*log((e^(d*x + c) + I)*e^(-c))/(a*d^2) - 5
*log(-I*(I*e^(d*x + c) + 1)*e^(-c))/(a*d^2)) + 4*e*(2*e^(-d*x - c)/((6*a*e^
(-d*x - c) + 6*a*e^(-3*d*x - 3*c) - 3*I*a*e^(-4*d*x - 4*c) + 3*I*a)*d) + I/
((6*a*e^(-d*x - c) + 6*a*e^(-3*d*x - 3*c) - 3*I*a*e^(-4*d*x - 4*c) + 3*I*a)
*d))
```

mupad [B] time = 2.48, size = 205, normalized size = 1.30

$$\frac{4\,f\,x}{3\,a\,d}-\frac{f+3\,d\,e+3\,d\,f\,x}{3\,a\,d^2\,\left(1-\mathrm{e}^{2\,c+2\,d\,x}+\mathrm{e}^{c+d\,x}\,2\mathrm{i}\right)}-\frac{5\,f\,\ln\left(f+f\,\mathrm{e}^{c+d\,x}\,1\mathrm{i}\right)}{6\,a\,d^2}-\frac{\left(e+f\,x\right)\,2\mathrm{i}}{3\,a\,d\,\left(3\,\mathrm{e}^{c+d\,x}+\mathrm{e}^{2\,c+2\,d\,x}\,3\mathrm{i}-\mathrm{e}^{3\,c+3\,d\,x}-\mathrm{i}\right)}-\frac{(e}{2\,a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] (4*f*x)/(3*a*d) - (f + 3*d*e + 3*d*f*x)/(3*a*d^2*(exp(c + d*x)*2i - exp(2*c
 + 2*d*x) + 1)) - (5*f*log(f + f*exp(c + d*x)*1i))/(6*a*d^2) - ((e + f*x)*2
```

```
i)/(3*a*d*(3*exp(c + d*x) + exp(2*c + 2*d*x)*3i - exp(3*c + 3*d*x) - 1i)) -
 ((e + f*x)*1i)/(2*a*d*(exp(c + d*x) + 1i)) - (f*log(exp(c + d*x)*1i - 1))/
(2*a*d^2) + ((3*d*e - 2*f + 3*d*f*x)*1i)/(6*a*d^2*(exp(c + d*x) - 1i))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e\operatorname{sech}^2(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{fx\operatorname{sech}^2(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e*sech(c + d*x)**2/(sinh(c + d*x) - I), x) + Integral(f*x*sech
(c + d*x)**2/(sinh(c + d*x) - I), x))/a
```

3.280 $\int \frac{\text{sech}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=47

$$\frac{2\tanh(c+dx)}{3ad}+\frac{i\text{sech}(c+dx)}{3d(a+ia\sinh(c+dx))}$$

```
[Out] 1/3*I*sech(d*x+c)/d/(a+I*a*sinh(d*x+c))+2/3*tanh(d*x+c)/a/d
```

Rubi [A] time = 0.05, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2672, 3767, 8}

$$\frac{2\tanh(c+dx)}{3ad}+\frac{i\text{sech}(c+dx)}{3d(a+ia\sinh(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[Sech[c + d*x]^2/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((I/3)*Sech[c + d*x])/(d*(a + I*a*Sinh[c + d*x])) + (2*Tanh[c + d*x])/(3*a*
d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2672

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_), x_Symbol] :> Simp[(b*(g*Cos[e + f*x])^(p + 1)*(a + b*Sin[e + f*x
])^m)/(a*f*g*Simplify[2*m + p + 1]), x] + Dist[Simplify[m + p + 1]/(a*Simpl
ify[2*m + p + 1]), Int[(g*Cos[e + f*x])^p*(a + b*Sin[e + f*x])^(m + 1), x],
 x] /; FreeQ[{a, b, e, f, g, m, p}, x] && EqQ[a^2 - b^2, 0] && ILtQ[Simplif
y[m + p + 1], 0] && NeQ[2*m + p + 1, 0] &&  !IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rubi steps

$$\int \frac{\operatorname{sech}^2(c+dx)}{a+ia\sinh(c+dx)}\,dx = \frac{i\operatorname{sech}(c+dx)}{3d(a+ia\sinh(c+dx))} + \frac{2\int \operatorname{sech}^2(c+dx)\,dx}{3a}$$
$$= \frac{i\operatorname{sech}(c+dx)}{3d(a+ia\sinh(c+dx))} + \frac{(2i)\operatorname{Subst}(\int 1\,dx, x, -i\tanh(c+dx))}{3ad}$$
$$= \frac{i\operatorname{sech}(c+dx)}{3d(a+ia\sinh(c+dx))} + \frac{2\tanh(c+dx)}{3ad}$$

Mathematica [A] time = 0.05, size = 47, normalized size = 1.00

$$\frac{\operatorname{sech}(c+dx)(\cosh(2(c+dx)) - 2i\sinh(c+dx))}{3ad(\sinh(c+dx)-i)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sech[c + d*x]^2/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (Sech[c + d*x]*(Cosh[2*(c + d*x)] - (2*I)*Sinh[c + d*x]))/(3*a*d*(-I + Sinh
[c + d*x]))
```

fricas [A] time = 0.50, size = 55, normalized size = 1.17

$$-\frac{4\left(-2i\,e^{(dx+c)}-1\right)}{3\,ade^{(4\,dx+4\,c)} - 6i\,ade^{(3\,dx+3\,c)} - 6i\,ade^{(dx+c)} - 3\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -4*(-2*I*e^(d*x + c) - 1)/(3*a*d*e^(4*d*x + 4*c) - 6*I*a*d*e^(3*d*x + 3*c)
- 6*I*a*d*e^(d*x + c) - 3*a*d)
```

giac [A] time = 0.19, size = 59, normalized size = 1.26

$$\frac{\frac{3}{a\left(i\,e^{(dx+c)}-1\right)} - \frac{-3i\,e^{(2\,dx+2\,c)}-12\,e^{(dx+c)}+5i}{a\left(e^{(dx+c)}-i\right)^3}}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/6*(3/(a*(I*e^(d*x + c) - 1)) - (-3*I*e^(2*d*x + 2*c) - 12*e^(d*x + c) + 5
*I)/(a*(e^(d*x + c) - I)^3))/d
```

maple [A] time = 0.09, size = 75, normalized size = 1.60

$$\frac{\frac{2}{4\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+4i}-\frac{2}{3\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^{3}}+\frac{i}{\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^{2}}+\frac{3}{2\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 2/d/a*(1/4/(tanh(1/2*d*x+1/2*c)+I)-1/3/(-I+tanh(1/2*d*x+1/2*c))^3+1/2*I/(-I
+tanh(1/2*d*x+1/2*c))^2+3/4/(-I+tanh(1/2*d*x+1/2*c)))
```

maxima [B] time = 0.81, size = 104, normalized size = 2.21

$$\frac{8\,e^{(-dx-c)}}{\left(6\,ae^{(-dx-c)}+6\,ae^{(-3\,dx-3\,c)}-3i\,ae^{(-4\,dx-4\,c)}+3i\,a\right)d}+\frac{4i}{\left(6\,ae^{(-dx-c)}+6\,ae^{(-3\,dx-3\,c)}-3i\,ae^{(-4\,dx-4\,c)}+3i\,a\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 8*e^(-d*x - c)/((6*a*e^(-d*x - c) + 6*a*e^(-3*d*x - 3*c) - 3*I*a*e^(-4*d*x
- 4*c) + 3*I*a)*d) + 4*I/((6*a*e^(-d*x - c) + 6*a*e^(-3*d*x - 3*c) - 3*I*a*
e^(-4*d*x - 4*c) + 3*I*a)*d)
```

mupad [B] time = 0.48, size = 43, normalized size = 0.91

$$\frac{4\,\left(1+\mathrm{e}^{c+d\,x}\,2\mathrm{i}\right)\,{\left(\mathrm{e}^{c+d\,x}+1\mathrm{i}\right)}^2}{3\,a\,d\,{\left(\mathrm{e}^{2\,c+2\,d\,x}+1\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] (4*(exp(c + d*x)*2i + 1)*(exp(c + d*x) + 1i)^2)/(3*a*d*(exp(2*c + 2*d*x) +
1)^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int\frac{\operatorname{sech}^{2}(c+dx)}{\sinh(c+dx)-i}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(sech(c + d*x)**2/(sinh(c + d*x) - I), x)/a
```

3.281 $\int \frac{\operatorname{sech}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\operatorname{Int}\left(\frac{\operatorname{sech}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{sech}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sech[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Sech[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\operatorname{sech}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx=\int \frac{\operatorname{sech}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Mathematica [A] time = 130.79, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}^2(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sech[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Integrate[Sech[c + d*x]^2/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$-\frac{4\,d^2f^2x^2+8\,d^2efx+4\,d^2e^2-2\,f^2e^{(2\,dx+2\,c)}-2\,f^2+\left(i\,df^2x+i\,def-2i\,f^2\right)e^{(3\,dx+3\,c)}+\left(8i\,d^2f^2x^2+8i\,d^2e^2+i\,d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(4*d^2*f^2*x^2 + 8*d^2*e*f*x + 4*d^2*e^2 - 2*f^2*e^(2*d*x + 2*c) - 2*f^2 +
 (I*d*f^2*x + I*d*e*f - 2*I*f^2)*e^(3*d*x + 3*c) + (8*I*d^2*f^2*x^2 + 8*I*d
^2*e^2 + I*d*e*f - 2*I*f^2 + (16*I*d^2*e*f + I*d*f^2)*x)*e^(d*x + c) - (3*a
*d^3*f^3*x^3 + 9*a*d^3*e*f^2*x^2 + 9*a*d^3*e^2*f*x + 3*a*d^3*e^3 - 3*(a*d^3
*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*e^(4*d*x + 4*c)
 - (-6*I*a*d^3*f^3*x^3 - 18*I*a*d^3*e*f^2*x^2 - 18*I*a*d^3*e^2*f*x - 6*I*a*
d^3*e^3)*e^(3*d*x + 3*c) - (-6*I*a*d^3*f^3*x^3 - 18*I*a*d^3*e*f^2*x^2 - 18*
I*a*d^3*e^2*f*x - 6*I*a*d^3*e^3)*e^(d*x + c))*integral(-1/3*(4*d^2*f^3*x^2
+ 8*d^2*e*f^2*x + 4*d^2*e^2*f - 6*f^3 - (I*d^2*f^3*x^2 + 2*I*d^2*e*f^2*x +
I*d^2*e^2*f - 6*I*f^3)*e^(d*x + c))/(a*d^3*f^4*x^4 + 4*a*d^3*e*f^3*x^3 + 6*
a*d^3*e^2*f^2*x^2 + 4*a*d^3*e^3*f*x + a*d^3*e^4 + (a*d^3*f^4*x^4 + 4*a*d^3*
e*f^3*x^3 + 6*a*d^3*e^2*f^2*x^2 + 4*a*d^3*e^3*f*x + a*d^3*e^4)*e^(2*d*x + 2
*c)), x))/(3*a*d^3*f^3*x^3 + 9*a*d^3*e*f^2*x^2 + 9*a*d^3*e^2*f*x + 3*a*d^3*
e^3 - 3*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*e
^(4*d*x + 4*c) - (-6*I*a*d^3*f^3*x^3 - 18*I*a*d^3*e*f^2*x^2 - 18*I*a*d^3*e^
2*f*x - 6*I*a*d^3*e^3)*e^(3*d*x + 3*c) - (-6*I*a*d^3*f^3*x^3 - 18*I*a*d^3*e
*f^2*x^2 - 18*I*a*d^3*e^2*f*x - 6*I*a*d^3*e^3)*e^(d*x + c))
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}\left(dx+c\right)^{2}}{\left(fx+e\right)\left(i\,a\sinh\left(dx+c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sech(d*x + c)^2/((f*x + e)*(I*a*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}\left(dx+c\right)^{2}}{\left(fx+e\right)\left(a+ia\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-4if\int \frac{1}{8i\,adf^{2}x^{2}+16i\,adefx+8i\,ade^{2}+8\left(adf^{2}x^{2}e^{c}+2\,adefxe^{c}+ade^{2}e^{c}\right)e^{(dx)}}\,dx - \frac{}{12\,ad^{3}f^{3}x^{3}+36\,ad^{3}ef^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sech(d*x+c)^2/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")

[Out] -4*I*f*integrate(1/(8*I*a*d*f^2*x^2 + 16*I*a*d*e*f*x + 8*I*a*d*e^2 + 8*(a*d*f^2*x^2*e^c + 2*a*d*e*f*x*e^c + a*d*e^2*e^c)*e^(d*x)), x) - 4*(4*d^2*f^2*x^2 + 8*d^2*e*f*x + 4*d^2*e^2 - 2*f^2*e^(2*d*x + 2*c) - 2*f^2 + (I*d*f^2*x*e^(3*c) + (I*d*e*f - 2*I*f^2)*e^(3*c))*e^(3*d*x) + (8*I*d^2*f^2*x^2*e^c + (16*I*d^2*e*f + I*d*f^2)*x*e^c + (8*I*d^2*e^2 + I*d*e*f - 2*I*f^2)*e^c)*e^(d*x))/(12*a*d^3*f^3*x^3 + 36*a*d^3*e*f^2*x^2 + 36*a*d^3*e^2*f*x + 12*a*d^3*e^3 - 12*(a*d^3*f^3*x^3*e^(4*c) + 3*a*d^3*e*f^2*x^2*e^(4*c) + 3*a*d^3*e^2*f*x*e^(4*c) + a*d^3*e^3*e^(4*c))*e^(4*d*x) - (-24*I*a*d^3*f^3*x^3*e^(3*c) - 72*I*a*d^3*e*f^2*x^2*e^(3*c) - 72*I*a*d^3*e^2*f*x*e^(3*c) - 24*I*a*d^3*e^3*e^(3*c))*e^(3*d*x) - (-24*I*a*d^3*f^3*x^3*e^c - 72*I*a*d^3*e*f^2*x^2*e^c - 72*I*a*d^3*e^2*f*x*e^c - 24*I*a*d^3*e^3*e^c)*e^(d*x)) - 4*integrate((5*d^2*f^3*x^2 + 10*d^2*e*f^2*x + 5*d^2*e^2*f - 12*f^3)/(24*a*d^3*f^4*x^4 + 96*a*d^3*e*f^3*x^3 + 144*a*d^3*e^2*f^2*x^2 + 96*a*d^3*e^3*f*x + 24*a*d^3*e^4 + (24*I*a*d^3*f^4*x^4*e^c + 96*I*a*d^3*e*f^3*x^3*e^c + 144*I*a*d^3*e^2*f^2*x^2*e^c + 96*I*a*d^3*e^3*f*x*e^c + 24*I*a*d^3*e^4*e^c)*e^(d*x)), x)

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+d\,x)^2\,\left(e+f\,x\right)\,\left(a+a\sinh(c+d\,x)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(cosh(c + d*x)^2*(e + f*x)*(a + a*sinh(c + d*x)*1i)),x)

[Out] int(1/(cosh(c + d*x)^2*(e + f*x)*(a + a*sinh(c + d*x)*1i)), x)

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int\frac{\operatorname{sech}^2(c+dx)}{e\sinh(c+dx)-ie+fx\sinh(c+dx)-ifx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sech(d*x+c)**2/(f*x+e)/(a+I*a*sinh(d*x+c)),x)

[Out] -I*Integral(sech(c + d*x)**2/(e*sinh(c + d*x) - I*e + f*x*sinh(c + d*x) - I*f*x), x)/a

3.282 $\int \frac{\operatorname{sech}^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\mathrm{Int}\left(\frac{\operatorname{sech}^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} =$ 0.000, Rules used = {}

$$\int \frac{\operatorname{sech}^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sech[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Sech[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\operatorname{sech}^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx = \int \frac{\operatorname{sech}^2(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.01, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Sech[c + d*x]^2/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.57, size = 0, normalized size = 0.00

$$-\frac{4d^2f^2x^2 + 8d^2efx + 4d^2e^2 - 6f^2e^{(2dx+2c)} - 6f^2 + \left(2idf^2x + 2idef - 6if^2\right)e^{(3dx+3c)} + \left(8id^2f^2x^2 + 8id^2e^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -(4*d^2*f^2*x^2 + 8*d^2*e*f*x + 4*d^2*e^2 - 6*f^2*e^(2*d*x + 2*c) - 6*f^2 +
 (2*I*d*f^2*x + 2*I*d*e*f - 6*I*f^2)*e^(3*d*x + 3*c) + (8*I*d^2*f^2*x^2 + 8
*I*d^2*e^2 + 2*I*d*e*f - 6*I*f^2 + (16*I*d^2*e*f + 2*I*d*f^2)*x)*e^(d*x + c
) - (3*a*d^3*f^4*x^4 + 12*a*d^3*e*f^3*x^3 + 18*a*d^3*e^2*f^2*x^2 + 12*a*d^3
*e^3*f*x + 3*a*d^3*e^4 - 3*(a*d^3*f^4*x^4 + 4*a*d^3*e*f^3*x^3 + 6*a*d^3*e^2
*f^2*x^2 + 4*a*d^3*e^3*f*x + a*d^3*e^4)*e^(4*d*x + 4*c) - (-6*I*a*d^3*f^4*x
^4 - 24*I*a*d^3*e*f^3*x^3 - 36*I*a*d^3*e^2*f^2*x^2 - 24*I*a*d^3*e^3*f*x - 6
*I*a*d^3*e^4)*e^(3*d*x + 3*c) - (-6*I*a*d^3*f^4*x^4 - 24*I*a*d^3*e*f^3*x^3
- 36*I*a*d^3*e^2*f^2*x^2 - 24*I*a*d^3*e^3*f*x - 6*I*a*d^3*e^4)*e^(d*x + c))
*integral(-1/3*(8*d^2*f^3*x^2 + 16*d^2*e*f^2*x + 8*d^2*e^2*f - 24*f^3 - (2*
I*d^2*f^3*x^2 + 4*I*d^2*e*f^2*x + 2*I*d^2*e^2*f - 24*I*f^3)*e^(d*x + c))/(a
*d^3*f^5*x^5 + 5*a*d^3*e*f^4*x^4 + 10*a*d^3*e^2*f^3*x^3 + 10*a*d^3*e^3*f^2*
x^2 + 5*a*d^3*e^4*f*x + a*d^3*e^5 + (a*d^3*f^5*x^5 + 5*a*d^3*e*f^4*x^4 + 10
*a*d^3*e^2*f^3*x^3 + 10*a*d^3*e^3*f^2*x^2 + 5*a*d^3*e^4*f*x + a*d^3*e^5)*e^
(2*d*x + 2*c)), x))/(3*a*d^3*f^4*x^4 + 12*a*d^3*e*f^3*x^3 + 18*a*d^3*e^2*f^
2*x^2 + 12*a*d^3*e^3*f*x + 3*a*d^3*e^4 - 3*(a*d^3*f^4*x^4 + 4*a*d^3*e*f^3*x
^3 + 6*a*d^3*e^2*f^2*x^2 + 4*a*d^3*e^3*f*x + a*d^3*e^4)*e^(4*d*x + 4*c) - (
-6*I*a*d^3*f^4*x^4 - 24*I*a*d^3*e*f^3*x^3 - 36*I*a*d^3*e^2*f^2*x^2 - 24*I*a
*d^3*e^3*f*x - 6*I*a*d^3*e^4)*e^(3*d*x + 3*c) - (-6*I*a*d^3*f^4*x^4 - 24*I*
a*d^3*e*f^3*x^3 - 36*I*a*d^3*e^2*f^2*x^2 - 24*I*a*d^3*e^3*f*x - 6*I*a*d^3*e
^4)*e^(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 1.98, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)^{2}}{\left(fx+e\right)^{2}\left(a+ia\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-4i f \int \frac{1}{4i adf^3x^3 + 12i adef^2x^2 + 12i ade^2 f x + 4i ade^3 + 4\left(adf^3x^3e^c + 3\, adef^2x^2e^c + 3\, ade^2 f xe^c + ade^3e^c\right)e^{(dx)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -4*I*f*integrate(1/(4*I*a*d*f^3*x^3 + 12*I*a*d*e*f^2*x^2 + 12*I*a*d*e^2*f*x
 + 4*I*a*d*e^3 + 4*(a*d*f^3*x^3*e^c + 3*a*d*e*f^2*x^2*e^c + 3*a*d*e^2*f*x*e
^c + a*d*e^3*e^c)*e^(d*x)), x) - 4*(2*d^2*f^2*x^2 + 4*d^2*e*f*x + 2*d^2*e^2
 - 3*f^2*e^(2*d*x + 2*c) - 3*f^2 + (I*d*f^2*x*e^(3*c) + (I*d*e*f - 3*I*f^2)
*e^(3*c))*e^(3*d*x) + (4*I*d^2*f^2*x^2*e^c + (8*I*d^2*e*f + I*d*f^2)*x*e^c
+ (4*I*d^2*e^2 + I*d*e*f - 3*I*f^2)*e^c)*e^(d*x))/(6*a*d^3*f^4*x^4 + 24*a*d
^3*e*f^3*x^3 + 36*a*d^3*e^2*f^2*x^2 + 24*a*d^3*e^3*f*x + 6*a*d^3*e^4 - 6*(a
*d^3*f^4*x^4*e^(4*c) + 4*a*d^3*e*f^3*x^3*e^(4*c) + 6*a*d^3*e^2*f^2*x^2*e^(4
*c) + 4*a*d^3*e^3*f*x*e^(4*c) + a*d^3*e^4*e^(4*c))*e^(4*d*x) - (-12*I*a*d^3
*f^4*x^4*e^(3*c) - 48*I*a*d^3*e*f^3*x^3*e^(3*c) - 72*I*a*d^3*e^2*f^2*x^2*e^
(3*c) - 48*I*a*d^3*e^3*f*x*e^(3*c) - 12*I*a*d^3*e^4*e^(3*c))*e^(3*d*x) - (-
12*I*a*d^3*f^4*x^4*e^c - 48*I*a*d^3*e*f^3*x^3*e^c - 72*I*a*d^3*e^2*f^2*x^2*
e^c - 48*I*a*d^3*e^3*f*x*e^c - 12*I*a*d^3*e^4*e^c)*e^(d*x)) - 4*integrate((
5*d^2*f^3*x^2 + 10*d^2*e*f^2*x + 5*d^2*e^2*f - 24*f^3)/(12*a*d^3*f^5*x^5 +
60*a*d^3*e*f^4*x^4 + 120*a*d^3*e^2*f^3*x^3 + 120*a*d^3*e^3*f^2*x^2 + 60*a*d
^3*e^4*f*x + 12*a*d^3*e^5 + (12*I*a*d^3*f^5*x^5*e^c + 60*I*a*d^3*e*f^4*x^4*
e^c + 120*I*a*d^3*e^2*f^3*x^3*e^c + 120*I*a*d^3*e^3*f^2*x^2*e^c + 60*I*a*d^
3*e^4*f*x*e^c + 12*I*a*d^3*e^5*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh\left(c+d\,x\right)^2\,{\left(e+f\,x\right)}^2\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^2*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(1/(cosh(c + d*x)^2*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i \int \frac{\operatorname{sech}^{2}{\left(c+dx \right)}}{e^{2} \sinh{\left(c+dx \right)} - ie^{2} + 2efx \sinh{\left(c+dx \right)} - 2iefx + f^{2}x^{2} \sinh{\left(c+dx \right)} - if^{2}x^{2}}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**2/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(sech(c + d*x)**2/(e**2*sinh(c + d*x) - I*e**2 + 2*e*f*x*sinh(c
+ d*x) - 2*I*e*f*x + f**2*x**2*sinh(c + d*x) - I*f**2*x**2), x)/a
```

3.283 $\int \frac{(e+fx)^3\mathbf{sech}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=667

$$\frac{5if^3\text{Li}_2\left(-ie^{c+dx}\right)}{2ad^4}-\frac{5if^3\text{Li}_2\left(ie^{c+dx}\right)}{2ad^4}+\frac{if^3\text{Li}_2\left(-e^{2(c+dx)}\right)}{2ad^4}-\frac{9if^3\text{Li}_4\left(-ie^{c+dx}\right)}{4ad^4}+\frac{9if^3\text{Li}_4\left(ie^{c+dx}\right)}{4ad^4}+\frac{if^3\tanh(c+dx)}{4ad^4}-$$

```
[Out] 9/4*I*f^2*(f*x+e)*polylog(3,-I*exp(d*x+c))/a/d^3-5*f^2*(f*x+e)*arctan(exp(d
*x+c))/a/d^3+3/4*(f*x+e)^3*arctan(exp(d*x+c))/a/d-1/4*I*f*(f*x+e)^2*sech(d*
x+c)^2*tanh(d*x+c)/a/d^2-9/4*I*f^2*(f*x+e)*polylog(3,I*exp(d*x+c))/a/d^3-5/
2*I*f^3*polylog(2,I*exp(d*x+c))/a/d^4+5/2*I*f^3*polylog(2,-I*exp(d*x+c))/a/
d^4+I*f^2*(f*x+e)*ln(1+exp(2*d*x+2*c))/a/d^3+1/2*I*f^3*polylog(2,-exp(2*d*x
+2*c))/a/d^4+1/4*I*f^3*tanh(d*x+c)/a/d^4-9/4*I*f^3*polylog(4,-I*exp(d*x+c))
/a/d^4-1/2*I*f*(f*x+e)^2/a/d^2-1/4*I*f^2*(f*x+e)*sech(d*x+c)^2/a/d^3-1/4*f^
3*sech(d*x+c)/a/d^4+9/8*f*(f*x+e)^2*sech(d*x+c)/a/d^2-9/8*I*f*(f*x+e)^2*pol
ylog(2,-I*exp(d*x+c))/a/d^2+1/4*f*(f*x+e)^2*sech(d*x+c)^3/a/d^2-1/2*I*f*(f*
x+e)^2*tanh(d*x+c)/a/d^2+1/4*I*(f*x+e)^3*sech(d*x+c)^4/a/d+9/8*I*f*(f*x+e)^
2*polylog(2,I*exp(d*x+c))/a/d^2-1/4*f^2*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/a/d
^3+3/8*(f*x+e)^3*sech(d*x+c)*tanh(d*x+c)/a/d+9/4*I*f^3*polylog(4,I*exp(d*x+
c))/a/d^4+1/4*(f*x+e)^3*sech(d*x+c)^3*tanh(d*x+c)/a/d
```

Rubi [A] time = 0.71, antiderivative size = 667, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 16, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.516, Rules used = {5571, 4186, 4185, 4180, 2279, 2391, 2531, 6609, 2282, 6589, 5451, 3767, 8, 4184, 3718, 2190}

$$\frac{9if^2(e+fx)\text{PolyLog}\left(3,-ie^{c+dx}\right)}{4ad^3}-\frac{9if^2(e+fx)\text{PolyLog}\left(3,ie^{c+dx}\right)}{4ad^3}-\frac{9if(e+fx)^2\text{PolyLog}\left(2,-ie^{c+dx}\right)}{8ad^2}+\frac{9if(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sech[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((-I/2)*f*(e + f*x)^2)/(a*d^2) - (5*f^2*(e + f*x)*ArcTan[E^(c + d*x)])/(a*d
^3) + (3*(e + f*x)^3*ArcTan[E^(c + d*x)])/(4*a*d) + (I*f^2*(e + f*x)*Log[1
+ E^(2*(c + d*x))])/(a*d^3) + (((5*I)/2)*f^3*PolyLog[2, (-I)*E^(c + d*x)])/
(a*d^4) - (((9*I)/8)*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^2) -
(((5*I)/2)*f^3*PolyLog[2, I*E^(c + d*x)])/(a*d^4) + (((9*I)/8)*f*(e + f*x)^
2*PolyLog[2, I*E^(c + d*x)])/(a*d^2) + ((I/2)*f^3*PolyLog[2, -E^(2*(c + d*x
))])/(a*d^4) + (((9*I)/4)*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/(a*d^
3) - (((9*I)/4)*f^2*(e + f*x)*PolyLog[3, I*E^(c + d*x)])/(a*d^3) - (((9*I)/
4)*f^3*PolyLog[4, (-I)*E^(c + d*x)])/(a*d^4) + (((9*I)/4)*f^3*PolyLog[4, I*
E^(c + d*x)])/(a*d^4) - (f^3*Sech[c + d*x])/(4*a*d^4) + (9*f*(e + f*x)^2*Se
ch[c + d*x])/(8*a*d^2) - ((I/4)*f^2*(e + f*x)*Sech[c + d*x]^2)/(a*d^3) + (f
```

```
*(e + f*x)^2*Sech[c + d*x]^3)/(4*a*d^2) + ((I/4)*(e + f*x)^3*Sech[c + d*x]^
4)/(a*d) + ((I/4)*f^3*Tanh[c + d*x])/(a*d^4) - ((I/2)*f*(e + f*x)^2*Tanh[c
+ d*x])/(a*d^2) - (f^2*(e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(4*a*d^3) + (
3*(e + f*x)^3*Sech[c + d*x]*Tanh[c + d*x])/(8*a*d) - ((I/4)*f*(e + f*x)^2*S
ech[c + d*x]^2*Tanh[c + d*x])/(a*d^2) + ((e + f*x)^3*Sech[c + d*x]^3*Tanh[c
 + d*x])/(4*a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
```

```
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5571

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sech[c
 + d*x]^(n + 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(n + 1)*T
anh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && Eq
Q[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{sech}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)^3\text{sech}^4(c+dx)\tanh(c+dx)\,dx}{a} + \frac{\int (e+fx)^3\text{sech}^5(c+dx)\,dx}{a}$$
$$= \frac{f(e+fx)^2\text{sech}^3(c+dx)}{4ad^2} + \frac{i(e+fx)^3\text{sech}^4(c+dx)}{4ad} + \frac{(e+fx)^3\text{sech}^3(c+dx)\,\text{t}}{4ad}$$
$$= -\frac{f^3\text{sech}(c+dx)}{4ad^4} + \frac{9f(e+fx)^2\text{sech}(c+dx)}{8ad^2} - \frac{if^2(e+fx)\text{sech}^2(c+dx)}{4ad^3} + \frac{f(e}{}$$
$$= -\frac{5f^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{4ad} - \frac{f^3\text{sech}(c+dx)}{4ad^4} + \frac{9f(}{}$$
$$= -\frac{if(e+fx)^2}{2ad^2} - \frac{5f^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{4ad} - \frac{9if(e+}{}$$
$$= -\frac{if(e+fx)^2}{2ad^2} - \frac{5f^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{4ad} + \frac{if^2(e+}{}$$
$$= -\frac{if(e+fx)^2}{2ad^2} - \frac{5f^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{4ad} + \frac{if^2(e+}{}$$
$$= -\frac{if(e+fx)^2}{2ad^2} - \frac{5f^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^3} + \frac{3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{4ad} + \frac{if^2(e+}{}$$

Mathematica [B] time = 13.49, size = 1804, normalized size = 2.70

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sech[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (-3*(4*d^2*e*(d^2*e^2 - 4*f^2)*x + 2*d^2*f*(3*d^2*e^2 - 4*f^2)*x^2 + 4*d^4*
e*f^2*x^3 + d^4*f^3*x^4 + 4*d*(1 - I*E^c)*f*(3*d^2*e^2 - 4*f^2)*x*Log[1 + I
*E^(-c - d*x)] + 12*d^3*e*(1 - I*E^c)*f^2*x^2*Log[1 + I*E^(-c - d*x)] + 4*d
^3*(1 - I*E^c)*f^3*x^3*Log[1 + I*E^(-c - d*x)] + (4*I)*d*e*(I + E^c)*(d^2*e
^2 - 4*f^2)*(d*x - Log[I + E^(c + d*x)]) + 4*(1 - I*E^c)*f*(-3*d^2*e^2 + 4*
f^2)*PolyLog[2, (-I)*E^(-c - d*x)] + (24*I)*d*e*(I + E^c)*f^2*(d*x*PolyLog[
2, (-I)*E^(-c - d*x)] + PolyLog[3, (-I)*E^(-c - d*x)]) + (12*I)*(I + E^c)*f
^3*(d^2*x^2*PolyLog[2, (-I)*E^(-c - d*x)] + 2*(d*x*PolyLog[3, (-I)*E^(-c -
d*x)] + PolyLog[4, (-I)*E^(-c - d*x)]))))/(32*a*d^4*(I + E^c)) - ((28*f^2 -
 3*d^2*(e + f*x)^2)^2 + 12*d*(1 + I*E^c)*f^2*(9*d^2*e^2 - 28*f^2)*x*Log[1 -
 I*E^(-c - d*x)] + 108*d^3*e*(1 + I*E^c)*f^3*x^2*Log[1 - I*E^(-c - d*x)] +
36*d^3*(1 + I*E^c)*f^4*x^3*Log[1 - I*E^(-c - d*x)] - 12*d*e*(1 + I*E^c)*f*(
3*d^2*e^2 - 28*f^2)*(d*x - Log[I - E^(c + d*x)]) + 12*(1 + I*E^c)*f^2*(-9*d
```

```
^2*e^2 + 28*f^2)*PolyLog[2, I*E^(-c - d*x)] - 216*d*e*(1 + I*E^c)*f^3*(d*x*
PolyLog[2, I*E^(-c - d*x)] + PolyLog[3, I*E^(-c - d*x)]) - 108*(1 + I*E^c)*
f^4*(d^2*x^2*PolyLog[2, I*E^(-c - d*x)] + 2*(d*x*PolyLog[3, I*E^(-c - d*x)]
 + PolyLog[4, I*E^(-c - d*x)])))/(96*a*d^4*(-I + E^c)*f) + ((3*e^3*x*Cosh[c
])/(4*a) + (3*e^3*x*Sinh[c])/(4*a))/(1 + Cosh[2*c] + Sinh[2*c]) + ((9*e^2*f
*x^2*Cosh[c])/(8*a) + (9*e^2*f*x^2*Sinh[c])/(8*a))/(1 + Cosh[2*c] + Sinh[2*
c]) + ((3*e*f^2*x^3*Cosh[c])/(4*a) + (3*e*f^2*x^3*Sinh[c])/(4*a))/(1 + Cosh
[2*c] + Sinh[2*c]) + ((3*f^3*x^4*Cosh[c])/(16*a) + (3*f^3*x^4*Sinh[c])/(16*
a))/(1 + Cosh[2*c] + Sinh[2*c]) - ((I/8)*(e^3 + 3*e^2*f*x + 3*e*f^2*x^2 + f
^3*x^3))/(a*d*(Cosh[c/2 + (d*x)/2] - I*Sinh[c/2 + (d*x)/2])^2) + (((3*I)/4)
*(e^2*f*Sinh[(d*x)/2] + 2*e*f^2*x*Sinh[(d*x)/2] + f^3*x^2*Sinh[(d*x)/2]))/(
a*d^2*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2 + (d*x)/2] - I*Sinh[c/2 + (d*x)/2
])) + ((I/8)*(e^3 + 3*e^2*f*x + 3*e*f^2*x^2 + f^3*x^3))/(a*d*(Cosh[c/2 + (d
*x)/2] + I*Sinh[c/2 + (d*x)/2])^4) - ((I/4)*(e^2*f*Sinh[(d*x)/2] + 2*e*f^2*
x*Sinh[(d*x)/2] + f^3*x^2*Sinh[(d*x)/2]))/(a*d^2*(Cosh[c/2] + I*Sinh[c/2])*
(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2])^3) + ((2*I)*d^2*e^3*Cosh[c/2]
 + d*e^2*f*Cosh[c/2] - (2*I)*e*f^2*Cosh[c/2] + (6*I)*d^2*e^2*f*x*Cosh[c/2]
+ 2*d*e*f^2*x*Cosh[c/2] - (2*I)*f^3*x*Cosh[c/2] + (6*I)*d^2*e*f^2*x^2*Cosh[
c/2] + d*f^3*x^2*Cosh[c/2] + (2*I)*d^2*f^3*x^3*Cosh[c/2] - 2*d^2*e^3*Sinh[c
/2] - I*d*e^2*f*Sinh[c/2] + 2*e*f^2*Sinh[c/2] - 6*d^2*e^2*f*x*Sinh[c/2] - (
2*I)*d*e*f^2*x*Sinh[c/2] + 2*f^3*x*Sinh[c/2] - 6*d^2*e*f^2*x^2*Sinh[c/2] -
I*d*f^3*x^2*Sinh[c/2] - 2*d^2*f^3*x^3*Sinh[c/2])/(8*a*d^3*(Cosh[c/2] + I*Si
nh[c/2])*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2])^2) - ((I/4)*(7*d^2*e
^2*f*Sinh[(d*x)/2] - 2*f^3*Sinh[(d*x)/2] + 14*d^2*e*f^2*x*Sinh[(d*x)/2] + 7
*d^2*f^3*x^2*Sinh[(d*x)/2]))/(a*d^4*(Cosh[c/2] + I*Sinh[c/2])*(Cosh[c/2 + (
d*x)/2] + I*Sinh[c/2 + (d*x)/2]))
```

fricas [C] time = 0.59, size = 3841, normalized size = 5.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (-8*I*d^2*e^2*f + 16*I*c*d*e*f^2 + (-8*I*c^2 + 4*I)*f^3 + (-9*I*d^2*f^3*x^2
 - 18*I*d^2*e*f^2*x - 9*I*d^2*e^2*f + 12*I*f^3 + (9*I*d^2*f^3*x^2 + 18*I*d^
2*e*f^2*x + 9*I*d^2*e^2*f - 12*I*f^3)*e^(6*d*x + 6*c) + 6*(3*d^2*f^3*x^2 +
6*d^2*e*f^2*x + 3*d^2*e^2*f - 4*f^3)*e^(5*d*x + 5*c) + (9*I*d^2*f^3*x^2 + 1
8*I*d^2*e*f^2*x + 9*I*d^2*e^2*f - 12*I*f^3)*e^(4*d*x + 4*c) + 12*(3*d^2*f^3
*x^2 + 6*d^2*e*f^2*x + 3*d^2*e^2*f - 4*f^3)*e^(3*d*x + 3*c) + (-9*I*d^2*f^3
*x^2 - 18*I*d^2*e*f^2*x - 9*I*d^2*e^2*f + 12*I*f^3)*e^(2*d*x + 2*c) + 6*(3*
d^2*f^3*x^2 + 6*d^2*e*f^2*x + 3*d^2*e^2*f - 4*f^3)*e^(d*x + c))*dilog(I*e^(
d*x + c)) + (9*I*d^2*f^3*x^2 + 18*I*d^2*e*f^2*x + 9*I*d^2*e^2*f - 28*I*f^3
+ (-9*I*d^2*f^3*x^2 - 18*I*d^2*e*f^2*x - 9*I*d^2*e^2*f + 28*I*f^3)*e^(6*d*x
```

+ 6*c) - 2*(9*d^2*f^3*x^2 + 18*d^2*e*f^2*x + 9*d^2*e^2*f - 28*f^3)*e^(5*d*
x + 5*c) + (-9*I*d^2*f^3*x^2 - 18*I*d^2*e*f^2*x - 9*I*d^2*e^2*f + 28*I*f^3)
*e^(4*d*x + 4*c) - 4*(9*d^2*f^3*x^2 + 18*d^2*e*f^2*x + 9*d^2*e^2*f - 28*f^3
)*e^(3*d*x + 3*c) + (9*I*d^2*f^3*x^2 + 18*I*d^2*e*f^2*x + 9*I*d^2*e^2*f - 2
8*I*f^3)*e^(2*d*x + 2*c) - 2*(9*d^2*f^3*x^2 + 18*d^2*e*f^2*x + 9*d^2*e^2*f
- 28*f^3)*e^(d*x + c))*dilog(-I*e^(d*x + c)) + (-8*I*d^2*f^3*x^2 - 16*I*d^2
*e*f^2*x - 16*I*c*d*e*f^2 + 8*I*c^2*f^3)*e^(6*d*x + 6*c) + 2*(3*d^3*f^3*x^3
+ 3*d^3*e^3 + 9*d^2*e^2*f - 2*(8*c + 1)*d*e*f^2 + 2*(4*c^2 - 1)*f^3 + (9*d
^3*e*f^2 + d^2*f^3)*x^2 + (9*d^3*e^2*f + 2*d^2*e*f^2 - 2*d*f^3)*x)*e^(5*d*x
+ 5*c) + (-12*I*d^3*f^3*x^3 - 12*I*d^3*e^3 - 36*I*d^2*e^2*f - 16*I*c*d*e*f
^2 + (8*I*c^2 + 4*I)*f^3 + (-36*I*d^3*e*f^2 - 44*I*d^2*f^3)*x^2 + (-36*I*d^
3*e^2*f - 88*I*d^2*e*f^2)*x)*e^(4*d*x + 4*c) + 4*(d^3*f^3*x^3 + d^3*e^3 + 4
*d^2*e^2*f - 2*(8*c + 1)*d*e*f^2 + 2*(4*c^2 - 1)*f^3 + (3*d^3*e*f^2 - 4*d^2
*f^3)*x^2 + (3*d^3*e^2*f - 8*d^2*e*f^2 - 2*d*f^3)*x)*e^(3*d*x + 3*c) + (12*
I*d^3*f^3*x^3 + 12*I*d^3*e^3 - 44*I*d^2*e^2*f + 16*I*c*d*e*f^2 + (-8*I*c^2
+ 8*I)*f^3 + (36*I*d^3*e*f^2 - 36*I*d^2*f^3)*x^2 + (36*I*d^3*e^2*f - 72*I*d
^2*e*f^2)*x)*e^(2*d*x + 2*c) + 2*(3*d^3*f^3*x^3 + 3*d^3*e^3 - d^2*e^2*f - 2
*(8*c + 1)*d*e*f^2 + 2*(4*c^2 - 1)*f^3 + 9*(d^3*e*f^2 - d^2*f^3)*x^2 + (9*d
^3*e^2*f - 18*d^2*e*f^2 - 2*d*f^3)*x)*e^(d*x + c) + (-3*I*d^3*e^3 + 9*I*c*d
^2*e^2*f + (-9*I*c^2 + 12*I)*d*e*f^2 + (3*I*c^3 - 12*I*c)*f^3 + (3*I*d^3*e^
3 - 9*I*c*d^2*e^2*f + (9*I*c^2 - 12*I)*d*e*f^2 + (-3*I*c^3 + 12*I*c)*f^3)*e
^(6*d*x + 6*c) + 6*(d^3*e^3 - 3*c*d^2*e^2*f + (3*c^2 - 4)*d*e*f^2 - (c^3 -
4*c)*f^3)*e^(5*d*x + 5*c) + (3*I*d^3*e^3 - 9*I*c*d^2*e^2*f + (9*I*c^2 - 12*
I)*d*e*f^2 + (-3*I*c^3 + 12*I*c)*f^3)*e^(4*d*x + 4*c) + 12*(d^3*e^3 - 3*c*d
^2*e^2*f + (3*c^2 - 4)*d*e*f^2 - (c^3 - 4*c)*f^3)*e^(3*d*x + 3*c) + (-3*I*d
^3*e^3 + 9*I*c*d^2*e^2*f + (-9*I*c^2 + 12*I)*d*e*f^2 + (3*I*c^3 - 12*I*c)*f
^3)*e^(2*d*x + 2*c) + 6*(d^3*e^3 - 3*c*d^2*e^2*f + (3*c^2 - 4)*d*e*f^2 - (c
^3 - 4*c)*f^3)*e^(d*x + c))*log(e^(d*x + c) + I) + (3*I*d^3*e^3 - 9*I*c*d^2
*e^2*f + (9*I*c^2 - 28*I)*d*e*f^2 + (-3*I*c^3 + 28*I*c)*f^3 + (-3*I*d^3*e^3
+ 9*I*c*d^2*e^2*f + (-9*I*c^2 + 28*I)*d*e*f^2 + (3*I*c^3 - 28*I*c)*f^3)*e^
(6*d*x + 6*c) - 2*(3*d^3*e^3 - 9*c*d^2*e^2*f + (9*c^2 - 28)*d*e*f^2 - (3*c^
3 - 28*c)*f^3)*e^(5*d*x + 5*c) + (-3*I*d^3*e^3 + 9*I*c*d^2*e^2*f + (-9*I*c^
2 + 28*I)*d*e*f^2 + (3*I*c^3 - 28*I*c)*f^3)*e^(4*d*x + 4*c) - 4*(3*d^3*e^3
- 9*c*d^2*e^2*f + (9*c^2 - 28)*d*e*f^2 - (3*c^3 - 28*c)*f^3)*e^(3*d*x + 3*c
) + (3*I*d^3*e^3 - 9*I*c*d^2*e^2*f + (9*I*c^2 - 28*I)*d*e*f^2 + (-3*I*c^3 +
28*I*c)*f^3)*e^(2*d*x + 2*c) - 2*(3*d^3*e^3 - 9*c*d^2*e^2*f + (9*c^2 - 28)
*d*e*f^2 - (3*c^3 - 28*c)*f^3)*e^(d*x + c))*log(e^(d*x + c) - I) + (3*I*d^3
*f^3*x^3 + 9*I*d^3*e*f^2*x^2 + 9*I*c*d^2*e^2*f - 9*I*c^2*d*e*f^2 + (3*I*c^3
- 28*I*c)*f^3 + (9*I*d^3*e^2*f - 28*I*d*f^3)*x + (-3*I*d^3*f^3*x^3 - 9*I*d
^3*e*f^2*x^2 - 9*I*c*d^2*e^2*f + 9*I*c^2*d*e*f^2 + (-3*I*c^3 + 28*I*c)*f^3
+ (-9*I*d^3*e^2*f + 28*I*d*f^3)*x)*e^(6*d*x + 6*c) - 2*(3*d^3*f^3*x^3 + 9*d
^3*e*f^2*x^2 + 9*c*d^2*e^2*f - 9*c^2*d*e*f^2 + (3*c^3 - 28*c)*f^3 + (9*d^3*
e^2*f - 28*d*f^3)*x)*e^(5*d*x + 5*c) + (-3*I*d^3*f^3*x^3 - 9*I*d^3*e*f^2*x^
2 - 9*I*c*d^2*e^2*f + 9*I*c^2*d*e*f^2 + (-3*I*c^3 + 28*I*c)*f^3 + (-9*I*d^3
*e^2*f + 28*I*d*f^3)*x)*e^(4*d*x + 4*c) - 4*(3*d^3*f^3*x^3 + 9*d^3*e*f^2*x^

```
2 + 9*c*d^2*e^2*f - 9*c^2*d*e*f^2 + (3*c^3 - 28*c)*f^3 + (9*d^3*e^2*f - 28*
d*f^3)*x)*e^(3*d*x + 3*c) + (3*I*d^3*f^3*x^3 + 9*I*d^3*e*f^2*x^2 + 9*I*c*d^
2*e^2*f - 9*I*c^2*d*e*f^2 + (3*I*c^3 - 28*I*c)*f^3 + (9*I*d^3*e^2*f - 28*I*
d*f^3)*x)*e^(2*d*x + 2*c) - 2*(3*d^3*f^3*x^3 + 9*d^3*e*f^2*x^2 + 9*c*d^2*e^
2*f - 9*c^2*d*e*f^2 + (3*c^3 - 28*c)*f^3 + (9*d^3*e^2*f - 28*d*f^3)*x)*e^(d
*x + c))*log(I*e^(d*x + c) + 1) + (-3*I*d^3*f^3*x^3 - 9*I*d^3*e*f^2*x^2 - 9
*I*c*d^2*e^2*f + 9*I*c^2*d*e*f^2 + (-3*I*c^3 + 12*I*c)*f^3 + (-9*I*d^3*e^2*
f + 12*I*d*f^3)*x + (3*I*d^3*f^3*x^3 + 9*I*d^3*e*f^2*x^2 + 9*I*c*d^2*e^2*f
- 9*I*c^2*d*e*f^2 + (3*I*c^3 - 12*I*c)*f^3 + (9*I*d^3*e^2*f - 12*I*d*f^3)*x
)*e^(6*d*x + 6*c) + 6*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*c^
2*d*e*f^2 + (c^3 - 4*c)*f^3 + (3*d^3*e^2*f - 4*d*f^3)*x)*e^(5*d*x + 5*c) +
(3*I*d^3*f^3*x^3 + 9*I*d^3*e*f^2*x^2 + 9*I*c*d^2*e^2*f - 9*I*c^2*d*e*f^2 +
(3*I*c^3 - 12*I*c)*f^3 + (9*I*d^3*e^2*f - 12*I*d*f^3)*x)*e^(4*d*x + 4*c) +
12*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + (c^3 -
4*c)*f^3 + (3*d^3*e^2*f - 4*d*f^3)*x)*e^(3*d*x + 3*c) + (-3*I*d^3*f^3*x^3 -
 9*I*d^3*e*f^2*x^2 - 9*I*c*d^2*e^2*f + 9*I*c^2*d*e*f^2 + (-3*I*c^3 + 12*I*c
)*f^3 + (-9*I*d^3*e^2*f + 12*I*d*f^3)*x)*e^(2*d*x + 2*c) + 6*(d^3*f^3*x^3 +
 3*d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + (c^3 - 4*c)*f^3 + (3*d^3
*e^2*f - 4*d*f^3)*x)*e^(d*x + c))*log(-I*e^(d*x + c) + 1) + (18*I*f^3*e^(6*
d*x + 6*c) + 36*f^3*e^(5*d*x + 5*c) + 18*I*f^3*e^(4*d*x + 4*c) + 72*f^3*e^(
3*d*x + 3*c) - 18*I*f^3*e^(2*d*x + 2*c) + 36*f^3*e^(d*x + c) - 18*I*f^3)*po
lylog(4, I*e^(d*x + c)) + (-18*I*f^3*e^(6*d*x + 6*c) - 36*f^3*e^(5*d*x + 5*
c) - 18*I*f^3*e^(4*d*x + 4*c) - 72*f^3*e^(3*d*x + 3*c) + 18*I*f^3*e^(2*d*x
+ 2*c) - 36*f^3*e^(d*x + c) + 18*I*f^3)*polylog(4, -I*e^(d*x + c)) + (18*I*
d*f^3*x + 18*I*d*e*f^2 + (-18*I*d*f^3*x - 18*I*d*e*f^2)*e^(6*d*x + 6*c) - 3
6*(d*f^3*x + d*e*f^2)*e^(5*d*x + 5*c) + (-18*I*d*f^3*x - 18*I*d*e*f^2)*e^(4
*d*x + 4*c) - 72*(d*f^3*x + d*e*f^2)*e^(3*d*x + 3*c) + (18*I*d*f^3*x + 18*I
*d*e*f^2)*e^(2*d*x + 2*c) - 36*(d*f^3*x + d*e*f^2)*e^(d*x + c))*polylog(3,
I*e^(d*x + c)) + (-18*I*d*f^3*x - 18*I*d*e*f^2 + (18*I*d*f^3*x + 18*I*d*e*f
^2)*e^(6*d*x + 6*c) + 36*(d*f^3*x + d*e*f^2)*e^(5*d*x + 5*c) + (18*I*d*f^3*
x + 18*I*d*e*f^2)*e^(4*d*x + 4*c) + 72*(d*f^3*x + d*e*f^2)*e^(3*d*x + 3*c)
+ (-18*I*d*f^3*x - 18*I*d*e*f^2)*e^(2*d*x + 2*c) + 36*(d*f^3*x + d*e*f^2)*e
^(d*x + c))*polylog(3, -I*e^(d*x + c)))/(8*a*d^4*e^(6*d*x + 6*c) - 16*I*a*d
^4*e^(5*d*x + 5*c) + 8*a*d^4*e^(4*d*x + 4*c) - 32*I*a*d^4*e^(3*d*x + 3*c) -
 8*a*d^4*e^(2*d*x + 2*c) - 16*I*a*d^4*e^(d*x + c) - 8*a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\operatorname{sech}\left(dx+c\right)^{3}}{i\,a\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sech(d*x + c)^3/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.50, size = 2026, normalized size = 3.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -9/4*I*f^3*polylog(4,-I*exp(d*x+c))/a/d^4+9/4*I*f^3*polylog(4,I*exp(d*x+c))
/a/d^4+1/4*(2*I*f^3-44*I*d^2*e*f^2*x*exp(2*d*x+2*c)-18*I*d^3*e*f^2*x^2*exp(
4*d*x+4*c)-18*I*d^3*e^2*f*x*exp(4*d*x+4*c)+18*I*d^3*e^2*f*x*exp(2*d*x+2*c)-
36*I*d^2*e*f^2*x*exp(4*d*x+4*c)-4*I*d^2*e^2*f-4*I*d^2*f^3*x^2-8*I*d^2*e*f^2
*x+3*d^3*e^3*exp(d*x+c)+2*d^3*e^3*exp(3*d*x+3*c)+3*d^3*e^3*exp(5*d*x+5*c)+2
*I*f^3*exp(4*d*x+4*c)+4*I*f^3*exp(2*d*x+2*c)+9*d^3*e*f^2*x^2*exp(d*x+c)+9*d
^3*e^2*f*x*exp(d*x+c)-2*d^2*e*f^2*x*exp(d*x+c)-2*f^3*exp(d*x+c)-22*I*d^2*e^
2*f*exp(2*d*x+2*c)+6*I*d^3*f^3*x^3*exp(2*d*x+2*c)-6*I*d^3*f^3*x^3*exp(4*d*x
+4*c)-18*I*d^2*f^3*x^2*exp(4*d*x+4*c)-18*I*d^2*e^2*f*exp(4*d*x+4*c)+18*I*d^
3*e*f^2*x^2*exp(2*d*x+2*c)-22*I*d^2*f^3*x^2*exp(2*d*x+2*c)+6*d^3*e*f^2*x^2*
exp(3*d*x+3*c)+6*d^3*e^2*f*x*exp(3*d*x+3*c)+9*d^3*e*f^2*x^2*exp(5*d*x+5*c)+
9*d^3*e^2*f*x*exp(5*d*x+5*c)+18*d^2*e*f^2*x*exp(5*d*x+5*c)+16*d^2*e*f^2*x*e
xp(3*d*x+3*c)-2*f^3*exp(5*d*x+5*c)-4*f^3*exp(3*d*x+3*c)-d^2*f^3*x^2*exp(d*x
+c)-d^2*e^2*f*exp(d*x+c)-2*d*f^3*x*exp(d*x+c)-2*d*e*f^2*exp(d*x+c)+3*d^3*f^
3*x^3*exp(d*x+c)-4*d*e*f^2*exp(3*d*x+3*c)+3*d^3*f^3*x^3*exp(5*d*x+5*c)+9*d^
2*f^3*x^2*exp(5*d*x+5*c)+8*d^2*f^3*x^2*exp(3*d*x+3*c)+9*d^2*e^2*f*exp(5*d*x
+5*c)+8*d^2*e^2*f*exp(3*d*x+3*c)-2*d*f^3*x*exp(5*d*x+5*c)-4*d*f^3*x*exp(3*d
*x+3*c)-2*d*e*f^2*exp(5*d*x+5*c)-6*I*d^3*e^3*exp(4*d*x+4*c)+6*I*d^3*e^3*exp
(2*d*x+2*c)+2*d^3*f^3*x^3*exp(3*d*x+3*c))/(exp(d*x+c)+I)^2/(exp(d*x+c)-I)^4
/d^4/a+9/8*I/a/d^3*ln(1+I*exp(d*x+c))*c^2*e*f^2-9/8*I/a/d^3*e*f^2*c^2*ln(ex
p(d*x+c)-I)+9/8*I/a/d^3*e*f^2*c^2*ln(exp(d*x+c)+I)+9/8*I/a/d^2*e^2*f*c*ln(e
xp(d*x+c)-I)-9/8*I/a/d^2*e^2*f*c*ln(exp(d*x+c)+I)-9/8*I/a/d^3*ln(1-I*exp(d*
x+c))*c^2*e*f^2-9/8*I/a/d*ln(1+I*exp(d*x+c))*e*f^2*x^2-9/4*I/a/d^2*polylog(
2,-I*exp(d*x+c))*e*f^2*x+9/8*I/a/d*ln(1-I*exp(d*x+c))*e*f^2*x^2+9/4*I/a/d^2
*polylog(2,I*exp(d*x+c))*e*f^2*x-9/8*I/a/d*ln(1+I*exp(d*x+c))*e^2*f*x-9/8*I
/a/d^2*ln(1+I*exp(d*x+c))*c*e^2*f+9/8*I/a/d*ln(1-I*exp(d*x+c))*e^2*f*x+9/8*
I/a/d^2*ln(1-I*exp(d*x+c))*c*e^2*f-I/a/d^2*f^3*x^2-I/a/d^4*f^3*c^2+7/2*I/a/
d^4*f^3*polylog(2,-I*exp(d*x+c))-3/2*I/a/d^4*f^3*polylog(2,I*exp(d*x+c))-3/
8*I/a/d*e^3*ln(exp(d*x+c)-I)+3/8*I/a/d*e^3*ln(exp(d*x+c)+I)-9/8*I/a/d^2*e^2
*f*polylog(2,-I*exp(d*x+c))+9/8*I/a/d^2*e^2*f*polylog(2,I*exp(d*x+c))+2*I/a
/d^4*f^3*c*ln(exp(d*x+c))-7/2*I/a/d^4*f^3*c*ln(exp(d*x+c)-I)+3/2*I/a/d^4*f^
3*c*ln(exp(d*x+c)+I)+3/8*I/a/d^4*f^3*c^3*ln(exp(d*x+c)-I)-2*I/a/d^3*f^3*c*x
-3/2*I/a/d^3*e*f^2*ln(exp(d*x+c)+I)+9/4*I/a/d^3*e*f^2*polylog(3,-I*exp(d*x+
c))-9/4*I/a/d^3*e*f^2*polylog(3,I*exp(d*x+c))-2*I/a/d^3*e*f^2*ln(exp(d*x+c)
)+7/2*I/a/d^3*e*f^2*ln(exp(d*x+c)-I)+7/2*I/a/d^3*f^3*ln(1+I*exp(d*x+c))*x+7
/2*I/a/d^4*f^3*ln(1+I*exp(d*x+c))*c-3/2*I/a/d^3*f^3*ln(1-I*exp(d*x+c))*x-3/
```

```
2*I/a/d^4*f^3*ln(1-I*exp(d*x+c))*c-3/8*I/a/d*f^3*ln(1+I*exp(d*x+c))*x^3-3/8
*I/a/d^4*f^3*ln(1+I*exp(d*x+c))*c^3-9/8*I/a/d^2*f^3*polylog(2,-I*exp(d*x+c)
)*x^2+9/4*I/a/d^3*f^3*polylog(3,-I*exp(d*x+c))*x+3/8*I/a/d*f^3*ln(1-I*exp(d
*x+c))*x^3+3/8*I/a/d^4*f^3*ln(1-I*exp(d*x+c))*c^3+9/8*I/a/d^2*f^3*polylog(2
,I*exp(d*x+c))*x^2-9/4*I/a/d^3*f^3*polylog(3,I*exp(d*x+c))*x-3/8*I/a/d^4*f^
3*c^3*ln(exp(d*x+c)+I)
```

maxima [B] time = 1.41, size = 1333, normalized size = 2.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)

[Out] -1/8*e^3*(64*(3*e^(-d*x - c) - 6*I*e^(-2*d*x - 2*c) + 2*e^(-3*d*x - 3*c) +
6*I*e^(-4*d*x - 4*c) + 3*e^(-5*d*x - 5*c))/((64*I*a*e^(-d*x - c) - 32*a*e^(
-2*d*x - 2*c) + 128*I*a*e^(-3*d*x - 3*c) + 32*a*e^(-4*d*x - 4*c) + 64*I*a*e
^(-5*d*x - 5*c) + 32*a*e^(-6*d*x - 6*c) - 32*a)*d) + 3*I*log(e^(-d*x - c) +
 I)/(a*d) - 3*I*log(e^(-d*x - c) - I)/(a*d)) - 2*I*e*f^2*x/(a*d^2) + (-4*I*
d^2*f^3*x^2 - 8*I*d^2*e*f^2*x - 4*I*d^2*e^2*f + 2*I*f^3 + (3*d^3*f^3*x^3*e^
(5*c) + 9*(d^3*e*f^2 + d^2*f^3)*x^2*e^(5*c) + (9*d^3*e^2*f + 18*d^2*e*f^2 -
 2*d*f^3)*x*e^(5*c) + (9*d^2*e^2*f - 2*d*e*f^2 - 2*f^3)*e^(5*c))*e^(5*d*x)
+ (-6*I*d^3*f^3*x^3*e^(4*c) + (-18*I*d^3*e*f^2 - 18*I*d^2*f^3)*x^2*e^(4*c)
+ (-18*I*d^3*e^2*f - 36*I*d^2*e*f^2)*x*e^(4*c) + (-18*I*d^2*e^2*f + 2*I*f^3
)*e^(4*c))*e^(4*d*x) + 2*(d^3*f^3*x^3*e^(3*c) + (3*d^3*e*f^2 + 4*d^2*f^3)*x
^2*e^(3*c) + (3*d^3*e^2*f + 8*d^2*e*f^2 - 2*d*f^3)*x*e^(3*c) + 2*(2*d^2*e^2
*f - d*e*f^2 - f^3)*e^(3*c))*e^(3*d*x) + (6*I*d^3*f^3*x^3*e^(2*c) + (18*I*d
^3*e*f^2 - 22*I*d^2*f^3)*x^2*e^(2*c) + (18*I*d^3*e^2*f - 44*I*d^2*e*f^2)*x*
e^(2*c) + (-22*I*d^2*e^2*f + 4*I*f^3)*e^(2*c))*e^(2*d*x) + (3*d^3*f^3*x^3*e
^c + (9*d^3*e*f^2 - d^2*f^3)*x^2*e^c + (9*d^3*e^2*f - 2*d^2*e*f^2 - 2*d*f^3
)*x*e^c - (d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*e^c)*e^(d*x))/(4*a*d^4*e^(6*d*x +
 6*c) - 8*I*a*d^4*e^(5*d*x + 5*c) + 4*a*d^4*e^(4*d*x + 4*c) - 16*I*a*d^4*e^
(3*d*x + 3*c) - 4*a*d^4*e^(2*d*x + 2*c) - 8*I*a*d^4*e^(d*x + c) - 4*a*d^4)
- 9/8*I*(d^2*x^2*log(I*e^(d*x + c) + 1) + 2*d*x*dilog(-I*e^(d*x + c)) - 2*p
olylog(3, -I*e^(d*x + c)))*e*f^2/(a*d^3) + 9/8*I*(d^2*x^2*log(-I*e^(d*x + c
) + 1) + 2*d*x*dilog(I*e^(d*x + c)) - 2*polylog(3, I*e^(d*x + c)))*e*f^2/(a
*d^3) + 7/2*I*e*f^2*log(I*e^(d*x + c) + 1)/(a*d^3) - 3/2*I*e*f^2*log(I*e^(d
*x + c) - 1)/(a*d^3) - 3/8*I*(d^3*x^3*log(I*e^(d*x + c) + 1) + 3*d^2*x^2*di
log(-I*e^(d*x + c)) - 6*d*x*polylog(3, -I*e^(d*x + c)) + 6*polylog(4, -I*e^
(d*x + c)))*f^3/(a*d^4) + 3/8*I*(d^3*x^3*log(-I*e^(d*x + c) + 1) + 3*d^2*x^
2*dilog(I*e^(d*x + c)) - 6*d*x*polylog(3, I*e^(d*x + c)) + 6*polylog(4, I*e
^(d*x + c)))*f^3/(a*d^4) - 1/8*I*(9*d^2*e^2*f - 28*f^3)*(d*x*log(I*e^(d*x +
 c) + 1) + dilog(-I*e^(d*x + c)))/(a*d^4) + 3/8*I*(3*d^2*e^2*f - 4*f^3)*(d*
x*log(-I*e^(d*x + c) + 1) + dilog(I*e^(d*x + c)))/(a*d^4) - 1/32*(3*I*d^4*f
```

```
^3*x^4 + 12*I*d^4*e*f^2*x^3 + (18*I*d^2*e^2*f - 24*I*f^3)*d^2*x^2)/(a*d^4)
+ 1/32*(3*I*d^4*f^3*x^4 + 12*I*d^4*e*f^2*x^3 + (18*I*d^2*e^2*f - 56*I*f^3)*
d^2*x^2)/(a*d^4)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{{\mathrm{cosh}\left(c+d\,x\right)}^3\,\left(a+a\,\mathrm{sinh}\left(c+d\,x\right)\,1{}\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cosh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)),x)
[Out] int((e + f*x)^3/(cosh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sech(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
[Out] Timed out
```

3.284 $\int \frac{(e+fx)^2\text{sech}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=423

$$\frac{3if^2\text{Li}_3\left(-ie^{c+dx}\right)}{4ad^3}-\frac{3if^2\text{Li}_3\left(ie^{c+dx}\right)}{4ad^3}-\frac{if^2\text{sech}^2(c+dx)}{12ad^3}-\frac{5f^2\tan^{-1}(\sinh(c+dx))}{6ad^3}+\frac{if^2\log(\cosh(c+dx))}{3ad^3}-\frac{f^2\tanh}{}$$

```
[Out] 3/4*(f*x+e)^2*arctan(exp(d*x+c))/a/d-5/6*f^2*arctan(sinh(d*x+c))/a/d^3-3/4*
I*f^2*polylog(3,I*exp(d*x+c))/a/d^3+3/4*I*f^2*polylog(3,-I*exp(d*x+c))/a/d^
3+1/3*I*f^2*ln(cosh(d*x+c))/a/d^3-3/4*I*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/
a/d^2+3/4*I*f*(f*x+e)*polylog(2,I*exp(d*x+c))/a/d^2+3/4*f*(f*x+e)*sech(d*x+
c)/a/d^2-1/3*I*f*(f*x+e)*tanh(d*x+c)/a/d^2+1/6*f*(f*x+e)*sech(d*x+c)^3/a/d^
2+1/4*I*(f*x+e)^2*sech(d*x+c)^4/a/d-1/12*I*f^2*sech(d*x+c)^2/a/d^3-1/12*f^2
*sech(d*x+c)*tanh(d*x+c)/a/d^3+3/8*(f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/a/d-1/
6*I*f*(f*x+e)*sech(d*x+c)^2*tanh(d*x+c)/a/d^2+1/4*(f*x+e)^2*sech(d*x+c)^3*t
anh(d*x+c)/a/d
```

Rubi [A] time = 0.40, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.387, Rules used = {5571, 4186, 3768, 3770, 4180, 2531, 2282, 6589, 5451, 4185, 4184, 3475}

$$-\frac{3if(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{4ad^2}+\frac{3if(e+fx)\text{PolyLog}\left(2,ie^{c+dx}\right)}{4ad^2}+\frac{3if^2\text{PolyLog}\left(3,-ie^{c+dx}\right)}{4ad^3}-\frac{3if^2\text{PolyLog}\left(3,\right.}{4ad^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sech[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (3*(e + f*x)^2*ArcTan[E^(c + d*x)])/(4*a*d) - (5*f^2*ArcTan[Sinh[c + d*x]])
/(6*a*d^3) + ((I/3)*f^2*Log[Cosh[c + d*x]])/(a*d^3) - (((3*I)/4)*f*(e + f*x
)*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^2) + (((3*I)/4)*f*(e + f*x)*PolyLog[2,
 I*E^(c + d*x)])/(a*d^2) + (((3*I)/4)*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(a*
d^3) - (((3*I)/4)*f^2*PolyLog[3, I*E^(c + d*x)])/(a*d^3) + (3*f*(e + f*x)*S
ech[c + d*x])/(4*a*d^2) - ((I/12)*f^2*Sech[c + d*x]^2)/(a*d^3) + (f*(e + f*
x)*Sech[c + d*x]^3)/(6*a*d^2) + ((I/4)*(e + f*x)^2*Sech[c + d*x]^4)/(a*d) -
 ((I/3)*f*(e + f*x)*Tanh[c + d*x])/(a*d^2) - (f^2*Sech[c + d*x]*Tanh[c + d*
x])/(12*a*d^3) + (3*(e + f*x)^2*Sech[c + d*x]*Tanh[c + d*x])/(8*a*d) - ((I/
6)*f*(e + f*x)*Sech[c + d*x]^2*Tanh[c + d*x])/(a*d^2) + ((e + f*x)^2*Sech[c
 + d*x]^3*Tanh[c + d*x])/(4*a*d)
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
```

```
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3768

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Csc[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[(b^2*(n - 2))/(n - 1), I
nt[(b*Csc[c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] &&
IntegerQ[2*n]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5571

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sech[c
 + d*x]^(n + 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(n + 1)*T
anh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && Eq
Q[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\operatorname{sech}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int (e+fx)^2\operatorname{sech}^4(c+dx)\tanh(c+dx)\,dx}{a}+\frac{\int (e+fx)^2\operatorname{sech}^5(c+dx)\,dx}{a}$$

$$= \frac{f(e+fx)\operatorname{sech}^3(c+dx)}{6ad^2}+\frac{i(e+fx)^2\operatorname{sech}^4(c+dx)}{4ad}+\frac{(e+fx)^2\operatorname{sech}^3(c+dx)\,\text{ta}}{4ad}$$

$$= \frac{3f(e+fx)\operatorname{sech}(c+dx)}{4ad^2}-\frac{if^2\operatorname{sech}^2(c+dx)}{12ad^3}+\frac{f(e+fx)\operatorname{sech}^3(c+dx)}{6ad^2}+\frac{i(e+}{}$$

$$= \frac{3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{4ad}-\frac{5f^2\tan^{-1}(\sinh(c+dx))}{6ad^3}+\frac{3f(e+fx)\operatorname{sech}(c+dx)}{4ad^2}$$

$$= \frac{3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{4ad}-\frac{5f^2\tan^{-1}(\sinh(c+dx))}{6ad^3}+\frac{if^2\log(\cosh(c+dx))}{3ad^3}-$$

$$= \frac{3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{4ad}-\frac{5f^2\tan^{-1}(\sinh(c+dx))}{6ad^3}+\frac{if^2\log(\cosh(c+dx))}{3ad^3}-$$

$$= \frac{3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{4ad}-\frac{5f^2\tan^{-1}(\sinh(c+dx))}{6ad^3}+\frac{if^2\log(\cosh(c+dx))}{3ad^3}-$$

Mathematica [B] time = 12.96, size = 1284, normalized size = 3.04

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sech[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] -1/24*((9*d^2*e^2 - 28*f^2)*x + 9*d^2*e*f*x^2 + 3*d^2*f^2*x^3 + 18*d*e*(1 +
 I*E^c)*f*x*Log[1 - I*E^(-c - d*x)] + 9*d*(1 + I*E^c)*f^2*x^2*Log[1 - I*E^(
-c - d*x)] - ((1 + I*E^c)*(9*d^2*e^2 - 28*f^2)*(d*x - Log[I - E^(c + d*x)])
)/d - 18*e*(1 + I*E^c)*f*PolyLog[2, I*E^(-c - d*x)] - 18*(1 + I*E^c)*f^2*(x
*PolyLog[2, I*E^(-c - d*x)] + PolyLog[3, I*E^(-c - d*x)]/d))/(a*d^2*(-I + E
^c)) - (3*d^2*e^2*x - 4*f^2*x + 3*d^2*e*f*x^2 + d^2*f^2*x^3 - (6*I)*d*e*f*x
*Log[1 + I*Cosh[c + d*x] - I*Sinh[c + d*x]]*(I + Cosh[c] + Sinh[c]) - (3*I)
*d*f^2*x^2*Log[1 + I*Cosh[c + d*x] - I*Sinh[c + d*x]]*(I + Cosh[c] + Sinh[c
]) + (I*(3*d^2*e^2 - 4*f^2)*(d*x - Log[I + Cosh[c + d*x] + Sinh[c + d*x]])*
(I + Cosh[c] + Sinh[c]))/d + (6*I)*e*f*PolyLog[2, (-I)*(Cosh[c + d*x] - Sin
h[c + d*x])]*(I + Cosh[c] + Sinh[c]) + ((6*I)*f^2*(d*x*PolyLog[2, (-I)*(Cos
h[c + d*x] - Sinh[c + d*x])] + PolyLog[3, (-I)*(Cosh[c + d*x] - Sinh[c + d*
x])])*(I + Cosh[c] + Sinh[c]))/d)/(8*a*d^2*(I + Cosh[c] + Sinh[c])) + ((3*e
^2*x*Cosh[c])/(4*a) + (3*e^2*x*Sinh[c])/(4*a))/(1 + Cosh[2*c] + Sinh[2*c])
+ ((3*e*f*x^2*Cosh[c])/(4*a) + (3*e*f*x^2*Sinh[c])/(4*a))/(1 + Cosh[2*c] +
Sinh[2*c]) + ((f^2*x^3*Cosh[c])/(4*a) + (f^2*x^3*Sinh[c])/(4*a))/(1 + Cosh[
```

```
2*c] + Sinh[2*c]) - ((I/8)*(e^2 + 2*e*f*x + f^2*x^2))/(a*d*(Cosh[c/2 + (d*x
)/2] - I*Sinh[c/2 + (d*x)/2])^2) + ((I/2)*(e*f*Sinh[(d*x)/2] + f^2*x*Sinh[(
d*x)/2]))/(a*d^2*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2 + (d*x)/2] - I*Sinh[c/
2 + (d*x)/2])) + ((I/8)*(e^2 + 2*e*f*x + f^2*x^2))/(a*d*(Cosh[c/2 + (d*x)/2
] + I*Sinh[c/2 + (d*x)/2])^4) - ((I/6)*(e*f*Sinh[(d*x)/2] + f^2*x*Sinh[(d*x
)/2]))/(a*d^2*(Cosh[c/2] + I*Sinh[c/2])*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 +
 (d*x)/2])^3) + ((3*I)*d^2*e^2*Cosh[c/2] + d*e*f*Cosh[c/2] - I*f^2*Cosh[c/2
] + (6*I)*d^2*e*f*x*Cosh[c/2] + d*f^2*x*Cosh[c/2] + (3*I)*d^2*f^2*x^2*Cosh[
c/2] - 3*d^2*e^2*Sinh[c/2] - I*d*e*f*Sinh[c/2] + f^2*Sinh[c/2] - 6*d^2*e*f*
x*Sinh[c/2] - I*d*f^2*x*Sinh[c/2] - 3*d^2*f^2*x^2*Sinh[c/2])/(12*a*d^3*(Cos
h[c/2] + I*Sinh[c/2])*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2])^2) - ((
(7*I)/6)*(e*f*Sinh[(d*x)/2] + f^2*x*Sinh[(d*x)/2]))/(a*d^2*(Cosh[c/2] + I*S
inh[c/2])*(Cosh[c/2 + (d*x)/2] + I*Sinh[c/2 + (d*x)/2]))
```

fricas [C] time = 0.70, size = 2055, normalized size = 4.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (-16*I*d*e*f + 16*I*c*f^2 + (-18*I*d*f^2*x - 18*I*d*e*f + (18*I*d*f^2*x + 1
8*I*d*e*f)*e^(6*d*x + 6*c) + 36*(d*f^2*x + d*e*f)*e^(5*d*x + 5*c) + (18*I*d
*f^2*x + 18*I*d*e*f)*e^(4*d*x + 4*c) + 72*(d*f^2*x + d*e*f)*e^(3*d*x + 3*c)
 + (-18*I*d*f^2*x - 18*I*d*e*f)*e^(2*d*x + 2*c) + 36*(d*f^2*x + d*e*f)*e^(d
*x + c))*dilog(I*e^(d*x + c)) + (18*I*d*f^2*x + 18*I*d*e*f + (-18*I*d*f^2*x
 - 18*I*d*e*f)*e^(6*d*x + 6*c) - 36*(d*f^2*x + d*e*f)*e^(5*d*x + 5*c) + (-1
8*I*d*f^2*x - 18*I*d*e*f)*e^(4*d*x + 4*c) - 72*(d*f^2*x + d*e*f)*e^(3*d*x +
 3*c) + (18*I*d*f^2*x + 18*I*d*e*f)*e^(2*d*x + 2*c) - 36*(d*f^2*x + d*e*f)*
e^(d*x + c))*dilog(-I*e^(d*x + c)) + (-16*I*d*f^2*x - 16*I*c*f^2)*e^(6*d*x
+ 6*c) + 2*(9*d^2*f^2*x^2 + 9*d^2*e^2 + 18*d*e*f - 2*(8*c + 1)*f^2 + 2*(9*d
^2*e*f + d*f^2)*x)*e^(5*d*x + 5*c) + (-36*I*d^2*f^2*x^2 - 36*I*d^2*e^2 - 72
*I*d*e*f - 16*I*c*f^2 + (-72*I*d^2*e*f - 88*I*d*f^2)*x)*e^(4*d*x + 4*c) + 4
*(3*d^2*f^2*x^2 + 3*d^2*e^2 + 8*d*e*f - 2*(8*c + 1)*f^2 + 2*(3*d^2*e*f - 4*
d*f^2)*x)*e^(3*d*x + 3*c) + (36*I*d^2*f^2*x^2 + 36*I*d^2*e^2 - 88*I*d*e*f +
 16*I*c*f^2 + (72*I*d^2*e*f - 72*I*d*f^2)*x)*e^(2*d*x + 2*c) + 2*(9*d^2*f^2
*x^2 + 9*d^2*e^2 - 2*d*e*f - 2*(8*c + 1)*f^2 + 18*(d^2*e*f - d*f^2)*x)*e^(d
*x + c) + (-9*I*d^2*e^2 + 18*I*c*d*e*f + (-9*I*c^2 + 12*I)*f^2 + (9*I*d^2*e
^2 - 18*I*c*d*e*f + (9*I*c^2 - 12*I)*f^2)*e^(6*d*x + 6*c) + 6*(3*d^2*e^2 -
6*c*d*e*f + (3*c^2 - 4)*f^2)*e^(5*d*x + 5*c) + (9*I*d^2*e^2 - 18*I*c*d*e*f
+ (9*I*c^2 - 12*I)*f^2)*e^(4*d*x + 4*c) + 12*(3*d^2*e^2 - 6*c*d*e*f + (3*c^
2 - 4)*f^2)*e^(3*d*x + 3*c) + (-9*I*d^2*e^2 + 18*I*c*d*e*f + (-9*I*c^2 + 12
*I)*f^2)*e^(2*d*x + 2*c) + 6*(3*d^2*e^2 - 6*c*d*e*f + (3*c^2 - 4)*f^2)*e^(d
*x + c))*log(e^(d*x + c) + I) + (9*I*d^2*e^2 - 18*I*c*d*e*f + (9*I*c^2 - 28
```

```
*I)*f^2 + (-9*I*d^2*e^2 + 18*I*c*d*e*f + (-9*I*c^2 + 28*I)*f^2)*e^(6*d*x +
6*c) - 2*(9*d^2*e^2 - 18*c*d*e*f + (9*c^2 - 28)*f^2)*e^(5*d*x + 5*c) + (-9*
I*d^2*e^2 + 18*I*c*d*e*f + (-9*I*c^2 + 28*I)*f^2)*e^(4*d*x + 4*c) - 4*(9*d^
2*e^2 - 18*c*d*e*f + (9*c^2 - 28)*f^2)*e^(3*d*x + 3*c) + (9*I*d^2*e^2 - 18*
I*c*d*e*f + (9*I*c^2 - 28*I)*f^2)*e^(2*d*x + 2*c) - 2*(9*d^2*e^2 - 18*c*d*e
*f + (9*c^2 - 28)*f^2)*e^(d*x + c))*log(e^(d*x + c) - I) + (9*I*d^2*f^2*x^2
 + 18*I*d^2*e*f*x + 18*I*c*d*e*f - 9*I*c^2*f^2 + (-9*I*d^2*f^2*x^2 - 18*I*d
^2*e*f*x - 18*I*c*d*e*f + 9*I*c^2*f^2)*e^(6*d*x + 6*c) - 18*(d^2*f^2*x^2 +
2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*e^(5*d*x + 5*c) + (-9*I*d^2*f^2*x^2 - 18
*I*d^2*e*f*x - 18*I*c*d*e*f + 9*I*c^2*f^2)*e^(4*d*x + 4*c) - 36*(d^2*f^2*x^
2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*e^(3*d*x + 3*c) + (9*I*d^2*f^2*x^2 +
 18*I*d^2*e*f*x + 18*I*c*d*e*f - 9*I*c^2*f^2)*e^(2*d*x + 2*c) - 18*(d^2*f^2
*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*e^(d*x + c))*log(I*e^(d*x + c) +
1) + (-9*I*d^2*f^2*x^2 - 18*I*d^2*e*f*x - 18*I*c*d*e*f + 9*I*c^2*f^2 + (9*I
*d^2*f^2*x^2 + 18*I*d^2*e*f*x + 18*I*c*d*e*f - 9*I*c^2*f^2)*e^(6*d*x + 6*c)
 + 18*(d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*e^(5*d*x + 5*c) + (
9*I*d^2*f^2*x^2 + 18*I*d^2*e*f*x + 18*I*c*d*e*f - 9*I*c^2*f^2)*e^(4*d*x + 4
*c) + 36*(d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*e^(3*d*x + 3*c)
+ (-9*I*d^2*f^2*x^2 - 18*I*d^2*e*f*x - 18*I*c*d*e*f + 9*I*c^2*f^2)*e^(2*d*x
 + 2*c) + 18*(d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*e^(d*x + c))
*log(-I*e^(d*x + c) + 1) + (-18*I*f^2*e^(6*d*x + 6*c) - 36*f^2*e^(5*d*x + 5
*c) - 18*I*f^2*e^(4*d*x + 4*c) - 72*f^2*e^(3*d*x + 3*c) + 18*I*f^2*e^(2*d*x
 + 2*c) - 36*f^2*e^(d*x + c) + 18*I*f^2)*polylog(3, I*e^(d*x + c)) + (18*I*
f^2*e^(6*d*x + 6*c) + 36*f^2*e^(5*d*x + 5*c) + 18*I*f^2*e^(4*d*x + 4*c) + 7
2*f^2*e^(3*d*x + 3*c) - 18*I*f^2*e^(2*d*x + 2*c) + 36*f^2*e^(d*x + c) - 18*
I*f^2)*polylog(3, -I*e^(d*x + c)))/(24*a*d^3*e^(6*d*x + 6*c) - 48*I*a*d^3*e
^(5*d*x + 5*c) + 24*a*d^3*e^(4*d*x + 4*c) - 96*I*a*d^3*e^(3*d*x + 3*c) - 24
*a*d^3*e^(2*d*x + 2*c) - 48*I*a*d^3*e^(d*x + c) - 24*a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{sech}\left(dx+c\right)^{3}}{i\,a \sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sech(d*x + c)^3/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.36, size = 1044, normalized size = 2.47

$$\frac{9d^{2}f^{2}x^{2}\mathrm{e}^{dx+c}+9d^{2}e^{2}\mathrm{e}^{dx+c}+6d^{2}f^{2}x^{2}\mathrm{e}^{3dx+3c}+18d\,f^{2}x\,\mathrm{e}^{5dx+5c}+18def\,\mathrm{e}^{5dx+5c}+9d^{2}f^{2}x^{2}\mathrm{e}^{5dx+5c}-4f^{2}\mathrm{e}^{3dx+3c}-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 1/12*(9*d^2*f^2*x^2*exp(d*x+c)+9*d^2*e^2*exp(d*x+c)+6*d^2*f^2*x^2*exp(3*d*x
+3*c)+18*d*f^2*x*exp(5*d*x+5*c)+18*d*e*f*exp(5*d*x+5*c)+9*d^2*f^2*x^2*exp(5
*d*x+5*c)-18*I*d^2*e^2*exp(4*d*x+4*c)+18*I*d^2*e^2*exp(2*d*x+2*c)-4*f^2*exp
(3*d*x+3*c)-2*d*f^2*x*exp(d*x+c)-2*d*e*f*exp(d*x+c)+16*d*f^2*x*exp(3*d*x+3*
c)+16*d*e*f*exp(3*d*x+3*c)+18*d^2*e*f*x*exp(d*x+c)-2*f^2*exp(d*x+c)-44*I*d*
e*f*exp(2*d*x+2*c)+6*d^2*e^2*exp(3*d*x+3*c)+9*d^2*e^2*exp(5*d*x+5*c)-2*f^2*
exp(5*d*x+5*c)+36*I*d^2*e*f*x*exp(2*d*x+2*c)-36*I*d^2*e*f*x*exp(4*d*x+4*c)-
18*I*d^2*f^2*x^2*exp(4*d*x+4*c)-36*I*d*f^2*x*exp(4*d*x+4*c)-36*I*d*e*f*exp(
4*d*x+4*c)-44*I*d*f^2*x*exp(2*d*x+2*c)+12*d^2*e*f*x*exp(3*d*x+3*c)+18*d^2*e
*f*x*exp(5*d*x+5*c)+18*I*d^2*f^2*x^2*exp(2*d*x+2*c)-8*I*d*f^2*x-8*I*d*f*e)/
(exp(d*x+c)+I)^2/(exp(d*x+c)-I)^4/d^3/a-3/8*I/d^3/a*ln(1-I*exp(d*x+c))*c^2*
f^2+3/4*I/d^2/a*ln(1-I*exp(d*x+c))*c*e*f+3/4*I/d/a*ln(1-I*exp(d*x+c))*e*f*x
+3/8*I/d^3/a*c^2*f^2*ln(exp(d*x+c)+I)-3/4*I/d^2/a*e*f*polylog(2,-I*exp(d*x+
c))-3/4*I/d/a*ln(1+I*exp(d*x+c))*e*f*x+3/4*I*f^2*polylog(3,-I*exp(d*x+c))/a
/d^3+3/4*I/d^2/a*e*f*polylog(2,I*exp(d*x+c))+3/4*I/d^2/a*e*f*c*ln(exp(d*x+c
)-I)-2/3*I/d^3/a*f^2*ln(exp(d*x+c))-1/2*I/d^3/a*f^2*ln(exp(d*x+c)+I)-3/4*I/
d^2/a*ln(1+I*exp(d*x+c))*c*e*f-3/4*I/d^2/a*e*f*c*ln(exp(d*x+c)+I)-3/4*I/d^2
/a*polylog(2,-I*exp(d*x+c))*f^2*x+3/8*I/d^3/a*ln(1+I*exp(d*x+c))*c^2*f^2-3/
8*I/d/a*e^2*ln(exp(d*x+c)-I)-3/8*I/d^3/a*c^2*f^2*ln(exp(d*x+c)-I)+3/8*I/d/a
*e^2*ln(exp(d*x+c)+I)-3/4*I*f^2*polylog(3,I*exp(d*x+c))/a/d^3+7/6*I/d^3/a*f
^2*ln(exp(d*x+c)-I)-3/8*I/d/a*ln(1+I*exp(d*x+c))*f^2*x^2+3/8*I/d/a*ln(1-I*e
xp(d*x+c))*f^2*x^2+3/4*I/d^2/a*polylog(2,I*exp(d*x+c))*f^2*x
```

maxima [B] time = 0.94, size = 801, normalized size = 1.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -1/8*e^2*(64*(3*e^(-d*x - c) - 6*I*e^(-2*d*x - 2*c) + 2*e^(-3*d*x - 3*c) +
6*I*e^(-4*d*x - 4*c) + 3*e^(-5*d*x - 5*c))/((64*I*a*e^(-d*x - c) - 32*a*e^(
-2*d*x - 2*c) + 128*I*a*e^(-3*d*x - 3*c) + 32*a*e^(-4*d*x - 4*c) + 64*I*a*e
^(-5*d*x - 5*c) + 32*a*e^(-6*d*x - 6*c) - 32*a)*d) + 3*I*log(e^(-d*x - c) +
 I)/(a*d) - 3*I*log(e^(-d*x - c) - I)/(a*d)) + (-8*I*d*f^2*x - 8*I*d*e*f +
(9*d^2*f^2*x^2*e^(5*c) + 18*(d^2*e*f + d*f^2)*x*e^(5*c) + 2*(9*d*e*f - f^2)
*e^(5*c))*e^(5*d*x) + (-18*I*d^2*f^2*x^2*e^(4*c) - 36*I*d*e*f*e^(4*c) + (-3
6*I*d^2*e*f - 36*I*d*f^2)*x*e^(4*c))*e^(4*d*x) + 2*(3*d^2*f^2*x^2*e^(3*c) +
 2*(3*d^2*e*f + 4*d*f^2)*x*e^(3*c) + 2*(4*d*e*f - f^2)*e^(3*c))*e^(3*d*x) +
 (18*I*d^2*f^2*x^2*e^(2*c) - 44*I*d*e*f*e^(2*c) + (36*I*d^2*e*f - 44*I*d*f^
```

```
2)*x*e^(2*c))*e^(2*d*x) + (9*d^2*f^2*x^2*e^c + 2*(9*d^2*e*f - d*f^2)*x*e^c
- 2*(d*e*f + f^2)*e^c)*e^(d*x))/(12*a*d^3*e^(6*d*x + 6*c) - 24*I*a*d^3*e^(5
*d*x + 5*c) + 12*a*d^3*e^(4*d*x + 4*c) - 48*I*a*d^3*e^(3*d*x + 3*c) - 12*a*
d^3*e^(2*d*x + 2*c) - 24*I*a*d^3*e^(d*x + c) - 12*a*d^3) - 3/4*I*(d*x*log(I
*e^(d*x + c) + 1) + dilog(-I*e^(d*x + c)))*e*f/(a*d^2) + 3/4*I*(d*x*log(-I*
e^(d*x + c) + 1) + dilog(I*e^(d*x + c)))*e*f/(a*d^2) - 2/3*I*f^2*x/(a*d^2)
- 3/8*I*(d^2*x^2*log(I*e^(d*x + c) + 1) + 2*d*x*dilog(-I*e^(d*x + c)) - 2*p
olylog(3, -I*e^(d*x + c)))*f^2/(a*d^3) + 3/8*I*(d^2*x^2*log(-I*e^(d*x + c)
+ 1) + 2*d*x*dilog(I*e^(d*x + c)) - 2*polylog(3, I*e^(d*x + c)))*f^2/(a*d^3
) + 7/6*I*f^2*log(I*e^(d*x + c) + 1)/(a*d^3) - 1/2*I*f^2*log(I*e^(d*x + c)
- 1)/(a*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e+f\,x)^2}{\cosh(c+d\,x)^3\,\left(a+a\sinh(c+d\,x)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cosh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)^2/(cosh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e^2\operatorname{sech}^3(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{f^2x^2\operatorname{sech}^3(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{2efx\operatorname{sech}^3(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sech(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e**2*sech(c + d*x)**3/(sinh(c + d*x) - I), x) + Integral(f**2*
x**2*sech(c + d*x)**3/(sinh(c + d*x) - I), x) + Integral(2*e*f*x*sech(c + d
*x)**3/(sinh(c + d*x) - I), x))/a
```

3.285 $\int \frac{(e+fx)\text{sech}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=233

$$-\frac{3ifLi_2\left(-ie^{c+dx}\right)}{8ad^2}+\frac{3ifLi_2\left(ie^{c+dx}\right)}{8ad^2}+\frac{if\tanh^3(c+dx)}{12ad^2}-\frac{if\tanh(c+dx)}{4ad^2}+\frac{f\text{sech}^3(c+dx)}{12ad^2}+\frac{3f\text{sech}(c+dx)}{8ad^2}+\frac{3(e+$$

```
[Out] 3/4*(f*x+e)*arctan(exp(d*x+c))/a/d-3/8*I*f*polylog(2,-I*exp(d*x+c))/a/d^2+3
/8*I*f*polylog(2,I*exp(d*x+c))/a/d^2+3/8*f*sech(d*x+c)/a/d^2+1/12*f*sech(d*
x+c)^3/a/d^2+1/4*I*(f*x+e)*sech(d*x+c)^4/a/d-1/4*I*f*tanh(d*x+c)/a/d^2+3/8*
(f*x+e)*sech(d*x+c)*tanh(d*x+c)/a/d+1/4*(f*x+e)*sech(d*x+c)^3*tanh(d*x+c)/a
/d+1/12*I*f*tanh(d*x+c)^3/a/d^2
```

Rubi [A] time = 0.19, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {5571, 4185, 4180, 2279, 2391, 5451, 3767}

$$-\frac{3if\text{PolyLog}\left(2,-ie^{c+dx}\right)}{8ad^2}+\frac{3if\text{PolyLog}\left(2,ie^{c+dx}\right)}{8ad^2}+\frac{if\tanh^3(c+dx)}{12ad^2}-\frac{if\tanh(c+dx)}{4ad^2}+\frac{f\text{sech}^3(c+dx)}{12ad^2}+\frac{3f\text{sech}}{8}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sech[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (3*(e + f*x)*ArcTan[E^(c + d*x)])/(4*a*d) - (((3*I)/8)*f*PolyLog[2, (-I)*E^
(c + d*x)])/(a*d^2) + (((3*I)/8)*f*PolyLog[2, I*E^(c + d*x)])/(a*d^2) + (3*
f*Sech[c + d*x])/(8*a*d^2) + (f*Sech[c + d*x]^3)/(12*a*d^2) + ((I/4)*(e + f
*x)*Sech[c + d*x]^4)/(a*d) - ((I/4)*f*Tanh[c + d*x])/(a*d^2) + (3*(e + f*x)
*Sech[c + d*x]*Tanh[c + d*x])/(8*a*d) + ((e + f*x)*Sech[c + d*x]^3*Tanh[c +
 d*x])/(4*a*d) + ((I/12)*f*Tanh[c + d*x]^3)/(a*d^2)
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5571

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sech[c
 + d*x]^(n + 2), x], x] + Dist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(n + 1)*T
anh[c + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && Eq
Q[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)\text{sech}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{i\int(e+fx)\text{sech}^4(c+dx)\tanh(c+dx)\,dx}{a}+\frac{\int(e+fx)\text{sech}^5(c+dx)\,dx}{a}$$
$$= \frac{f\text{sech}^3(c+dx)}{12ad^2}+\frac{i(e+fx)\text{sech}^4(c+dx)}{4ad}+\frac{(e+fx)\text{sech}^3(c+dx)\tanh(c+dx)}{4ad}+$$
$$= \frac{3f\text{sech}(c+dx)}{8ad^2}+\frac{f\text{sech}^3(c+dx)}{12ad^2}+\frac{i(e+fx)\text{sech}^4(c+dx)}{4ad}+\frac{3(e+fx)\text{sech}(c+}{8a}$$
$$= \frac{3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{4ad}+\frac{3f\text{sech}(c+dx)}{8ad^2}+\frac{f\text{sech}^3(c+dx)}{12ad^2}+\frac{i(e+fx)\text{sech}^4(c+}{4ad}$$
$$= \frac{3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{4ad}+\frac{3f\text{sech}(c+dx)}{8ad^2}+\frac{f\text{sech}^3(c+dx)}{12ad^2}+\frac{i(e+fx)\text{sech}^4(c+}{4ad}$$
$$= \frac{3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{4ad}-\frac{3if\text{Li}_2\left(-ie^{c+dx}\right)}{8ad^2}+\frac{3if\text{Li}_2\left(ie^{c+dx}\right)}{8ad^2}+\frac{3f\text{sech}(c+dx)}{8ad^2}+$$

Mathematica [**B**] time = 6.66, size = 1290, normalized size = 5.54

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sech[c + d*x]^3)/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] ((I/24)*(6*d*e - I*f - 6*c*f + 6*f*(c + d*x)))/(d^2*(a + I*a*Sinh[c + d*x])
) + ((I/8)*(d*e - c*f + f*(c + d*x)))/(d^2*(Cosh[(c + d*x)/2] + I*Sinh[(c +
 d*x)/2])^2*(a + I*a*Sinh[c + d*x])) + (3*(c + d*x)*(2*d*e - 2*c*f + f*(c +
 d*x))*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2)/(16*d^2*(a + I*a*Sinh[c
 + d*x])) + (((3*I)/8)*e*((I/2)*(c + d*x) + Log[Cosh[(c + d*x)/2] - I*Sinh[
(c + d*x)/2]])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2)/(d*(a + I*a*Sin
h[c + d*x])) - (((3*I)/8)*c*f*((I/2)*(c + d*x) + Log[Cosh[(c + d*x)/2] - I*
Sinh[(c + d*x)/2]])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2)/(d^2*(a +
I*a*Sinh[c + d*x])) - (((3*I)/8)*e*((-1/2*I)*(c + d*x) + Log[Cosh[(c + d*x)
/2] + I*Sinh[(c + d*x)/2]])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2)/(d
*(a + I*a*Sinh[c + d*x])) + (((3*I)/8)*c*f*((-1/2*I)*(c + d*x) + Log[Cosh[(
c + d*x)/2] + I*Sinh[(c + d*x)/2]])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2
])^2)/(d^2*(a + I*a*Sinh[c + d*x])) - (3*f*((c + d*x)^2/(4*E^((I/4)*Pi)) +
((3*Pi*(c + d*x))/4 - Pi*Log[1 + E^(c + d*x)] - 2*(-1/4*Pi + (I/2)*(c + d*x
))*Log[1 - E^((2*I)*(-1/4*Pi + (I/2)*(c + d*x)))] + Pi*Log[Cosh[(c + d*x)/2
]] - (Pi*Log[-Sin[Pi/4 - (I/2)*(c + d*x)]])/2 + I*PolyLog[2, E^((2*I)*(-1/4
*Pi + (I/2)*(c + d*x)))])/Sqrt[2])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2]
)^2)/(4*Sqrt[2]*d^2*(a + I*a*Sinh[c + d*x])) - (3*f*((E^((I/4)*Pi)*(c + d*x
```

```
)^2)/4 - ((Pi*(c + d*x))/4 - Pi*Log[1 + E^(c + d*x)] - 2*(Pi/4 + (I/2)*(c +
 d*x))*Log[1 - E^((2*I)*(Pi/4 + (I/2)*(c + d*x)))] + Pi*Log[Cosh[(c + d*x)/
2]] + (Pi*Log[Sin[Pi/4 + (I/2)*(c + d*x)]])/2 + I*PolyLog[2, E^((2*I)*(Pi/4
 + (I/2)*(c + d*x)))])/Sqrt[2])*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2
)/(4*Sqrt[2]*d^2*(a + I*a*Sinh[c + d*x])) - ((I/8)*(d*e - c*f + f*(c + d*x)
)*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])^2)/(d^2*(Cosh[(c + d*x)/2] - I*
Sinh[(c + d*x)/2])^2*(a + I*a*Sinh[c + d*x])) - ((I/12)*f*Sinh[(c + d*x)/2]
)/(d^2*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*(a + I*a*Sinh[c + d*x])) -
 (((7*I)/12)*f*(Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2])*Sinh[(c + d*x)/2])
/(d^2*(a + I*a*Sinh[c + d*x])) + ((I/4)*f*(Cosh[(c + d*x)/2] + I*Sinh[(c +
d*x)/2])^2*Sinh[(c + d*x)/2])/(d^2*(Cosh[(c + d*x)/2] - I*Sinh[(c + d*x)/2]
)*(a + I*a*Sinh[c + d*x]))
```

fricas [B] time = 0.53, size = 910, normalized size = 3.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((9*I*f*e^(6*d*x + 6*c) + 18*f*e^(5*d*x + 5*c) + 9*I*f*e^(4*d*x + 4*c) + 36
*f*e^(3*d*x + 3*c) - 9*I*f*e^(2*d*x + 2*c) + 18*f*e^(d*x + c) - 9*I*f)*dilo
g(I*e^(d*x + c)) + (-9*I*f*e^(6*d*x + 6*c) - 18*f*e^(5*d*x + 5*c) - 9*I*f*e
^(4*d*x + 4*c) - 36*f*e^(3*d*x + 3*c) + 9*I*f*e^(2*d*x + 2*c) - 18*f*e^(d*x
 + c) + 9*I*f)*dilog(-I*e^(d*x + c)) + 18*(d*f*x + d*e + f)*e^(5*d*x + 5*c)
 + (-36*I*d*f*x - 36*I*d*e - 36*I*f)*e^(4*d*x + 4*c) + 4*(3*d*f*x + 3*d*e +
 4*f)*e^(3*d*x + 3*c) + (36*I*d*f*x + 36*I*d*e - 44*I*f)*e^(2*d*x + 2*c) +
2*(9*d*f*x + 9*d*e - f)*e^(d*x + c) + (-9*I*d*e + 9*I*c*f + (9*I*d*e - 9*I*
c*f)*e^(6*d*x + 6*c) + 18*(d*e - c*f)*e^(5*d*x + 5*c) + (9*I*d*e - 9*I*c*f)
*e^(4*d*x + 4*c) + 36*(d*e - c*f)*e^(3*d*x + 3*c) + (-9*I*d*e + 9*I*c*f)*e^
(2*d*x + 2*c) + 18*(d*e - c*f)*e^(d*x + c))*log(e^(d*x + c) + I) + (9*I*d*e
 - 9*I*c*f + (-9*I*d*e + 9*I*c*f)*e^(6*d*x + 6*c) - 18*(d*e - c*f)*e^(5*d*x
 + 5*c) + (-9*I*d*e + 9*I*c*f)*e^(4*d*x + 4*c) - 36*(d*e - c*f)*e^(3*d*x +
3*c) + (9*I*d*e - 9*I*c*f)*e^(2*d*x + 2*c) - 18*(d*e - c*f)*e^(d*x + c))*lo
g(e^(d*x + c) - I) + (9*I*d*f*x + 9*I*c*f + (-9*I*d*f*x - 9*I*c*f)*e^(6*d*x
 + 6*c) - 18*(d*f*x + c*f)*e^(5*d*x + 5*c) + (-9*I*d*f*x - 9*I*c*f)*e^(4*d*
x + 4*c) - 36*(d*f*x + c*f)*e^(3*d*x + 3*c) + (9*I*d*f*x + 9*I*c*f)*e^(2*d*
x + 2*c) - 18*(d*f*x + c*f)*e^(d*x + c))*log(I*e^(d*x + c) + 1) + (-9*I*d*f
*x - 9*I*c*f + (9*I*d*f*x + 9*I*c*f)*e^(6*d*x + 6*c) + 18*(d*f*x + c*f)*e^(
5*d*x + 5*c) + (9*I*d*f*x + 9*I*c*f)*e^(4*d*x + 4*c) + 36*(d*f*x + c*f)*e^(
3*d*x + 3*c) + (-9*I*d*f*x - 9*I*c*f)*e^(2*d*x + 2*c) + 18*(d*f*x + c*f)*e^
(d*x + c))*log(-I*e^(d*x + c) + 1) - 8*I*f)/(24*a*d^2*e^(6*d*x + 6*c) - 48*
I*a*d^2*e^(5*d*x + 5*c) + 24*a*d^2*e^(4*d*x + 4*c) - 96*I*a*d^2*e^(3*d*x +
3*c) - 24*a*d^2*e^(2*d*x + 2*c) - 48*I*a*d^2*e^(d*x + c) - 24*a*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\,\mathrm{sech}\,(dx+c)^3}{i\,a\sinh\,(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)*sech(d*x + c)^3/(I*a*sinh(d*x + c) + a), x)
```

maple [B] time = 0.36, size = 445, normalized size = 1.91

$$\frac{-18if\,e^{4dx+4c}+6dfx\,e^{3dx+3c}-18idfx\,e^{4dx+4c}+18ide\,e^{2dx+2c}+9dfx\,e^{5dx+5c}+9f\,e^{5dx+5c}+8f\,e^{3dx+3c}-f\,e^{dx+c}+}{12\left(e^{dx+c}+i\right)^2\left(e^{dx+}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
[Out] 1/12*(-18*I*f*exp(4*d*x+4*c)+6*d*f*x*exp(3*d*x+3*c)-18*I*d*f*x*exp(4*d*x+4*
c)+18*I*d*e*exp(2*d*x+2*c)+9*d*f*x*exp(5*d*x+5*c)+9*f*exp(5*d*x+5*c)+8*f*ex
p(3*d*x+3*c)-f*exp(d*x+c)+9*d*e*exp(5*d*x+5*c)+18*I*d*f*x*exp(2*d*x+2*c)-4*
I*f+9*d*f*x*exp(d*x+c)+9*d*e*exp(d*x+c)-22*I*f*exp(2*d*x+2*c)-18*I*d*e*exp(
4*d*x+4*c)+6*d*e*exp(3*d*x+3*c))/(exp(d*x+c)+I)^2/(exp(d*x+c)-I)^4/d^2/a-3/
8*I/a/d*e*ln(exp(d*x+c)-I)+3/8*I/a/d*e*ln(exp(d*x+c)+I)-3/8*I/a/d*f*ln(1+I*
exp(d*x+c))*x-3/8*I/a/d^2*f*ln(1+I*exp(d*x+c))*c-3/8*I*f*polylog(2,-I*exp(d
*x+c))/a/d^2+3/8*I/a/d*f*ln(1-I*exp(d*x+c))*x+3/8*I/a/d^2*f*ln(1-I*exp(d*x+
c))*c+3/8*I*f*polylog(2,I*exp(d*x+c))/a/d^2+3/8*I/a/d^2*f*c*ln(exp(d*x+c)-I
)-3/8*I/a/d^2*f*c*ln(exp(d*x+c)+I)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$8f\left(\frac{9\left(dxe^{(5c)}+e^{(5c)}\right)e^{(5dx)}+\left(-18i\,dxe^{(4c)}-18i\,e^{(4c)}\right)e^{(4dx)}+2\left(3\,dxe^{(3c)}+4\,e^{(3c)}\right)e^{(3dx)}+\left(18i\,dxe^{(2c)}-22i\,e^{(2c)}\right)}{96\,ad^2e^{(6dx+6c)}-192i\,ad^2e^{(5dx+5c)}+96\,ad^2e^{(4dx+4c)}-384i\,ad^2e^{(3dx+3c)}-96\,ad^2e^{(2dx+2c)}-192i\,a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
[Out] 8*f*((9*(d*x*e^(5*c) + e^(5*c))*e^(5*d*x) + (-18*I*d*x*e^(4*c) - 18*I*e^(4*
c))*e^(4*d*x) + 2*(3*d*x*e^(3*c) + 4*e^(3*c))*e^(3*d*x) + (18*I*d*x*e^(2*c)
 - 22*I*e^(2*c))*e^(2*d*x) + (9*d*x*e^c - e^c)*e^(d*x) - 4*I)/(96*a*d^2*e^(
6*d*x + 6*c) - 192*I*a*d^2*e^(5*d*x + 5*c) + 96*a*d^2*e^(4*d*x + 4*c) - 384
*I*a*d^2*e^(3*d*x + 3*c) - 96*a*d^2*e^(2*d*x + 2*c) - 192*I*a*d^2*e^(d*x +
```

```
c) - 96*a*d^2) + 3*integrate(x/(64*a*e^(d*x + c) + 64*I*a), x) + 3*integrat
e(x/(64*a*e^(d*x + c) - 64*I*a), x)) - 1/8*e*(64*(3*e^(-d*x - c) - 6*I*e^(-
2*d*x - 2*c) + 2*e^(-3*d*x - 3*c) + 6*I*e^(-4*d*x - 4*c) + 3*e^(-5*d*x - 5*
c))/((64*I*a*e^(-d*x - c) - 32*a*e^(-2*d*x - 2*c) + 128*I*a*e^(-3*d*x - 3*c
) + 32*a*e^(-4*d*x - 4*c) + 64*I*a*e^(-5*d*x - 5*c) + 32*a*e^(-6*d*x - 6*c)
 - 32*a)*d) + 3*I*log(e^(-d*x - c) + I)/(a*d) - 3*I*log(e^(-d*x - c) - I)/(
a*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+fx}{\cosh(c+dx)^3\ (a+a\sinh(c+dx)\ 1\mathrm{i})}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\left(\int \frac{e\operatorname{sech}^3(c+dx)}{\sinh(c+dx)-i}\,dx+\int \frac{fx\operatorname{sech}^3(c+dx)}{\sinh(c+dx)-i}\,dx\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*(Integral(e*sech(c + d*x)**3/(sinh(c + d*x) - I), x) + Integral(f*x*sech
(c + d*x)**3/(sinh(c + d*x) - I), x))/a
```

3.286 $\int \frac{\operatorname{sech}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx$

Optimal. Leaf size=91

$$\frac{ia}{8d(a+ia\sinh(c+dx))^2}-\frac{i}{8d(a-ia\sinh(c+dx))}+\frac{i}{4d(a+ia\sinh(c+dx))}+\frac{3\tan^{-1}(\sinh(c+dx))}{8ad}$$

```
[Out] 3/8*arctan(sinh(d*x+c))/a/d-1/8*I/d/(a-I*a*sinh(d*x+c))+1/8*I*a/d/(a+I*a*si
nh(d*x+c))^2+1/4*I/d/(a+I*a*sinh(d*x+c))
```

Rubi [A] time = 0.08, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2667, 44, 206}

$$\frac{ia}{8d(a+ia\sinh(c+dx))^2}-\frac{i}{8d(a-ia\sinh(c+dx))}+\frac{i}{4d(a+ia\sinh(c+dx))}+\frac{3\tan^{-1}(\sinh(c+dx))}{8ad}$$

Antiderivative was successfully verified.

```
[In] Int[Sech[c + d*x]^3/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (3*ArcTan[Sinh[c + d*x]])/(8*a*d) - (I/8)/(d*(a - I*a*Sinh[c + d*x])) + ((I
/8)*a)/(d*(a + I*a*Sinh[c + d*x])^2) + (I/4)/(d*(a + I*a*Sinh[c + d*x]))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2667

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^(m + (p - 1)/2)*(a - x)
^((p - 1)/2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && In
tegerQ[(p - 1)/2] && EqQ[a^2 - b^2, 0] && (GeQ[p, -1] ||  !IntegerQ[m + 1/2
])
```

Rubi steps

$$\int \frac{\operatorname{sech}^3(c+dx)}{a+ia\sinh(c+dx)}\,dx = -\frac{(ia^3)\,\text{Subst}\left(\int \frac{1}{(a-x)^2(a+x)^3}\,dx, x, ia\sinh(c+dx)\right)}{d}$$

$$= -\frac{(ia^3)\,\text{Subst}\left(\int \left(\frac{1}{8a^3(a-x)^2} + \frac{1}{4a^2(a+x)^3} + \frac{1}{4a^3(a+x)^2} + \frac{3}{8a^3(a^2-x^2)}\right) dx, x, ia\sinh(c+dx)\right)}{d}$$

$$= -\frac{i}{8d(a-ia\sinh(c+dx))} + \frac{ia}{8d(a+ia\sinh(c+dx))^2} + \frac{i}{4d(a+ia\sinh(c+dx))} - \frac{(3}{}$$

$$= \frac{3\tan^{-1}(\sinh(c+dx))}{8ad} - \frac{i}{8d(a-ia\sinh(c+dx))} + \frac{ia}{8d(a+ia\sinh(c+dx))^2} + \frac{}{4d(a}$$

Mathematica [A] time = 0.11, size = 101, normalized size = 1.11

$$\frac{\operatorname{sech}^2(c+dx)\left(3\sinh^3(c+dx)\tan^{-1}(\sinh(c+dx)) + \sinh^2(c+dx)\left(3-3i\tan^{-1}(\sinh(c+dx))\right) + 3\sinh(c+d}{8ad(\sinh(c+dx)-i)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sech[c + d*x]^3/(a + I*a*Sinh[c + d*x]),x]
```

```
[Out] (Sech[c + d*x]^2*(2 - (3*I)*ArcTan[Sinh[c + d*x]] + 3*(-I + ArcTan[Sinh[c +
 d*x]])*Sinh[c + d*x] + (3 - (3*I)*ArcTan[Sinh[c + d*x]])*Sinh[c + d*x]^2 +
 3*ArcTan[Sinh[c + d*x]]*Sinh[c + d*x]^3))/(8*a*d*(-I + Sinh[c + d*x]))
```

fricas [B] time = 0.58, size = 286, normalized size = 3.14

$$\frac{\left(3i\,e^{(6\,dx+6\,c)} + 6\,e^{(5\,dx+5\,c)} + 3i\,e^{(4\,dx+4\,c)} + 12\,e^{(3\,dx+3\,c)} - 3i\,e^{(2\,dx+2\,c)} + 6\,e^{(dx+c)} - 3i\right)\log\left(e^{(dx+c)}+i\right) + \left(-3i\,e^{(6\,dx+}\right.}{8\,ade^{(6\,dx+6\,c)} - 16i\,ade^{(5\,dx+5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((3*I*e^(6*d*x + 6*c) + 6*e^(5*d*x + 5*c) + 3*I*e^(4*d*x + 4*c) + 12*e^(3*d
*x + 3*c) - 3*I*e^(2*d*x + 2*c) + 6*e^(d*x + c) - 3*I)*log(e^(d*x + c) + I)
 + (-3*I*e^(6*d*x + 6*c) - 6*e^(5*d*x + 5*c) - 3*I*e^(4*d*x + 4*c) - 12*e^(
3*d*x + 3*c) + 3*I*e^(2*d*x + 2*c) - 6*e^(d*x + c) + 3*I)*log(e^(d*x + c) -
 I) + 6*e^(5*d*x + 5*c) - 12*I*e^(4*d*x + 4*c) + 4*e^(3*d*x + 3*c) + 12*I*e
^(2*d*x + 2*c) + 6*e^(d*x + c))/(8*a*d*e^(6*d*x + 6*c) - 16*I*a*d*e^(5*d*x
```

```
+ 5*c) + 8*a*d*e^(4*d*x + 4*c) - 32*I*a*d*e^(3*d*x + 3*c) - 8*a*d*e^(2*d*x
+ 2*c) - 16*I*a*d*e^(d*x + c) - 8*a*d)
```

giac [B] time = 0.21, size = 177, normalized size = 1.95

$$-\frac{-\frac{6i\log\left(-ie^{(dx+c)}+ie^{(-dx-c)}+2\right)}{a}+\frac{6i\log\left(-ie^{(dx+c)}+ie^{(-dx-c)}-2\right)}{a}-\frac{2\left(3e^{(dx+c)}-3e^{(-dx-c)}+10i\right)}{a\left(ie^{(dx+c)}-ie^{(-dx-c)}-2\right)}+\frac{-9i\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2-52e^{(dx+c)}+52e^{(-dx-c)}}{a\left(e^{(dx+c)}-e^{(-dx-c)}-2i\right)^2}}{32d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/32*(-6*I*log(-I*e^(d*x + c) + I*e^(-d*x - c) + 2)/a + 6*I*log(-I*e^(d*x
+ c) + I*e^(-d*x - c) - 2)/a - 2*(3*e^(d*x + c) - 3*e^(-d*x - c) + 10*I)/(a
*(I*e^(d*x + c) - I*e^(-d*x - c) - 2)) + (-9*I*(e^(d*x + c) - e^(-d*x - c))
^2 - 52*e^(d*x + c) + 52*e^(-d*x - c) + 84*I)/(a*(e^(d*x + c) - e^(-d*x - c
) - 2*I)^2))/d
```

maple [B] time = 0.11, size = 180, normalized size = 1.98

$$\frac{i}{4da\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+i\right)^2}+\frac{3i\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+i\right)}{8da}-\frac{1}{4da\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+i\right)}+\frac{i}{2da\left(-i+\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^4}-\frac{3i\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] 1/4*I/d/a/(tanh(1/2*d*x+1/2*c)+I)^2+3/8*I/d/a*ln(tanh(1/2*d*x+1/2*c)+I)-1/4
/d/a/(tanh(1/2*d*x+1/2*c)+I)+1/2*I/d/a/(-I+tanh(1/2*d*x+1/2*c))^4-3/8*I/d/a
*ln(-I+tanh(1/2*d*x+1/2*c))-3/2*I/d/a/(-I+tanh(1/2*d*x+1/2*c))^2+1/d/a/(-I+
tanh(1/2*d*x+1/2*c))^3-1/d/a/(-I+tanh(1/2*d*x+1/2*c))
```

maxima [B] time = 0.33, size = 180, normalized size = 1.98

$$-\frac{8\left(3e^{(-dx-c)}-6ie^{(-2dx-2c)}+2e^{(-3dx-3c)}+6ie^{(-4dx-4c)}+3e^{(-5dx-5c)}\right)}{\left(64i\,ae^{(-dx-c)}-32\,ae^{(-2dx-2c)}+128i\,ae^{(-3dx-3c)}+32\,ae^{(-4dx-4c)}+64i\,ae^{(-5dx-5c)}+32\,ae^{(-6dx-6c)}-32\,a\right)d}-\frac{3i}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -8*(3*e^(-d*x - c) - 6*I*e^(-2*d*x - 2*c) + 2*e^(-3*d*x - 3*c) + 6*I*e^(-4*
d*x - 4*c) + 3*e^(-5*d*x - 5*c))/((64*I*a*e^(-d*x - c) - 32*a*e^(-2*d*x - 2
```

```
*c) + 128*I*a*e^(-3*d*x - 3*c) + 32*a*e^(-4*d*x - 4*c) + 64*I*a*e^(-5*d*x -
 5*c) + 32*a*e^(-6*d*x - 6*c) - 32*a)*d) - 3/8*I*log(e^(-d*x - c) + I)/(a*d
) + 3/8*I*log(e^(-d*x - c) - I)/(a*d)
```

mupad [B] time = 0.99, size = 137, normalized size = 1.51

$$\frac{3\,\mathrm{atan}\left(\frac{\mathrm{e}^{d\,x}\,\mathrm{e}^{c}\,\sqrt{a^2\,d^2}}{a\,d}\right)}{4\,\sqrt{a^2\,d^2}}+\frac{1}{2\,a\,d\,\left(\mathrm{e}^{c+d\,x}-\mathrm{i}\right)}+\frac{1}{4\,a\,d\,\left(\mathrm{e}^{c+d\,x}+1\mathrm{i}\right)}-\frac{1\mathrm{i}}{4\,a\,d\,{\left(\mathrm{e}^{c+d\,x}+1\mathrm{i}\right)}^2}-\frac{1\mathrm{i}}{a\,d\,{\left(1+\mathrm{e}^{c+d\,x}\,1\mathrm{i}\right)}^3}+\frac{1\mathrm{i}}{2\,a\,d\,\left(1+\mathrm{e}^{c}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] (3*atan((exp(d*x)*exp(c)*(a^2*d^2)^(1/2))/(a*d)))/(4*(a^2*d^2)^(1/2)) + 1/(
2*a*d*(exp(c + d*x) - 1i)) + 1/(4*a*d*(exp(c + d*x) + 1i)) - 1i/(4*a*d*(exp
(c + d*x) + 1i)^2) - 1i/(a*d*(exp(c + d*x)*1i + 1)^3) + 1i/(2*a*d*(exp(c +
d*x)*1i + 1)^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int\frac{\operatorname{sech}^{3}{(c+dx)}}{\sinh{(c+dx)}-i}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**3/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(sech(c + d*x)**3/(sinh(c + d*x) - I), x)/a
```

3.287 $\int \frac{\text{sech}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\text{Int}\left(\frac{\text{sech}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{sech}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sech[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
[Out] Defer[Int][Sech[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\text{sech}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx = \int \frac{\text{sech}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Mathematica [A] time = 118.30, size = 0, normalized size = 0.00

$$\int \frac{\text{sech}^3(c+dx)}{(e+fx)(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sech[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])),x]
[Out] Integrate[Sech[c + d*x]^3/((e + f*x)*(a + I*a*Sinh[c + d*x])), x]
```

fricas [A] time = 0.73, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(4*I*d^2*f^3*x^2 + 8*I*d^2*e*f^2*x + 4*I*d^2*e^2*f - 6*I*f^3 + (9*d^3*f^3*
x^3 + 9*d^3*e^3 - 9*d^2*e^2*f - 2*d*e*f^2 + 6*f^3 + 9*(3*d^3*e*f^2 - d^2*f^
3)*x^2 + (27*d^3*e^2*f - 18*d^2*e*f^2 - 2*d*f^3)*x)*e^(5*d*x + 5*c) + (-18*
I*d^3*f^3*x^3 - 18*I*d^3*e^3 + 18*I*d^2*e^2*f - 6*I*f^3 + (-54*I*d^3*e*f^2
+ 18*I*d^2*f^3)*x^2 + (-54*I*d^3*e^2*f + 36*I*d^2*e*f^2)*x)*e^(4*d*x + 4*c)
 + 2*(3*d^3*f^3*x^3 + 3*d^3*e^3 - 4*d^2*e^2*f - 2*d*e*f^2 + 6*f^3 + (9*d^3*
e*f^2 - 4*d^2*f^3)*x^2 + (9*d^3*e^2*f - 8*d^2*e*f^2 - 2*d*f^3)*x)*e^(3*d*x
+ 3*c) + (18*I*d^3*f^3*x^3 + 18*I*d^3*e^3 + 22*I*d^2*e^2*f - 12*I*f^3 + (54
*I*d^3*e*f^2 + 22*I*d^2*f^3)*x^2 + (54*I*d^3*e^2*f + 44*I*d^2*e*f^2)*x)*e^(
2*d*x + 2*c) + (9*d^3*f^3*x^3 + 9*d^3*e^3 + d^2*e^2*f - 2*d*e*f^2 + 6*f^3 +
 (27*d^3*e*f^2 + d^2*f^3)*x^2 + (27*d^3*e^2*f + 2*d^2*e*f^2 - 2*d*f^3)*x)*e
^(d*x + c) - (12*a*d^4*f^4*x^4 + 48*a*d^4*e*f^3*x^3 + 72*a*d^4*e^2*f^2*x^2
+ 48*a*d^4*e^3*f*x + 12*a*d^4*e^4 - 12*(a*d^4*f^4*x^4 + 4*a*d^4*e*f^3*x^3 +
 6*a*d^4*e^2*f^2*x^2 + 4*a*d^4*e^3*f*x + a*d^4*e^4)*e^(6*d*x + 6*c) - (-24*
I*a*d^4*f^4*x^4 - 96*I*a*d^4*e*f^3*x^3 - 144*I*a*d^4*e^2*f^2*x^2 - 96*I*a*d
^4*e^3*f*x - 24*I*a*d^4*e^4)*e^(5*d*x + 5*c) - 12*(a*d^4*f^4*x^4 + 4*a*d^4*
e*f^3*x^3 + 6*a*d^4*e^2*f^2*x^2 + 4*a*d^4*e^3*f*x + a*d^4*e^4)*e^(4*d*x + 4
*c) - (-48*I*a*d^4*f^4*x^4 - 192*I*a*d^4*e*f^3*x^3 - 288*I*a*d^4*e^2*f^2*x^
2 - 192*I*a*d^4*e^3*f*x - 48*I*a*d^4*e^4)*e^(3*d*x + 3*c) + 12*(a*d^4*f^4*x
^4 + 4*a*d^4*e*f^3*x^3 + 6*a*d^4*e^2*f^2*x^2 + 4*a*d^4*e^3*f*x + a*d^4*e^4)
*e^(2*d*x + 2*c) - (-24*I*a*d^4*f^4*x^4 - 96*I*a*d^4*e*f^3*x^3 - 144*I*a*d^
4*e^2*f^2*x^2 - 96*I*a*d^4*e^3*f*x - 24*I*a*d^4*e^4)*e^(d*x + c))*integral(
1/12*(-8*I*d^2*f^4*x^2 - 16*I*d^2*e*f^3*x - 8*I*d^2*e^2*f^2 + 24*I*f^4 + (9
*d^4*f^4*x^4 + 36*d^4*e*f^3*x^3 + 9*d^4*e^4 - 20*d^2*e^2*f^2 + 24*f^4 + 2*(
27*d^4*e^2*f^2 - 10*d^2*f^4)*x^2 + 4*(9*d^4*e^3*f - 10*d^2*e*f^3)*x)*e^(d*x
 + c))/(a*d^4*f^5*x^5 + 5*a*d^4*e*f^4*x^4 + 10*a*d^4*e^2*f^3*x^3 + 10*a*d^4
*e^3*f^2*x^2 + 5*a*d^4*e^4*f*x + a*d^4*e^5 + (a*d^4*f^5*x^5 + 5*a*d^4*e*f^4
*x^4 + 10*a*d^4*e^2*f^3*x^3 + 10*a*d^4*e^3*f^2*x^2 + 5*a*d^4*e^4*f*x + a*d^
4*e^5)*e^(2*d*x + 2*c)), x))/(12*a*d^4*f^4*x^4 + 48*a*d^4*e*f^3*x^3 + 72*a*
d^4*e^2*f^2*x^2 + 48*a*d^4*e^3*f*x + 12*a*d^4*e^4 - 12*(a*d^4*f^4*x^4 + 4*a
*d^4*e*f^3*x^3 + 6*a*d^4*e^2*f^2*x^2 + 4*a*d^4*e^3*f*x + a*d^4*e^4)*e^(6*d*
x + 6*c) - (-24*I*a*d^4*f^4*x^4 - 96*I*a*d^4*e*f^3*x^3 - 144*I*a*d^4*e^2*f^
2*x^2 - 96*I*a*d^4*e^3*f*x - 24*I*a*d^4*e^4)*e^(5*d*x + 5*c) - 12*(a*d^4*f^
4*x^4 + 4*a*d^4*e*f^3*x^3 + 6*a*d^4*e^2*f^2*x^2 + 4*a*d^4*e^3*f*x + a*d^4*e
^4)*e^(4*d*x + 4*c) - (-48*I*a*d^4*f^4*x^4 - 192*I*a*d^4*e*f^3*x^3 - 288*I*
a*d^4*e^2*f^2*x^2 - 192*I*a*d^4*e^3*f*x - 48*I*a*d^4*e^4)*e^(3*d*x + 3*c) +
 12*(a*d^4*f^4*x^4 + 4*a*d^4*e*f^3*x^3 + 6*a*d^4*e^2*f^2*x^2 + 4*a*d^4*e^3*
f*x + a*d^4*e^4)*e^(2*d*x + 2*c) - (-24*I*a*d^4*f^4*x^4 - 96*I*a*d^4*e*f^3*
x^3 - 144*I*a*d^4*e^2*f^2*x^2 - 96*I*a*d^4*e^3*f*x - 24*I*a*d^4*e^4)*e^(d*x
 + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 2.02, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)^{3}}{\left(fx+e\right)\left(a+ia\sinh(dx+c)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(f*x+e)/(a+I*a*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -8*(4*I*d^2*f^3*x^2 + 8*I*d^2*e*f^2*x + 4*I*d^2*e^2*f - 6*I*f^3 + (9*d^3*f^
3*x^3*e^(5*c) + 9*(3*d^3*e*f^2 - d^2*f^3)*x^2*e^(5*c) + (27*d^3*e^2*f - 18*
d^2*e*f^2 - 2*d*f^3)*x*e^(5*c) + (9*d^3*e^3 - 9*d^2*e^2*f - 2*d*e*f^2 + 6*f
^3)*e^(5*c))*e^(5*d*x) + (-18*I*d^3*f^3*x^3*e^(4*c) + (-54*I*d^3*e*f^2 + 18
*I*d^2*f^3)*x^2*e^(4*c) + (-54*I*d^3*e^2*f + 36*I*d^2*e*f^2)*x*e^(4*c) + (-
18*I*d^3*e^3 + 18*I*d^2*e^2*f - 6*I*f^3)*e^(4*c))*e^(4*d*x) + 2*(3*d^3*f^3*
x^3*e^(3*c) + (9*d^3*e*f^2 - 4*d^2*f^3)*x^2*e^(3*c) + (9*d^3*e^2*f - 8*d^2*
e*f^2 - 2*d*f^3)*x*e^(3*c) + (3*d^3*e^3 - 4*d^2*e^2*f - 2*d*e*f^2 + 6*f^3)*
e^(3*c))*e^(3*d*x) + (18*I*d^3*f^3*x^3*e^(2*c) + (54*I*d^3*e*f^2 + 22*I*d^2
*f^3)*x^2*e^(2*c) + (54*I*d^3*e^2*f + 44*I*d^2*e*f^2)*x*e^(2*c) + (18*I*d^3
*e^3 + 22*I*d^2*e^2*f - 12*I*f^3)*e^(2*c))*e^(2*d*x) + (9*d^3*f^3*x^3*e^c +
 (27*d^3*e*f^2 + d^2*f^3)*x^2*e^c + (27*d^3*e^2*f + 2*d^2*e*f^2 - 2*d*f^3)*
x*e^c + (9*d^3*e^3 + d^2*e^2*f - 2*d*e*f^2 + 6*f^3)*e^c)*e^(d*x))/(96*a*d^4
*f^4*x^4 + 384*a*d^4*e*f^3*x^3 + 576*a*d^4*e^2*f^2*x^2 + 384*a*d^4*e^3*f*x
+ 96*a*d^4*e^4 - 96*(a*d^4*f^4*x^4*e^(6*c) + 4*a*d^4*e*f^3*x^3*e^(6*c) + 6*
a*d^4*e^2*f^2*x^2*e^(6*c) + 4*a*d^4*e^3*f*x*e^(6*c) + a*d^4*e^4*e^(6*c))*e^
(6*d*x) - (-192*I*a*d^4*f^4*x^4*e^(5*c) - 768*I*a*d^4*e*f^3*x^3*e^(5*c) - 1
152*I*a*d^4*e^2*f^2*x^2*e^(5*c) - 768*I*a*d^4*e^3*f*x*e^(5*c) - 192*I*a*d^4
*e^4*e^(5*c))*e^(5*d*x) - 96*(a*d^4*f^4*x^4*e^(4*c) + 4*a*d^4*e*f^3*x^3*e^(
4*c) + 6*a*d^4*e^2*f^2*x^2*e^(4*c) + 4*a*d^4*e^3*f*x*e^(4*c) + a*d^4*e^4*e^
(4*c))*e^(4*d*x) - (-384*I*a*d^4*f^4*x^4*e^(3*c) - 1536*I*a*d^4*e*f^3*x^3*e
```

```
^(3*c) - 2304*I*a*d^4*e^2*f^2*x^2*e^(3*c) - 1536*I*a*d^4*e^3*f*x*e^(3*c) -
384*I*a*d^4*e^4*e^(3*c))*e^(3*d*x) + 96*(a*d^4*f^4*x^4*e^(2*c) + 4*a*d^4*e*
f^3*x^3*e^(2*c) + 6*a*d^4*e^2*f^2*x^2*e^(2*c) + 4*a*d^4*e^3*f*x*e^(2*c) + a
*d^4*e^4*e^(2*c))*e^(2*d*x) - (-192*I*a*d^4*f^4*x^4*e^c - 768*I*a*d^4*e*f^3
*x^3*e^c - 1152*I*a*d^4*e^2*f^2*x^2*e^c - 768*I*a*d^4*e^3*f*x*e^c - 192*I*a
*d^4*e^4*e^c)*e^(d*x)) + 8*integrate((9*d^4*f^4*x^4 + 36*d^4*e*f^3*x^3 + 9*
d^4*e^4 - 28*d^2*e^2*f^2 + 48*f^4 + 2*(27*d^4*e^2*f^2 - 14*d^2*f^4)*x^2 + 4
*(9*d^4*e^3*f - 14*d^2*e*f^3)*x)/(-192*I*a*d^4*f^5*x^5 - 960*I*a*d^4*e*f^4*
x^4 - 1920*I*a*d^4*e^2*f^3*x^3 - 1920*I*a*d^4*e^3*f^2*x^2 - 960*I*a*d^4*e^4
*f*x - 192*I*a*d^4*e^5 + 192*(a*d^4*f^5*x^5*e^c + 5*a*d^4*e*f^4*x^4*e^c + 1
0*a*d^4*e^2*f^3*x^3*e^c + 10*a*d^4*e^3*f^2*x^2*e^c + 5*a*d^4*e^4*f*x*e^c +
a*d^4*e^5*e^c)*e^(d*x)), x) + 8*integrate((3*d^2*f^2*x^2 + 6*d^2*e*f*x + 3*
d^2*e^2 - 4*f^2)/(64*I*a*d^2*f^3*x^3 + 192*I*a*d^2*e*f^2*x^2 + 192*I*a*d^2*
e^2*f*x + 64*I*a*d^2*e^3 + 64*(a*d^2*f^3*x^3*e^c + 3*a*d^2*e*f^2*x^2*e^c +
3*a*d^2*e^2*f*x*e^c + a*d^2*e^3*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+d\,x)^3\,\left(e+f\,x\right)\,\left(a+a\sinh(c+d\,x)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*(e + f*x)*(a + a*sinh(c + d*x)*1i)),x)
```

```
[Out] int(1/(cosh(c + d*x)^3*(e + f*x)*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int \frac{\operatorname{sech}^3(c+dx)}{e\sinh(c+dx)-ie+fx\sinh(c+dx)-ifx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**3/(f*x+e)/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(sech(c + d*x)**3/(e*sinh(c + d*x) - I*e + f*x*sinh(c + d*x) - I
*f*x), x)/a
```

3.288 $\int \frac{\text{sech}^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$

Optimal. Leaf size=34

$$\text{Int}\left(\frac{\text{sech}^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{sech}^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sech[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] Defer[Int][Sech[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\text{sech}^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx = \int \frac{\text{sech}^3(c+dx)}{(e+fx)^2(a+ia\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.03, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Sech[c + d*x]^3/((e + f*x)^2*(a + I*a*Sinh[c + d*x])),x]
[Out] $Aborted
```

fricas [A] time = 0.62, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="fricas"
)

[Out] -(8*I*d^2*f^3*x^2 + 16*I*d^2*e*f^2*x + 8*I*d^2*e^2*f - 24*I*f^3 + 3*(3*d^3*
f^3*x^3 + 3*d^3*e^3 - 6*d^2*e^2*f - 2*d*e*f^2 + 8*f^3 + 3*(3*d^3*e*f^2 - 2*
d^2*f^3)*x^2 + (9*d^3*e^2*f - 12*d^2*e*f^2 - 2*d*f^3)*x)*e^(5*d*x + 5*c) +
(-18*I*d^3*f^3*x^3 - 18*I*d^3*e^3 + 36*I*d^2*e^2*f - 24*I*f^3 + (-54*I*d^3*
e*f^2 + 36*I*d^2*f^3)*x^2 + (-54*I*d^3*e^2*f + 72*I*d^2*e*f^2)*x)*e^(4*d*x
+ 4*c) + 2*(3*d^3*f^3*x^3 + 3*d^3*e^3 - 8*d^2*e^2*f - 6*d*e*f^2 + 24*f^3 +
(9*d^3*e*f^2 - 8*d^2*f^3)*x^2 + (9*d^3*e^2*f - 16*d^2*e*f^2 - 6*d*f^3)*x)*e
^(3*d*x + 3*c) + (18*I*d^3*f^3*x^3 + 18*I*d^3*e^3 + 44*I*d^2*e^2*f - 48*I*f
^3 + (54*I*d^3*e*f^2 + 44*I*d^2*f^3)*x^2 + (54*I*d^3*e^2*f + 88*I*d^2*e*f^2
)*x)*e^(2*d*x + 2*c) + (9*d^3*f^3*x^3 + 9*d^3*e^3 + 2*d^2*e^2*f - 6*d*e*f^2
 + 24*f^3 + (27*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (27*d^3*e^2*f + 4*d^2*e*f^2 -
6*d*f^3)*x)*e^(d*x + c) - (12*a*d^4*f^5*x^5 + 60*a*d^4*e*f^4*x^4 + 120*a*d^
4*e^2*f^3*x^3 + 120*a*d^4*e^3*f^2*x^2 + 60*a*d^4*e^4*f*x + 12*a*d^4*e^5 - 1
2*(a*d^4*f^5*x^5 + 5*a*d^4*e*f^4*x^4 + 10*a*d^4*e^2*f^3*x^3 + 10*a*d^4*e^3*
f^2*x^2 + 5*a*d^4*e^4*f*x + a*d^4*e^5)*e^(6*d*x + 6*c) - (-24*I*a*d^4*f^5*x
^5 - 120*I*a*d^4*e*f^4*x^4 - 240*I*a*d^4*e^2*f^3*x^3 - 240*I*a*d^4*e^3*f^2*
x^2 - 120*I*a*d^4*e^4*f*x - 24*I*a*d^4*e^5)*e^(5*d*x + 5*c) - 12*(a*d^4*f^5
*x^5 + 5*a*d^4*e*f^4*x^4 + 10*a*d^4*e^2*f^3*x^3 + 10*a*d^4*e^3*f^2*x^2 + 5*
a*d^4*e^4*f*x + a*d^4*e^5)*e^(4*d*x + 4*c) - (-48*I*a*d^4*f^5*x^5 - 240*I*a
*d^4*e*f^4*x^4 - 480*I*a*d^4*e^2*f^3*x^3 - 480*I*a*d^4*e^3*f^2*x^2 - 240*I*
a*d^4*e^4*f*x - 48*I*a*d^4*e^5)*e^(3*d*x + 3*c) + 12*(a*d^4*f^5*x^5 + 5*a*d
^4*e*f^4*x^4 + 10*a*d^4*e^2*f^3*x^3 + 10*a*d^4*e^3*f^2*x^2 + 5*a*d^4*e^4*f*
x + a*d^4*e^5)*e^(2*d*x + 2*c) - (-24*I*a*d^4*f^5*x^5 - 120*I*a*d^4*e*f^4*x
^4 - 240*I*a*d^4*e^2*f^3*x^3 - 240*I*a*d^4*e^3*f^2*x^2 - 120*I*a*d^4*e^4*f*
x - 24*I*a*d^4*e^5)*e^(d*x + c))*integral(1/4*(-8*I*d^2*f^4*x^2 - 16*I*d^2*
e*f^3*x - 8*I*d^2*e^2*f^2 + 40*I*f^4 + (3*d^4*f^4*x^4 + 12*d^4*e*f^3*x^3 +
3*d^4*e^4 - 20*d^2*e^2*f^2 + 40*f^4 + 2*(9*d^4*e^2*f^2 - 10*d^2*f^4)*x^2 +
4*(3*d^4*e^3*f - 10*d^2*e*f^3)*x)*e^(d*x + c))/(a*d^4*f^6*x^6 + 6*a*d^4*e*f
^5*x^5 + 15*a*d^4*e^2*f^4*x^4 + 20*a*d^4*e^3*f^3*x^3 + 15*a*d^4*e^4*f^2*x^2
 + 6*a*d^4*e^5*f*x + a*d^4*e^6 + (a*d^4*f^6*x^6 + 6*a*d^4*e*f^5*x^5 + 15*a*
d^4*e^2*f^4*x^4 + 20*a*d^4*e^3*f^3*x^3 + 15*a*d^4*e^4*f^2*x^2 + 6*a*d^4*e^5
*f*x + a*d^4*e^6)*e^(2*d*x + 2*c)), x))/(12*a*d^4*f^5*x^5 + 60*a*d^4*e*f^4*
x^4 + 120*a*d^4*e^2*f^3*x^3 + 120*a*d^4*e^3*f^2*x^2 + 60*a*d^4*e^4*f*x + 12
*a*d^4*e^5 - 12*(a*d^4*f^5*x^5 + 5*a*d^4*e*f^4*x^4 + 10*a*d^4*e^2*f^3*x^3 +
 10*a*d^4*e^3*f^2*x^2 + 5*a*d^4*e^4*f*x + a*d^4*e^5)*e^(6*d*x + 6*c) - (-24
*I*a*d^4*f^5*x^5 - 120*I*a*d^4*e*f^4*x^4 - 240*I*a*d^4*e^2*f^3*x^3 - 240*I*
a*d^4*e^3*f^2*x^2 - 120*I*a*d^4*e^4*f*x - 24*I*a*d^4*e^5)*e^(5*d*x + 5*c) -
 12*(a*d^4*f^5*x^5 + 5*a*d^4*e*f^4*x^4 + 10*a*d^4*e^2*f^3*x^3 + 10*a*d^4*e^
3*f^2*x^2 + 5*a*d^4*e^4*f*x + a*d^4*e^5)*e^(4*d*x + 4*c) - (-48*I*a*d^4*f^5
*x^5 - 240*I*a*d^4*e*f^4*x^4 - 480*I*a*d^4*e^2*f^3*x^3 - 480*I*a*d^4*e^3*f^
2*x^2 - 240*I*a*d^4*e^4*f*x - 48*I*a*d^4*e^5)*e^(3*d*x + 3*c) + 12*(a*d^4*f
^5*x^5 + 5*a*d^4*e*f^4*x^4 + 10*a*d^4*e^2*f^3*x^3 + 10*a*d^4*e^3*f^2*x^2 +
```

```
5*a*d^4*e^4*f*x + a*d^4*e^5)*e^(2*d*x + 2*c) - (-24*I*a*d^4*f^5*x^5 - 120*I
*a*d^4*e*f^4*x^4 - 240*I*a*d^4*e^2*f^3*x^3 - 240*I*a*d^4*e^3*f^2*x^2 - 120*
I*a*d^4*e^4*f*x - 24*I*a*d^4*e^5)*e^(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 2.97, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)^{3}}{\left(fx+e\right)^{2}(a+ia\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(f*x+e)^2/(a+I*a*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -8*(8*I*d^2*f^3*x^2 + 16*I*d^2*e*f^2*x + 8*I*d^2*e^2*f - 24*I*f^3 + 3*(3*d^
3*f^3*x^3*e^(5*c) + 3*(3*d^3*e*f^2 - 2*d^2*f^3)*x^2*e^(5*c) + (9*d^3*e^2*f
- 12*d^2*e*f^2 - 2*d*f^3)*x*e^(5*c) + (3*d^3*e^3 - 6*d^2*e^2*f - 2*d*e*f^2
+ 8*f^3)*e^(5*c))*e^(5*d*x) + (-18*I*d^3*f^3*x^3*e^(4*c) + (-54*I*d^3*e*f^2
 + 36*I*d^2*f^3)*x^2*e^(4*c) + (-54*I*d^3*e^2*f + 72*I*d^2*e*f^2)*x*e^(4*c)
 + (-18*I*d^3*e^3 + 36*I*d^2*e^2*f - 24*I*f^3)*e^(4*c))*e^(4*d*x) + 2*(3*d^
3*f^3*x^3*e^(3*c) + (9*d^3*e*f^2 - 8*d^2*f^3)*x^2*e^(3*c) + (9*d^3*e^2*f -
16*d^2*e*f^2 - 6*d*f^3)*x*e^(3*c) + (3*d^3*e^3 - 8*d^2*e^2*f - 6*d*e*f^2 +
24*f^3)*e^(3*c))*e^(3*d*x) + (18*I*d^3*f^3*x^3*e^(2*c) + (54*I*d^3*e*f^2 +
44*I*d^2*f^3)*x^2*e^(2*c) + (54*I*d^3*e^2*f + 88*I*d^2*e*f^2)*x*e^(2*c) + (
18*I*d^3*e^3 + 44*I*d^2*e^2*f - 48*I*f^3)*e^(2*c))*e^(2*d*x) + (9*d^3*f^3*x
^3*e^c + (27*d^3*e*f^2 + 2*d^2*f^3)*x^2*e^c + (27*d^3*e^2*f + 4*d^2*e*f^2 -
```

```
6*d*f^3)*x*e^c + (9*d^3*e^3 + 2*d^2*e^2*f - 6*d*e*f^2 + 24*f^3)*e^c)*e^(d*
x))/(96*a*d^4*f^5*x^5 + 480*a*d^4*e*f^4*x^4 + 960*a*d^4*e^2*f^3*x^3 + 960*a
*d^4*e^3*f^2*x^2 + 480*a*d^4*e^4*f*x + 96*a*d^4*e^5 - 96*(a*d^4*f^5*x^5*e^(
6*c) + 5*a*d^4*e*f^4*x^4*e^(6*c) + 10*a*d^4*e^2*f^3*x^3*e^(6*c) + 10*a*d^4*
e^3*f^2*x^2*e^(6*c) + 5*a*d^4*e^4*f*x*e^(6*c) + a*d^4*e^5*e^(6*c))*e^(6*d*x
) - (-192*I*a*d^4*f^5*x^5*e^(5*c) - 960*I*a*d^4*e*f^4*x^4*e^(5*c) - 1920*I*
a*d^4*e^2*f^3*x^3*e^(5*c) - 1920*I*a*d^4*e^3*f^2*x^2*e^(5*c) - 960*I*a*d^4*
e^4*f*x*e^(5*c) - 192*I*a*d^4*e^5*e^(5*c))*e^(5*d*x) - 96*(a*d^4*f^5*x^5*e^
(4*c) + 5*a*d^4*e*f^4*x^4*e^(4*c) + 10*a*d^4*e^2*f^3*x^3*e^(4*c) + 10*a*d^4
*e^3*f^2*x^2*e^(4*c) + 5*a*d^4*e^4*f*x*e^(4*c) + a*d^4*e^5*e^(4*c))*e^(4*d*
x) - (-384*I*a*d^4*f^5*x^5*e^(3*c) - 1920*I*a*d^4*e*f^4*x^4*e^(3*c) - 3840*
I*a*d^4*e^2*f^3*x^3*e^(3*c) - 3840*I*a*d^4*e^3*f^2*x^2*e^(3*c) - 1920*I*a*d
^4*e^4*f*x*e^(3*c) - 384*I*a*d^4*e^5*e^(3*c))*e^(3*d*x) + 96*(a*d^4*f^5*x^5
*e^(2*c) + 5*a*d^4*e*f^4*x^4*e^(2*c) + 10*a*d^4*e^2*f^3*x^3*e^(2*c) + 10*a*
d^4*e^3*f^2*x^2*e^(2*c) + 5*a*d^4*e^4*f*x*e^(2*c) + a*d^4*e^5*e^(2*c))*e^(2
*d*x) - (-192*I*a*d^4*f^5*x^5*e^c - 960*I*a*d^4*e*f^4*x^4*e^c - 1920*I*a*d^
4*e^2*f^3*x^3*e^c - 1920*I*a*d^4*e^3*f^2*x^2*e^c - 960*I*a*d^4*e^4*f*x*e^c
- 192*I*a*d^4*e^5*e^c)*e^(d*x)) + 8*integrate((3*d^4*f^4*x^4 + 12*d^4*e*f^3
*x^3 + 3*d^4*e^4 - 28*d^2*e^2*f^2 + 80*f^4 + 2*(9*d^4*e^2*f^2 - 14*d^2*f^4)
*x^2 + 4*(3*d^4*e^3*f - 14*d^2*e*f^3)*x)/(-64*I*a*d^4*f^6*x^6 - 384*I*a*d^4
*e*f^5*x^5 - 960*I*a*d^4*e^2*f^4*x^4 - 1280*I*a*d^4*e^3*f^3*x^3 - 960*I*a*d
^4*e^4*f^2*x^2 - 384*I*a*d^4*e^5*f*x - 64*I*a*d^4*e^6 + 64*(a*d^4*f^6*x^6*e
^c + 6*a*d^4*e*f^5*x^5*e^c + 15*a*d^4*e^2*f^4*x^4*e^c + 20*a*d^4*e^3*f^3*x^
3*e^c + 15*a*d^4*e^4*f^2*x^2*e^c + 6*a*d^4*e^5*f*x*e^c + a*d^4*e^6*e^c)*e^(
d*x)), x) + 8*integrate(3*(d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2 - 4*f^2)/(64
*I*a*d^2*f^4*x^4 + 256*I*a*d^2*e*f^3*x^3 + 384*I*a*d^2*e^2*f^2*x^2 + 256*I*
a*d^2*e^3*f*x + 64*I*a*d^2*e^4 + 64*(a*d^2*f^4*x^4*e^c + 4*a*d^2*e*f^3*x^3*
e^c + 6*a*d^2*e^2*f^2*x^2*e^c + 4*a*d^2*e^3*f*x*e^c + a*d^2*e^4*e^c)*e^(d*x
)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+d\,x)^3\,\left(e+f\,x\right)^2\,\left(a+a\sinh(c+d\,x)\,1\mathrm{i}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)),x)
[Out] int(1/(cosh(c + d*x)^3*(e + f*x)^2*(a + a*sinh(c + d*x)*1i)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{i\int\frac{\operatorname{sech}^3(c+dx)}{e^2\sinh(c+dx)-ie^2+2efx\sinh(c+dx)-2iefx+f^2x^2\sinh(c+dx)-if^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**3/(f*x+e)**2/(a+I*a*sinh(d*x+c)),x)
```

```
[Out] -I*Integral(sech(c + d*x)**3/(e**2*sinh(c + d*x) - I*e**2 + 2*e*f*x*sinh(c
+ d*x) - 2*I*e*f*x + f**2*x**2*sinh(c + d*x) - I*f**2*x**2), x)/a
```

3.289 $\int \frac{(e+fx)^3 \cosh(c+dx)}{a+b\sinh(c+dx)}\, dx$

Optimal. Leaf size=356

$$\frac{6f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4}+\frac{6f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^4}-\frac{6f^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3}-\frac{6f^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^3}+\frac{3f(e+$$

```
[Out] -1/4*(f*x+e)^4/b/f+(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d+(f*
x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/d+3*f*(f*x+e)^2*polylog(2,-
b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d^2+3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+
c)/(a+(a^2+b^2)^(1/2)))/b/d^2-6*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2
+b^2)^(1/2)))/b/d^3-6*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2
)))/b/d^3+6*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d^4+6*f^3*po
lylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/d^4
```

Rubi [A] time = 0.48, antiderivative size = 356, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {5561, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3}-\frac{6f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^3}+\frac{3f(e+fx)^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b}}\right.}{bd^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(e + f*x)^4/(4*b*f) + ((e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2])])/(b*d) + ((e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])
])/(b*d) + (3*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^
2]))])/(b*d^2) + (3*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2]))])/(b*d^2) - (6*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - S
qrt[a^2 + b^2]))])/(b*d^3) - (6*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/
(a + Sqrt[a^2 + b^2]))])/(b*d^3) + (6*f^3*PolyLog[4, -((b*E^(c + d*x))/(a -
 Sqrt[a^2 + b^2]))])/(b*d^4) + (6*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqr
t[a^2 + b^2]))])/(b*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{(e+fx)^4}{4bf} + \int \frac{e^{c+dx}(e+fx)^3}{a-\sqrt{a^2+b^2}+be^{c+dx}}\,dx + \int \frac{e^{c+dx}(e+fx)^3}{a+\sqrt{a^2+b^2}+be^{c+dx}}\,dx$$

$$= -\frac{(e+fx)^4}{4bf} + \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} - \frac{(3}{}$$

$$= -\frac{(e+fx)^4}{4bf} + \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} + \frac{3f}{}$$

$$= -\frac{(e+fx)^4}{4bf} + \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} + \frac{3f}{}$$

$$= -\frac{(e+fx)^4}{4bf} + \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} + \frac{3f}{}$$

$$= -\frac{(e+fx)^4}{4bf} + \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} + \frac{3f}{}$$

Mathematica [A] time = 0.14, size = 329, normalized size = 0.92

$$\frac{\frac{12f\left(d^2(e+fx)^2\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)-2df(e+fx)\text{Li}_3\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+2f^2\text{Li}_4\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)\right)}{d^4}+\frac{12f\left(d^2(e+fx)^2\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)-2df(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)+\right.}{d^4}}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-((e + f*x)^4/f) + (4*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
b^2])])/d + (4*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/
d + (12*f*(d^2*(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2]
)] - 2*d*f*(e + f*x)*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2
*f^2*PolyLog[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]))/d^4 + (12*f*(d^2*
(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*d*f*(e
 + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 2*f^2*PolyLo
g[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/d^4)/(4*b)
```

fricas [C] time = 0.52, size = 882, normalized size = 2.48

$$-\frac{d^4f^3x^4+4\,d^4ef^2x^3+6\,d^4e^2fx^2+4\,d^4e^3x-24\,f^3\mathrm{polylog}\left(4,\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}}{b}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(d^4*f^3*x^4 + 4*d^4*e*f^2*x^3 + 6*d^4*e^2*f*x^2 + 4*d^4*e^3*x - 24*f^
3*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 24*f^3*polylog(4, (a*cosh(d*x + c) +
 a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2
))/b) - 12*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f)*dilog((a*cosh(d*x + c)
 + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2) - b)/b + 1) - 12*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f)*dilog((a*cos
h(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2) - b)/b + 1) - 4*(d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^
3*f^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2
) + 2*a) - 4*(d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*log(2*b*co
sh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 4*(d^3
*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2
+ c^3*f^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*s
inh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 4*(d^3*f^3*x^3 + 3*d^3*e*f^2*
x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*log(-(a*cosh
(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2) - b)/b) + 24*(d*f^3*x + d*e*f^2)*polylog(3, (a*cosh(d*x + c) +
 a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2
))/b) + 24*(d*f^3*x + d*e*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c
) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b))/(b*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^3\cosh\left(dx+c\right)}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{e^{3}\log\left(b\sinh\left(dx+c\right)+a\right)}{bd}+\frac{f^{3}x^{4}+4\,ef^{2}x^{3}+6\,e^{2}fx^{2}}{4\,b}-\int -\frac{2\left(bf^{3}x^{3}+3\,bef^{2}x^{2}+3\,be^{2}fx-\left(af^{3}x^{3}e^{c}+3\,aef^{2}x\right.\right.}{b^{2}e^{\left(2\,dx+2\,c\right)}+2\,abe^{\left(dx+c\right)}-b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] e^3*log(b*sinh(d*x + c) + a)/(b*d) + 1/4*(f^3*x^4 + 4*e*f^2*x^3 + 6*e^2*f*x
^2)/b - integrate(-2*(b*f^3*x^3 + 3*b*e*f^2*x^2 + 3*b*e^2*f*x - (a*f^3*x^3*
e^c + 3*a*e*f^2*x^2*e^c + 3*a*e^2*f*x*e^c)*e^(d*x))/(b^2*e^(2*d*x + 2*c) +
2*a*b*e^(d*x + c) - b^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^{3}}{a+b\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.290 $\int \frac{(e+fx)^2 \cosh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=264

$$-\frac{2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3}-\frac{2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^3}+\frac{2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2}+\frac{2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^2}+\frac{(e+fx)^2}{}$$

```
[Out] -1/3*(f*x+e)^3/b/f+(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d+(f*
x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/d+2*f*(f*x+e)*polylog(2,-b*
exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d^2+2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(
a+(a^2+b^2)^(1/2)))/b/d^2-2*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2))
)/b/d^3-2*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/d^3
```

Rubi [A] time = 0.41, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {5561, 2190, 2531, 2282, 6589}

$$\frac{2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2}+\frac{2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^2}-\frac{2f^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3}-\frac{2f^2\text{Poly}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(e + f*x)^3/(3*b*f) + ((e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2])])/(b*d) + ((e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])
])/(b*d) + (2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]
))])/(b*d^2) + (2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2]))])/(b*d^2) - (2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]
))])/(b*d^3) - (2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])
/(b*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
```

```
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{(e+fx)^3}{3bf} + \int \frac{e^{c+dx}(e+fx)^2}{a-\sqrt{a^2+b^2}+be^{c+dx}}\,dx + \int \frac{e^{c+dx}(e+fx)^2}{a+\sqrt{a^2+b^2}+be^{c+dx}}\,dx$$

$$= -\frac{(e+fx)^3}{3bf} + \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} - \frac{(2f)}{}$$

$$= -\frac{(e+fx)^3}{3bf} + \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} + \frac{2f(}{}$$

$$= -\frac{(e+fx)^3}{3bf} + \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} + \frac{2f(}{}$$

$$= -\frac{(e+fx)^3}{3bf} + \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} + \frac{2f(}{}$$

Mathematica [A] time = 0.13, size = 244, normalized size = 0.92

$$\frac{\frac{6f\left(d(e+fx)\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)-f\text{Li}_3\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)\right)}{d^3} + \frac{6f\left(d(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)-f\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)\right)}{d^3} + \frac{3(e+fx)^2\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{d} + \frac{3(e+fx)^2\text{lo}}{}}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-((e + f*x)^3/f) + (3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
b^2])])/d + (3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/
d + (6*f*(d*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] -
f*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]))/d^3 + (6*f*(d*(e + f
*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - f*PolyLog[3, -((
b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/d^3)/(3*b)
```

fricas [C] time = 0.54, size = 609, normalized size = 2.31

$$-\frac{d^3f^2x^3 + 3\,d^3efx^2 + 3\,d^3e^2x + 6\,f^2\text{polylog}\left(3, \frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}}{b}\right) + 6\,f^2\text{poly}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/3*(d^3*f^2*x^3 + 3*d^3*e*f*x^2 + 3*d^3*e^2*x + 6*f^2*polylog(3, (a*cosh(
d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2))/b) + 6*f^2*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*(d*f^2*x + d
*e*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(
d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 6*(d*f^2*x + d*e*f)*dilog((a*
cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2) - b)/b + 1) - 3*(d^2*e^2 - 2*c*d*e*f + c^2*f^2)*log(2*b*co
sh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 3*(d^2
*e^2 - 2*c*d*e*f + c^2*f^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b
*sqrt((a^2 + b^2)/b^2) + 2*a) - 3*(d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f -
c^2*f^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sin
h(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 3*(d^2*f^2*x^2 + 2*d^2*e*f*x +
2*c*d*e*f - c^2*f^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b))/(b*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2\cosh(dx+c)}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2\cosh(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{e^2\log(b\sinh(dx+c)+a)}{bd}+\frac{f^2x^3+3\,efx^2}{3\,b}-\int -\frac{2\left(bf^2x^2+2\,befx-\left(af^2x^2e^c+2\,aefxe^c\right)e^{(dx)}\right)}{b^2e^{(2\,dx+2\,c)}+2\,abe^{(dx+c)}-b^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] e^2*log(b*sinh(d*x + c) + a)/(b*d) + 1/3*(f^2*x^3 + 3*e*f*x^2)/b - integrat
e(-2*(b*f^2*x^2 + 2*b*e*f*x - (a*f^2*x^2*e^c + 2*a*e*f*x*e^c)*e^(d*x))/(b^2
*e^(2*d*x + 2*c) + 2*a*b*e^(d*x + c) - b^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)\,\left(e+f\,x\right)^2}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*cosh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.291 $\int \frac{(e+fx)\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=170

$$\frac{f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2}+\frac{f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^2}+\frac{(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd}+\frac{(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{bd}-\frac{(e+fx)^2}{2bf}$$

```
[Out] -1/2*(f*x+e)^2/b/f+(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/d+(f*x+
e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/d+f*polylog(2,-b*exp(d*x+c)/(a-
(a^2+b^2)^(1/2)))/b/d^2+f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/d^
2
```

Rubi [A] time = 0.23, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {5561, 2190, 2279, 2391}

$$\frac{f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2}+\frac{f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^2}+\frac{(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd}+\frac{(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(e + f*x)^2/(2*b*f) + ((e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b
^2])])/(b*d) + ((e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(
b*d) + (f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*d^2) + (
f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{(e+fx)^2}{2bf} + \int \frac{e^{c+dx}(e+fx)}{a-\sqrt{a^2+b^2}+be^{c+dx}}\,dx + \int \frac{e^{c+dx}(e+fx)}{a+\sqrt{a^2+b^2}+be^{c+dx}}\,dx$$

$$= -\frac{(e+fx)^2}{2bf} + \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} - \frac{f\int \log\ldots}{\ldots}$$

$$= -\frac{(e+fx)^2}{2bf} + \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} - \frac{f\,\mathrm{Subs}\ldots}{\ldots}$$

$$= -\frac{(e+fx)^2}{2bf} + \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd} + \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd} + \frac{f\,\mathrm{Li}_2\left(\ldots\right.}{\ldots}$$

Mathematica [A] time = 0.03, size = 157, normalized size = 0.92

$$\frac{-d(e+fx)\left(-2f\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-2f\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)+de+dfx\right)+2f^2\mathrm{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+2f^2\mathrm{Li}_2\left(-\frac{be^{c+d\ldots}}{a+\sqrt{a^2\ldots}}\right.}{2bd^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-(d*(e + f*x)*(d*e + d*f*x - 2*f*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b
^2])] - 2*f*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])) + 2*f^2*PolyLo
g[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*f^2*PolyLog[2, -((b*E^(c +
 d*x))/(a + Sqrt[a^2 + b^2]))])/(2*b*d^2*f)
```

fricas [B] time = 0.53, size = 380, normalized size = 2.24

$$-\frac{d^2fx^2+2\,d^2ex-2\,f\mathrm{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}-b}{b}+1\right)-2\,f\mathrm{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(d^2*f*x^2 + 2*d^2*e*x - 2*f*dilog((a*cosh(d*x + c) + a*sinh(d*x + c)
+ (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2
*f*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(d*e - c*f)*log(2*b*cosh(d*x +
 c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(d*e - c*f)*
log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a
) - 2*(d*f*x + c*f)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(d*f*x + c*f)*log(
-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*s
qrt((a^2 + b^2)/b^2) - b)/b))/(b*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cosh(dx+c)}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.14, size = 412, normalized size = 2.42

$$-\frac{f\,x^2}{2b}+\frac{ex}{b}-\frac{fc\ln\left(b\,\mathrm{e}^{2dx+2c}+2a\,\mathrm{e}^{dx+c}-b\right)}{d^2b}+\frac{2fc\ln\left(\mathrm{e}^{dx+c}\right)}{d^2b}+\frac{e\ln\left(b\,\mathrm{e}^{2dx+2c}+2a\,\mathrm{e}^{dx+c}-b\right)}{db}-\frac{2e\ln\left(\mathrm{e}^{dx+c}\right)}{db}+\frac{f\ln\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/2*f*x^2/b+e*x/b-1/d^2/b*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d^2/
b*f*c*ln(exp(d*x+c))+1/d/b*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/d/b*e*
ln(exp(d*x+c))+1/d/b*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(
```

```
1/2)))*x+1/d^2/b*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)
))*c+1/d/b*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d
^2/b*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/d^2/b*f
*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/d^2/b*f*dilo
g((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-2/d/b*f*c*x-1/d^2
/b*f*c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,f\left(\frac{x^2}{b}-\int\frac{4\left(axe^{(dx+c)}-bx\right)}{b^2e^{(2\,dx+2\,c)}+2\,abe^{(dx+c)}-b^2}\,dx\right)+\frac{e\log\left(b\sinh\left(dx+c\right)+a\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*f*(x^2/b - integrate(4*(a*x*e^(d*x + c) - b*x)/(b^2*e^(2*d*x + 2*c) + 2
*a*b*e^(d*x + c) - b^2), x)) + e*log(b*sinh(d*x + c) + a)/(b*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\cosh\left(c+d\,x\right)\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(e+fx\right)\cosh\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*cosh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.292 $\int \frac{\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=18

$$\frac{\log(a+b\sinh(c+dx))}{bd}$$

[Out] ln(a+b*sinh(d*x+c))/b/d

Rubi [A] time = 0.03, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2668, 31}

$$\frac{\log(a+b\sinh(c+dx))}{bd}$$

Antiderivative was successfully verified.

[In] Int[Cosh[c + d*x]/(a + b*Sinh[c + d*x]),x]

[Out] Log[a + b*Sinh[c + d*x]]/(b*d)

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{a+x}\,dx, x, b\sinh(c+dx)\right)}{bd}\\ &= \frac{\log(a+b\sinh(c+dx))}{bd}\end{aligned}$$

Mathematica [A] time = 0.01, size = 18, normalized size = 1.00

$$\frac{\log(a+b\sinh(c+dx))}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cosh[c + d*x]/(a + b*Sinh[c + d*x]),x]
[Out] Log[a + b*Sinh[c + d*x]]/(b*d)
```

fricas [B] time = 0.43, size = 44, normalized size = 2.44

$$-\frac{dx - \log\left(\frac{2\,(b\sinh(dx+c)+a)}{\cosh(dx+c)-\sinh(dx+c)}\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] -(d*x - log(2*(b*sinh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x + c))))/(b*d)
```

giac [A] time = 1.92, size = 33, normalized size = 1.83

$$\frac{\log\left(\left|b\left(e^{(dx+c)} - e^{(-dx-c)}\right) + 2\,a\right|\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/(b*d)
```

maple [A] time = 0.00, size = 19, normalized size = 1.06

$$\frac{\ln\left(a + b\sinh\left(dx + c\right)\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] ln(a+b*sinh(d*x+c))/b/d
```

maxima [A] time = 0.31, size = 18, normalized size = 1.00

$$\frac{\log\left(b\sinh\left(dx + c\right) + a\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] log(b*sinh(d*x + c) + a)/(b*d)
```

mupad [B] time = 0.08, size = 18, normalized size = 1.00

$$\frac{\ln\left(a+b\sinh\left(c+d\,x\right)\right)}{b\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)/(a + b*sinh(c + d*x)),x)
```

```
[Out] log(a + b*sinh(c + d*x))/(b*d)
```

sympy [A] time = 0.86, size = 41, normalized size = 2.28

$$\begin{cases} \frac{x\cosh\left(c\right)}{a} & \text{for}\: b = 0 \wedge d = 0 \\ \frac{\sinh\left(c+dx\right)}{ad} & \text{for}\: b = 0 \\ \frac{x\cosh\left(c\right)}{a+b\sinh\left(c\right)} & \text{for}\: d = 0 \\ \frac{\log\left(\frac{a}{b}+\sinh\left(c+dx\right)\right)}{bd} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Piecewise((x*cosh(c)/a, Eq(b, 0) & Eq(d, 0)), (sinh(c + d*x)/(a*d), Eq(b, 0
)), (x*cosh(c)/(a + b*sinh(c)), Eq(d, 0)), (log(a/b + sinh(c + d*x))/(b*d),
 True))
```

3.293 $\int \frac{\cosh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\cosh(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Cosh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Cosh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\cosh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 13.11, size = 0, normalized size = 0.00

$$\int \frac{\cosh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cosh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Integrate[Cosh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(cosh(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(cosh(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\log(fx+e)}{bf} - \frac{1}{2}\int -\frac{4\left(ae^{(dx+c)}-b\right)}{b^2fx+b^2e-\left(b^2fxe^{(2c)}+b^2ee^{(2c)}\right)e^{(2dx)}-2\left(abfxe^{c}+abee^{c}\right)e^{(dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] log(f*x + e)/(b*f) - 1/2*integrate(-4*(a*e^(d*x + c) - b)/(b^2*f*x + b^2*e
- (b^2*f*x*e^(2*c) + b^2*e*e^(2*c))*e^(2*d*x) - 2*(a*b*f*x*e^c + a*b*e*e^c)
*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh(c+d\,x)}{(e+f\,x)\,(a+b\sinh(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)/((e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int(cosh(c + d*x)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.294 $\int \frac{(e+fx)^3\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=527

$$\frac{6f^3\sqrt{a^2+b^2}\,\mathrm{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^4}-\frac{6f^3\sqrt{a^2+b^2}\,\mathrm{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^4}-\frac{6f^2\sqrt{a^2+b^2}\,(e+fx)\mathrm{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3}+\frac{6f^2\sqrt{a^2-}}{}$$

```
[Out] -1/4*a*(f*x+e)^4/b^2/f+6*f^2*(f*x+e)*cosh(d*x+c)/b/d^3+(f*x+e)^3*cosh(d*x+c
)/b/d-6*f^3*sinh(d*x+c)/b/d^4-3*f*(f*x+e)^2*sinh(d*x+c)/b/d^2+(f*x+e)^3*ln(
1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^2/d-(f*x+e)^3*ln(1+b*
exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^2/d+3*f*(f*x+e)^2*polylog
(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^2/d^2-3*f*(f*x+e)^2
*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^2/d^2-6*f^2
*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^2/d
^3+6*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/
2)/b^2/d^3+6*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/
2)/b^2/d^4-6*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/
2)/b^2/d^4
```

Rubi [A] time = 0.91, antiderivative size = 527, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 11, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.393, Rules used = {5565, 32, 3296, 2637, 3322, 2264, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6f^2\sqrt{a^2+b^2}\,(e+fx)\mathrm{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3}+\frac{6f^2\sqrt{a^2+b^2}\,(e+fx)\mathrm{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^2d^3}+\frac{3f\sqrt{a^2+b^2}\,(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a*(e + f*x)^4)/(4*b^2*f) + (6*f^2*(e + f*x)*Cosh[c + d*x])/(b*d^3) + ((e
+ f*x)^3*Cosh[c + d*x])/(b*d) + (Sqrt[a^2 + b^2]*(e + f*x)^3*Log[1 + (b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^2*d) - (Sqrt[a^2 + b^2]*(e + f*x)^3*Lo
g[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^2*d) + (3*Sqrt[a^2 + b^2]*
f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*d^
2) - (3*Sqrt[a^2 + b^2]*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqr
t[a^2 + b^2]))])/(b^2*d^2) - (6*Sqrt[a^2 + b^2]*f^2*(e + f*x)*PolyLog[3, -(
(b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*d^3) + (6*Sqrt[a^2 + b^2]*f^2
*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*d^3)
+ (6*Sqrt[a^2 + b^2]*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])
)])/(b^2*d^4) - (6*Sqrt[a^2 + b^2]*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sq
```

```
rt[a^2 + b^2]))])/(b^2*d^4) - (6*f^3*Sinh[c + d*x])/(b*d^4) - (3*f*(e + f*x
)^2*Sinh[c + d*x])/(b*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{a\int(e+fx)^3\,dx}{b^2} + \frac{\int(e+fx)^3\sinh(c+dx)\,dx}{b} + \frac{\left(a^2+b^2\right)\int\frac{(e+fx)^3}{a+b\sinh(c+dx)}\,dx}{b^2}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{\left(2\left(a^2+b^2\right)\right)\int\frac{e^{c+dx}(e+fx)^3}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{b^2} - \cdots$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{(e+fx)^3\cosh(c+dx)}{bd} - \frac{3f(e+fx)^2\sinh(c+dx)}{bd^2} + \frac{\left(2\sqrt{a^2+b^2}\cdots\right.}{\cdots}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(\cdots}{\cdots}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(\cdots}{\cdots}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(\cdots}{\cdots}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(\cdots}{\cdots}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cosh(c+dx)}{bd^3} + \frac{(e+fx)^3\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(\cdots}{\cdots}$$

Mathematica [A] time = 3.09, size = 933, normalized size = 1.77

$$-\frac{af^3x^4d^4+4aef^2x^3d^4+6ae^2fx^2d^4+4ae^3xd^4+8\sqrt{a^2+b^2}\,e^3\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^3-4be^3\cosh(c+dx)d^3-4bf^3\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/4*(4*a*d^4*e^3*x + 6*a*d^4*e^2*f*x^2 + 4*a*d^4*e*f^2*x^3 + a*d^4*f^3*x^4
 + 8*Sqrt[a^2 + b^2]*d^3*e^3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] -
 4*b*d^3*e^3*Cosh[c + d*x] - 24*b*d*e*f^2*Cosh[c + d*x] - 12*b*d^3*e^2*f*x*
Cosh[c + d*x] - 24*b*d*f^3*x*Cosh[c + d*x] - 12*b*d^3*e*f^2*x^2*Cosh[c + d*
x] - 4*b*d^3*f^3*x^3*Cosh[c + d*x] - 12*Sqrt[a^2 + b^2]*d^3*e^2*f*x*Log[1 +
 (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 12*Sqrt[a^2 + b^2]*d^3*e*f^2*x^2*
```

```
Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 4*Sqrt[a^2 + b^2]*d^3*f^3*
x^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 12*Sqrt[a^2 + b^2]*d^3
*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 12*Sqrt[a^2 + b^2
]*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 4*Sqrt[a^2
 + b^2]*d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 12*Sqr
t[a^2 + b^2]*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 +
b^2])] + 12*Sqrt[a^2 + b^2]*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/
(a + Sqrt[a^2 + b^2]))] + 24*Sqrt[a^2 + b^2]*d*e*f^2*PolyLog[3, (b*E^(c + d
*x))/(-a + Sqrt[a^2 + b^2])] + 24*Sqrt[a^2 + b^2]*d*f^3*x*PolyLog[3, (b*E^(
c + d*x))/(-a + Sqrt[a^2 + b^2])] - 24*Sqrt[a^2 + b^2]*d*e*f^2*PolyLog[3, -
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 24*Sqrt[a^2 + b^2]*d*f^3*x*PolyL
og[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 24*Sqrt[a^2 + b^2]*f^3*Po
lyLog[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 24*Sqrt[a^2 + b^2]*f^3*P
olyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 12*b*d^2*e^2*f*Sinh[c
 + d*x] + 24*b*f^3*Sinh[c + d*x] + 24*b*d^2*e*f^2*x*Sinh[c + d*x] + 12*b*d^
2*f^3*x^2*Sinh[c + d*x])/(b^2*d^4)
```

fricas [C] time = 0.79, size = 2020, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*b*d^3*f^3*x^3 + 2*b*d^3*e^3 + 6*b*d^2*e^2*f + 12*b*d*e*f^2 + 12*b*f^
3 + 6*(b*d^3*e*f^2 + b*d^2*f^3)*x^2 + 2*(b*d^3*f^3*x^3 + b*d^3*e^3 - 3*b*d^
2*e^2*f + 6*b*d*e*f^2 - 6*b*f^3 + 3*(b*d^3*e*f^2 - b*d^2*f^3)*x^2 + 3*(b*d^
3*e^2*f - 2*b*d^2*e*f^2 + 2*b*d*f^3)*x)*cosh(d*x + c)^2 + 2*(b*d^3*f^3*x^3
+ b*d^3*e^3 - 3*b*d^2*e^2*f + 6*b*d*e*f^2 - 6*b*f^3 + 3*(b*d^3*e*f^2 - b*d^
2*f^3)*x^2 + 3*(b*d^3*e^2*f - 2*b*d^2*e*f^2 + 2*b*d*f^3)*x)*sinh(d*x + c)^2
 + 12*((b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*cosh(d*x + c) + (b*d
^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(
d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 12*((b*d^2*f^3*x^2 + 2*b*d^2*
e*f^2*x + b*d^2*e^2*f)*cosh(d*x + c) + (b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b
*d^2*e^2*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b + 1) - 4*((b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3
)*cosh(d*x + c) + (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^
3)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*
x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 4*((b*d^3*e^3 - 3*b*c*d^2*e^2*f
 + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*cosh(d*x + c) + (b*d^3*e^3 - 3*b*c*d^2*e^2*
f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2
*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 4
*((b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f -
```

```
3*b*c^2*d*e*f^2 + b*c^3*f^3)*cosh(d*x + c) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2
*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sin
h(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) +
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 4*((b*
d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c
^2*d*e*f^2 + b*c^3*f^3)*cosh(d*x + c) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2
+ 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*c
osh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 24*(b*f^3*c
osh(d*x + c) + b*f^3*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cos
h(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2))/b) - 24*(b*f^3*cosh(d*x + c) + b*f^3*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 24*((b*d*f^3*x + b*d*e*f
^2)*cosh(d*x + c) + (b*d*f^3*x + b*d*e*f^2)*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*
sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*((b*d*f^3*x + b*d*e*f^2)*cosh
(d*x + c) + (b*d*f^3*x + b*d*e*f^2)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*po
lylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(b*d^3*e^2*f + 2*b*d^2*e*f^2 + 2*b*d*f
^3)*x - (a*d^4*f^3*x^4 + 4*a*d^4*e*f^2*x^3 + 6*a*d^4*e^2*f*x^2 + 4*a*d^4*e^
3*x)*cosh(d*x + c) - (a*d^4*f^3*x^4 + 4*a*d^4*e*f^2*x^3 + 6*a*d^4*e^2*f*x^2
 + 4*a*d^4*e^3*x - 4*(b*d^3*f^3*x^3 + b*d^3*e^3 - 3*b*d^2*e^2*f + 6*b*d*e*f
^2 - 6*b*f^3 + 3*(b*d^3*e*f^2 - b*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f - 2*b*d^2*e
*f^2 + 2*b*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^2*d^4*cosh(d*x + c) +
 b^2*d^4*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \cosh\left(dx+c\right)^{2}}{b \sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)^2/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.51, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\cosh^{2}\left(dx+c\right)\right)}{a+b \sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}e^3\left(\frac{2(dx+c)a}{b^2d}-\frac{e^{(dx+c)}}{bd}-\frac{e^{(-dx-c)}}{bd}-\frac{2\sqrt{a^2+b^2}\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{b^2d}\right)-\frac{\left(ad^4f^3x^4e^c+4\,ad^4ef^2x^3e^c+6\,ad^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*e^3*(2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) - e^(-d*x - c)/(b*d) -
2*sqrt(a^2 + b^2)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c
) - a + sqrt(a^2 + b^2)))/(b^2*d)) - 1/4*(a*d^4*f^3*x^4*e^c + 4*a*d^4*e*f^2
*x^3*e^c + 6*a*d^4*e^2*f*x^2*e^c - 2*(b*d^3*f^3*x^3*e^(2*c) + 3*(d^3*e*f^2
- d^2*f^3)*b*x^2*e^(2*c) + 3*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*b*x*e^(2*c
) - 3*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*b*e^(2*c))*e^(d*x) - 2*(b*d^3*f^3*x^3
 + 3*(d^3*e*f^2 + d^2*f^3)*b*x^2 + 3*(d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*b*
x + 3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*b)*e^(-d*x))*e^(-c)/(b^2*d^4) + integ
rate(2*((a^2*f^3*e^c + b^2*f^3*e^c)*x^3 + 3*(a^2*e*f^2*e^c + b^2*e*f^2*e^c)
*x^2 + 3*(a^2*e^2*f*e^c + b^2*e^2*f*e^c)*x)*e^(d*x)/(b^3*e^(2*d*x + 2*c) +
2*a*b^2*e^(d*x + c) - b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\cosh\left(c+d\,x\right)}^2\,{\left(e+f\,x\right)}^3}{a+b\,\sinh\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.295 $\int \frac{(e+fx)^2\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=389

$$-\frac{2f^2\sqrt{a^2+b^2}\,\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3}+\frac{2f^2\sqrt{a^2+b^2}\,\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^3}+\frac{2f\sqrt{a^2+b^2}\,(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{2f\sqrt{a^2+}}{}$$

```
[Out] -1/3*a*(f*x+e)^3/b^2/f+2*f^2*cosh(d*x+c)/b/d^3+(f*x+e)^2*cosh(d*x+c)/b/d-2*
f*(f*x+e)*sinh(d*x+c)/b/d^2+(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2))
)*(a^2+b^2)^(1/2)/b^2/d-(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a
^2+b^2)^(1/2)/b^2/d+2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2))
)*(a^2+b^2)^(1/2)/b^2/d^2-2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^
(1/2)))*(a^2+b^2)^(1/2)/b^2/d^2-2*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^
(1/2)))*(a^2+b^2)^(1/2)/b^2/d^3+2*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^
(1/2)))*(a^2+b^2)^(1/2)/b^2/d^3
```

Rubi [A] time = 0.79, antiderivative size = 389, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {5565, 32, 3296, 2638, 3322, 2264, 2190, 2531, 2282, 6589}

$$\frac{2f\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{2f\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^2d^2}-\frac{2f^2\sqrt{a^2+b^2}\,\text{PolyL}}{b^2d}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a*(e + f*x)^3)/(3*b^2*f) + (2*f^2*Cosh[c + d*x])/(b*d^3) + ((e + f*x)^2*C
osh[c + d*x])/(b*d) + (Sqrt[a^2 + b^2]*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/
(a - Sqrt[a^2 + b^2])])/(b^2*d) - (Sqrt[a^2 + b^2]*(e + f*x)^2*Log[1 + (b*E
^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^2*d) + (2*Sqrt[a^2 + b^2]*f*(e + f*x
)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*d^2) - (2*Sqrt
[a^2 + b^2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
])/(b^2*d^2) - (2*Sqrt[a^2 + b^2]*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqr
t[a^2 + b^2]))])/(b^2*d^3) + (2*Sqrt[a^2 + b^2]*f^2*PolyLog[3, -((b*E^(c +
d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*d^3) - (2*f*(e + f*x)*Sinh[c + d*x])/(b
*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{a\int (e+fx)^2\,dx}{b^2} + \frac{\int (e+fx)^2\sinh(c+dx)\,dx}{b} + \frac{\left(a^2+b^2\right)\int \frac{(e+fx)^2}{a+b\sinh(c+dx)}\,dx}{b^2}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{(e+fx)^2\cosh(c+dx)}{bd} + \frac{\left(2\left(a^2+b^2\right)\right)\int \frac{e^{c+dx}(e+fx)^2}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{b^2} -$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{(e+fx)^2\cosh(c+dx)}{bd} - \frac{2f(e+fx)\sinh(c+dx)}{bd^2} + \frac{\left(2\sqrt{a^2+b\right.}}{}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cosh(c+dx)}{bd^3} + \frac{(e+fx)^2\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(e+fx}{}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cosh(c+dx)}{bd^3} + \frac{(e+fx)^2\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(e+fx}{}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cosh(c+dx)}{bd^3} + \frac{(e+fx)^2\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(e+fx}{}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cosh(c+dx)}{bd^3} + \frac{(e+fx)^2\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(e+fx}{}$$

Mathematica [A] time = 2.77, size = 447, normalized size = 1.15

$$-\frac{3\sqrt{a^2+b^2}\left(2d^2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) - 2d^2efx\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) + 2d^2efx\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right) - d^2f^2x^2\log\left(\frac{}{a}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/3*(a*d^3*x*(3*e^2 + 3*e*f*x + f^2*x^2) + 3*Sqrt[a^2 + b^2]*(2*d^2*e^2*Ar
cTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 2*d^2*e*f*x*Log[1 + (b*E^(c +
d*x))/(a - Sqrt[a^2 + b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqr
t[a^2 + b^2])] + 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]
 + d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 2*d*f*(e +
f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*d*f*(e + f*x)*P
olyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 2*f^2*PolyLog[3, (b*E
^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2]))]) - 3*b*Cosh[d*x]*((2*f^2 + d^2*(e + f*x)^2)*Cosh[c] -
```

```
 2*d*f*(e + f*x)*Sinh[c]) + 3*b*(2*d*f*(e + f*x)*Cosh[c] - (2*f^2 + d^2*(e
+ f*x)^2)*Sinh[c])*Sinh[d*x])/(b^2*d^3)
```

fricas [C] time = 0.72, size = 1313, normalized size = 3.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/6*(3*b*d^2*f^2*x^2 + 3*b*d^2*e^2 + 6*b*d*e*f + 6*b*f^2 + 3*(b*d^2*f^2*x^2
 + b*d^2*e^2 - 2*b*d*e*f + 2*b*f^2 + 2*(b*d^2*e*f - b*d*f^2)*x)*cosh(d*x +
c)^2 + 3*(b*d^2*f^2*x^2 + b*d^2*e^2 - 2*b*d*e*f + 2*b*f^2 + 2*(b*d^2*e*f -
b*d*f^2)*x)*sinh(d*x + c)^2 + 12*((b*d*f^2*x + b*d*e*f)*cosh(d*x + c) + (b*
d*f^2*x + b*d*e*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x +
 c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2
)/b^2) - b)/b + 1) - 12*((b*d*f^2*x + b*d*e*f)*cosh(d*x + c) + (b*d*f^2*x +
 b*d*e*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*s
inh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) -
b)/b + 1) - 6*((b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*cosh(d*x + c) + (b*d^2
*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*
b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 6*
((b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*cosh(d*x + c) + (b*d^2*e^2 - 2*b*c*d
*e*f + b*c^2*f^2)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c
) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 6*((b*d^2*f^2*x^
2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*cosh(d*x + c) + (b*d^2*f^2*x^2
 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 6*((b*d^2*f^2*x^2 + 2*b*d^2*e*f*x
+ 2*b*c*d*e*f - b*c^2*f^2)*cosh(d*x + c) + (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x +
 2*b*c*d*e*f - b*c^2*f^2)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh
(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2) - b)/b) - 12*(b*f^2*cosh(d*x + c) + b*f^2*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*
x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 12*(b*f^2*cosh(d*x +
c) + b*f^2*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c)
 + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2))/b) + 6*(b*d^2*e*f + b*d*f^2)*x - 2*(a*d^3*f^2*x^3 + 3*a*d^3*e*f*x^2 +
3*a*d^3*e^2*x)*cosh(d*x + c) - 2*(a*d^3*f^2*x^3 + 3*a*d^3*e*f*x^2 + 3*a*d^3
*e^2*x - 3*(b*d^2*f^2*x^2 + b*d^2*e^2 - 2*b*d*e*f + 2*b*f^2 + 2*(b*d^2*e*f
- b*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^2*d^3*cosh(d*x + c) + b^2*d^
3*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \cosh\left(dx+c\right)^2}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)^2/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \left(\cosh^2\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}e^2\left(\frac{2\left(dx+c\right)a}{b^2d}-\frac{e^{(dx+c)}}{bd}-\frac{e^{(-dx-c)}}{bd}-\frac{2\sqrt{a^2+b^2}\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{b^2d}\right)-\frac{\left(2\,ad^3f^2x^3e^c+6\,ad^3efx^2e^c-3\left(b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*e^2*(2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) - e^(-d*x - c)/(b*d) -
2*sqrt(a^2 + b^2)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c
) - a + sqrt(a^2 + b^2)))/(b^2*d)) - 1/6*(2*a*d^3*f^2*x^3*e^c + 6*a*d^3*e*f
*x^2*e^c - 3*(b*d^2*f^2*x^2*e^(2*c) + 2*(d^2*e*f - d*f^2)*b*x*e^(2*c) - 2*(
d*e*f - f^2)*b*e^(2*c))*e^(d*x) - 3*(b*d^2*f^2*x^2 + 2*(d^2*e*f + d*f^2)*b*
x + 2*(d*e*f + f^2)*b)*e^(-d*x))*e^(-c)/(b^2*d^3) + integrate(2*((a^2*f^2*e
^c + b^2*f^2*e^c)*x^2 + 2*(a^2*e*f*e^c + b^2*e*f*e^c)*x)*e^(d*x)/(b^3*e^(2*
d*x + 2*c) + 2*a*b^2*e^(d*x + c) - b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\cosh\left(c+d\,x\right)}^2\,{\left(e+f\,x\right)}^2}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.296 $\int \frac{(e+fx)\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=252

$$\frac{f\sqrt{a^2+b^2}\,\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{f\sqrt{a^2+b^2}\,\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^2}+\frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^2d}-\frac{\sqrt{a^2+b^2}\,(e+$$

```
[Out] -a*e*x/b^2-1/2*a*f*x^2/b^2+(f*x+e)*cosh(d*x+c)/b/d-f*sinh(d*x+c)/b/d^2+(f*x
+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^2/d-(f*x+e)*ln
(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^2/d+f*polylog(2,-b*e
xp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^2/d^2-f*polylog(2,-b*exp(d
*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^2/d^2
```

Rubi [A] time = 0.44, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {5565, 3296, 2637, 3322, 2264, 2190, 2279, 2391}

$$\frac{f\sqrt{a^2+b^2}\,\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{f\sqrt{a^2+b^2}\,\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^2d^2}+\frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^2d}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*e*x)/b^2) - (a*f*x^2)/(2*b^2) + ((e + f*x)*Cosh[c + d*x])/(b*d) + (Sqr
t[a^2 + b^2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^2
*d) - (Sqrt[a^2 + b^2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2])])/(b^2*d) + (Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a
^2 + b^2]))])/(b^2*d^2) - (Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2]))])/(b^2*d^2) - (f*Sinh[c + d*x])/(b*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
```

```
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{a\int(e+fx)\,dx}{b^2} + \frac{\int(e+fx)\sinh(c+dx)\,dx}{b} + \frac{\left(a^2+b^2\right)\int \frac{e+fx}{a+b\sinh(c+dx)}\,dx}{b^2}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} + \frac{(e+fx)\cosh(c+dx)}{bd} + \frac{\left(2\left(a^2+b^2\right)\right)\int \frac{e^{c+dx}(e+fx)}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{b^2} -$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} + \frac{(e+fx)\cosh(c+dx)}{bd} - \frac{f\sinh(c+dx)}{bd^2} + \frac{\left(2\sqrt{a^2+b^2}\right)\int \frac{e^{c}}{2a-2\sqrt{}}}{b}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} + \frac{(e+fx)\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d} -$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} + \frac{(e+fx)\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d} -$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} + \frac{(e+fx)\cosh(c+dx)}{bd} + \frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d} -$$

Mathematica [A] time = 1.91, size = 258, normalized size = 1.02

$$2\sqrt{a^2+b^2}\left(-2de\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) + f\mathrm{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right) - f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right) + f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) - f(c$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(c + d*x)*(c*f - d*(2*e + f*x)) + 2*b*d*(e + f*x)*Cosh[c + d*x] + 2*Sqrt
[a^2 + b^2]*(-2*d*e*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 2*c*f*Ar
cTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + f*(c + d*x)*Log[1 + (b*E^(c +
d*x))/(a - Sqrt[a^2 + b^2])] - f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqr
t[a^2 + b^2])] + f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - f*P
olyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) - 2*b*f*Sinh[c + d*x])
/(2*b^2*d^2)
```

fricas [B] time = 0.66, size = 742, normalized size = 2.94

$$bdfx + bde + \left(bdfx + bde - bf\right)\cosh\left(dx+c\right)^2 + \left(bdfx + bde - bf\right)\sinh\left(dx+c\right)^2 + 2\left(bf\cosh\left(dx+c\right) + bf\,\mathrm{s}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")

[Out] 1/2*(b*d*f*x + b*d*e + (b*d*f*x + b*d*e - b*f)*cosh(d*x + c)^2 + (b*d*f*x + b*d*e - b*f)*sinh(d*x + c)^2 + 2*(b*f*cosh(d*x + c) + b*f*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(b*f*cosh(d*x + c) + b*f*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*((b*d*e - b*c*f)*cosh(d*x + c) + (b*d*e - b*c*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*((b*d*e - b*c*f)*cosh(d*x + c) + (b*d*e - b*c*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*((b*d*f*x + b*c*f)*cosh(d*x + c) + (b*d*f*x + b*c*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*((b*d*f*x + b*c*f)*cosh(d*x + c) + (b*d*f*x + b*c*f)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + b*f - (a*d^2*f*x^2 + 2*a*d^2*e*x)*cosh(d*x + c) - (a*d^2*f*x^2 + 2*a*d^2*e*x - 2*(b*d*f*x + b*d*e - b*f)*cosh(d*x + c))*sinh(d*x + c))/(b^2*d^2*cosh(d*x + c) + b^2*d^2*sinh(d*x + c))

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\cosh\left(dx+c\right)^{2}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")

[Out] integrate((f*x + e)*cosh(d*x + c)^2/(b*sinh(d*x + c) + a), x)

maple [B] time = 0.17, size = 901, normalized size = 3.58

$$-\frac{af\,x^{2}}{2b^{2}}-\frac{aex}{b^{2}}+\frac{\left(dfx+de-f\right){\mathrm e}^{dx+c}}{2d^{2}b}+\frac{\left(dfx+de+f\right){\mathrm e}^{-dx-c}}{2d^{2}b}-\frac{2a^{2}e\,\mathrm{arctanh}\left(\frac{2b\,{\mathrm e}^{dx+c}+2a}{2\sqrt{a^{2}+b^{2}}}\right)}{d\,b^{2}\sqrt{a^{2}+b^{2}}}-\frac{2e\,\mathrm{arctanh}\left(\frac{2b\,{\mathrm e}^{dx+c}+2a}{2\sqrt{a^{2}+b^{2}}}\right)}{d\sqrt{a^{2}+b^{2}}}+$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f*x+e)*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x)

[Out] -1/2*a*f*x^2/b^2-a*e*x/b^2+1/2*(d*f*x+d*e-f)/d^2/b*exp(d*x+c)+1/2*(d*f*x+d*e+f)/d^2/b*exp(-d*x-c)-2/d*a^2/b^2*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d

```
*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+
c)+2*a)/(a^2+b^2)^(1/2))+1/d*a^2/b^2*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a
^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d^2*a^2/b^2*f/(a^2+b^2)^(1/2)*ln
((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a^2/b^2*f/(a
^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/
d^2*a^2/b^2*f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b
^2)^(1/2)))*c+1/d^2*a^2/b^2*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2
)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2*a^2/b^2*f/(a^2+b^2)^(1/2)*dilog((b*e
xp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/d*f/(a^2+b^2)^(1/2)*ln(
(-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d^2*f/(a^2+b^2)
^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*f/(
a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1
/d^2*f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/
2)))*c+1/d^2*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+
(a^2+b^2)^(1/2)))-1/d^2*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/
2)+a)/(a+(a^2+b^2)^(1/2)))+2/d^2*a^2/b^2*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2
*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/d^2*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(
2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(4\left(a^2e^c + b^2e^c\right)\int \frac{xe^{(dx)}}{b^3e^{(2\,dx+2\,c)} + 2\,ab^2e^{(dx+c)} - b^3}\,dx - \frac{\left(ad^2x^2e^c - \left(bdxe^{(2\,c)} - be^{(2\,c)}\right)e^{(dx)} - (bdx + b)e^{(-dx)}\right)e^{(-c}}{b^2d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(4*(a^2*e^c + b^2*e^c)*integrate(x*e^(d*x)/(b^3*e^(2*d*x + 2*c) + 2*a*b
^2*e^(d*x + c) - b^3), x) - (a*d^2*x^2*e^c - (b*d*x*e^(2*c) - b*e^(2*c))*e^
(d*x) - (b*d*x + b)*e^(-d*x))*e^(-c)/(b^2*d^2))*f - 1/2*e*(2*(d*x + c)*a/(b
^2*d) - e^(d*x + c)/(b*d) - e^(-d*x - c)/(b*d) - 2*sqrt(a^2 + b^2)*log((b*e
^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/
(b^2*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)^2\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.297 $\int \frac{\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=68

$$-\frac{2\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^2d}-\frac{ax}{b^2}+\frac{\cosh(c+dx)}{bd}$$

```
[Out] -a*x/b^2+cosh(d*x+c)/b/d-2*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2
))*(a^2+b^2)^(1/2)/b^2/d
```

Rubi [A] time = 0.12, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2695, 2735, 2660, 618, 204}

$$-\frac{2\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^2d}-\frac{ax}{b^2}+\frac{\cosh(c+dx)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[Cosh[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*x)/b^2) - (2*Sqrt[a^2 + b^2]*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^
2 + b^2]])/(b^2*d) + Cosh[c + d*x]/(b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
```

```
a^2 - b^2, 0]
```

Rule 2695

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_), x_Symbol] :> Simp[(g*(g*Cos[e + f*x])^(p - 1)*(a + b*Sin[e + f*x
])^(m + 1))/(b*f*(m + p)), x] + Dist[(g^2*(p - 1))/(b*(m + p)), Int[(g*Cos[
e + f*x])^(p - 2)*(a + b*Sin[e + f*x])^m*(b + a*Sin[e + f*x]), x], x] /; Fr
eeQ[{a, b, e, f, g, m}, x] && NeQ[a^2 - b^2, 0] && GtQ[p, 1] && NeQ[m + p,
0] && IntegersQ[2*m, 2*p]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx &= \frac{\cosh(c+dx)}{bd}+\frac{i\int \frac{-ib+ia\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}\\ &= -\frac{ax}{b^2}+\frac{\cosh(c+dx)}{bd}+\frac{\left(a^2+b^2\right)\int \frac{1}{a+b\sinh(c+dx)}\,dx}{b^2}\\ &= -\frac{ax}{b^2}+\frac{\cosh(c+dx)}{bd}-\frac{\left(2i\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(ic+idx)\right)\right)}{b^2d}\\ &= -\frac{ax}{b^2}+\frac{\cosh(c+dx)}{bd}+\frac{\left(4i\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{1}{-4\left(a^2+b^2\right)-x^2}\,dx,x,-2ib+2a\tan\left(\frac{1}{2}(ic\right.\right.}{b^2d}\\ &= -\frac{ax}{b^2}-\frac{2\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^2d}+\frac{\cosh(c+dx)}{bd}\end{aligned}$$

Mathematica [C] time = 1.42, size = 458, normalized size = 6.74

$$\frac{\cosh(c+dx)\left(\sqrt{a+ib}\sqrt{-\frac{b(\sinh(c+dx)-i)}{a+ib}}\left(\sqrt{a-ib}\sqrt{1+i\sinh(c+dx)}\sqrt{-\frac{b(\sinh(c+dx)+i)}{a-ib}}-2(-1)^{3/4}\sqrt{b}\sin^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{}}{}\right.\right.\right.}{bd\sqrt{a-ib}\sqrt{a+ib}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cosh[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (Cosh[c + d*x]*(-2*Sqrt[a - I*b]*Sqrt[a + I*b]*ArcTanh[Sqrt[-((b*(I + Sinh[
c + d*x]))/(a - I*b))]/Sqrt[-((b*(-I + Sinh[c + d*x]))/(a + I*b))]]*Sqrt[1
+ I*Sinh[c + d*x]] + 2*(a - I*b)*ArcTanh[(Sqrt[a - I*b]*Sqrt[-((b*(I + Sinh
[c + d*x]))/(a - I*b))])/(Sqrt[a + I*b]*Sqrt[-((b*(-I + Sinh[c + d*x]))/(a
+ I*b))])]*Sqrt[1 + I*Sinh[c + d*x]] + Sqrt[a + I*b]*Sqrt[-((b*(-I + Sinh[c
 + d*x]))/(a + I*b))]*(-2*(-1)^(3/4)*Sqrt[b]*ArcSin[((-1)^(1/4)*Sqrt[a - I*
b]*Sqrt[-((b*(I + Sinh[c + d*x]))/(a - I*b))])/(Sqrt[2]*Sqrt[b])] + Sqrt[a
- I*b]*Sqrt[1 + I*Sinh[c + d*x]]*Sqrt[-((b*(I + Sinh[c + d*x]))/(a - I*b))]
)))/(Sqrt[a - I*b]*Sqrt[a + I*b]*b*d*Sqrt[1 + I*Sinh[c + d*x]]*Sqrt[-((b*(-
I + Sinh[c + d*x]))/(a + I*b))]*Sqrt[-((b*(I + Sinh[c + d*x]))/(a - I*b))])
```

fricas [B] time = 0.60, size = 259, normalized size = 3.81

$$-\frac{2\,adx\cosh\left(dx+c\right) - b\cosh\left(dx+c\right)^2 - b\sinh\left(dx+c\right)^2 - 2\sqrt{a^2+b^2}\left(\cosh\left(dx+c\right)+\sinh\left(dx+c\right)\right)\log\left(\frac{b^2 \mathrm{co}\cdots}{\cdots}\right)\cdots}{2\left(\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*a*d*x*cosh(d*x + c) - b*cosh(d*x + c)^2 - b*sinh(d*x + c)^2 - 2*sqr
t(a^2 + b^2)*(cosh(d*x + c) + sinh(d*x + c))*log((b^2*cosh(d*x + c)^2 + b^2
*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c)
 + a*b)*sinh(d*x + c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x + c
) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*c
osh(d*x + c) + a)*sinh(d*x + c) - b)) + 2*(a*d*x - b*cosh(d*x + c))*sinh(d*
x + c) - b)/(b^2*d*cosh(d*x + c) + b^2*d*sinh(d*x + c))
```

giac [A] time = 0.19, size = 110, normalized size = 1.62

$$-\frac{\frac{2\,(dx+c)a}{b^2} - \frac{e^{(dx+c)}}{b} - \frac{e^{(-dx-c)}}{b} - \frac{2\sqrt{a^2+b^2}\log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\sqrt{a^2+b^2}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\sqrt{a^2+b^2}\right|}\right)}{b^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(2*(d*x + c)*a/b^2 - e^(d*x + c)/b - e^(-d*x - c)/b - 2*sqrt(a^2 + b^2
)*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d*x + c) +
2*a + 2*sqrt(a^2 + b^2)))/b^2)/d
```

maple [B] time = 0.07, size = 174, normalized size = 2.56

$$-\frac{1}{db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}+\frac{a\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{d\,b^2}+\frac{1}{db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}-\frac{a\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{d\,b^2}+\frac{2a^2\,\mathrm{arcta}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/d/b/(tanh(1/2*d*x+1/2*c)-1)+1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)-1)+1/d/b/(t
anh(1/2*d*x+1/2*c)+1)-1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)+1)+2/d*a^2/b^2/(a^2+
b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))+2/d/(
a^2+b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))
```

maxima [A] time = 0.42, size = 116, normalized size = 1.71

$$-\frac{(dx+c)a}{b^2d}+\frac{e^{(dx+c)}}{2\,bd}+\frac{e^{(-dx-c)}}{2\,bd}+\frac{\sqrt{a^2+b^2}\,\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{b^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(d*x + c)*a/(b^2*d) + 1/2*e^(d*x + c)/(b*d) + 1/2*e^(-d*x - c)/(b*d) + sqr
t(a^2 + b^2)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a
 + sqrt(a^2 + b^2)))/(b^2*d)
```

mupad [B] time = 0.42, size = 121, normalized size = 1.78

$$\frac{\mathrm{e}^{c+d\,x}}{2\,b\,d}-\frac{2\,\mathrm{atan}\left(\frac{a\,\sqrt{-b^4\,d^2}}{b^2\,d\,\sqrt{a^2+b^2}}+\frac{\mathrm{e}^{d\,x}\,\mathrm{e}^{c}\,\sqrt{-b^4\,d^2}}{b\,d\,\sqrt{a^2+b^2}}\right)\,\sqrt{a^2+b^2}}{\sqrt{-b^4\,d^2}}+\frac{\mathrm{e}^{-c-d\,x}}{2\,b\,d}-\frac{a\,x}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)^2/(a + b*sinh(c + d*x)),x)
```

```
[Out] exp(c + d*x)/(2*b*d) - (2*atan((a*(-b^4*d^2)^(1/2))/(b^2*d*(a^2 + b^2)^(1/2
)) + (exp(d*x)*exp(c)*(-b^4*d^2)^(1/2))/(b*d*(a^2 + b^2)^(1/2)))*(a^2 + b^2
)^(1/2))/(-b^4*d^2)^(1/2) + exp(- c - d*x)/(2*b*d) - (a*x)/b^2
```

sympy [A] time = 156.44, size = 503, normalized size = 7.40

$$\begin{cases} \frac{\tilde{\infty} x \cosh^2(c)}{\sinh(c)} \\ \frac{-\frac{x\sinh^2(c+dx)}{2}+\frac{x\cosh^2(c+dx)}{2}+\frac{\sinh(c+dx)\cosh(c+dx)}{2d}}{a} \\ \frac{x\cosh^2(c)}{a+b\sinh(c)} \\ \frac{\frac{\log\left(\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)\right)\tanh^2\left(\frac{c}{2}+\frac{dx}{2}\right)}{d\tanh^2\left(\frac{c}{2}+\frac{dx}{2}\right)-d}-\frac{\log\left(\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)\right)}{d\tanh^2\left(\frac{c}{2}+\frac{dx}{2}\right)-d}-\frac{2}{d\tanh^2\left(\frac{c}{2}+\frac{dx}{2}\right)-d}}{b} \\ -\frac{adx\tanh^2\left(\frac{c}{2}+\frac{dx}{2}\right)}{b^2d\tanh^2\left(\frac{c}{2}+\frac{dx}{2}\right)-b^2d}+\frac{adx}{b^2d\tanh^2\left(\frac{c}{2}+\frac{dx}{2}\right)-b^2d}-\frac{2b}{b^2d\tanh^2\left(\frac{c}{2}+\frac{dx}{2}\right)-b^2d}-\frac{\sqrt{a^2+b^2}\log\left(\tanh\left(\frac{c}{2}+\frac{dx}{2}\right)-\frac{b}{a}-\frac{\sqrt{a^2+b^2}}{a}\right)\tanh^2\left(\frac{c}{2}+\frac{dx}{2}\right)}{b^2d\tanh^2\left(\frac{c}{2}+\frac{dx}{2}\right)-b^2d}+\ldots \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Piecewise((zoo*x*cosh(c)**2/sinh(c), Eq(a, 0) & Eq(b, 0) & Eq(d, 0)), ((-x*
sinh(c + d*x)**2/2 + x*cosh(c + d*x)**2/2 + sinh(c + d*x)*cosh(c + d*x)/(2*
d))/a, Eq(b, 0)), (x*cosh(c)**2/(a + b*sinh(c)), Eq(d, 0)), ((log(tanh(c/2
+ d*x/2))*tanh(c/2 + d*x/2)**2/(d*tanh(c/2 + d*x/2)**2 - d) - log(tanh(c/2
+ d*x/2))/(d*tanh(c/2 + d*x/2)**2 - d) - 2/(d*tanh(c/2 + d*x/2)**2 - d))/b,
 Eq(a, 0)), (-a*d*x*tanh(c/2 + d*x/2)**2/(b**2*d*tanh(c/2 + d*x/2)**2 - b**
2*d) + a*d*x/(b**2*d*tanh(c/2 + d*x/2)**2 - b**2*d) - 2*b/(b**2*d*tanh(c/2
+ d*x/2)**2 - b**2*d) - sqrt(a**2 + b**2)*log(tanh(c/2 + d*x/2) - b/a - sqr
t(a**2 + b**2)/a)*tanh(c/2 + d*x/2)**2/(b**2*d*tanh(c/2 + d*x/2)**2 - b**2*
d) + sqrt(a**2 + b**2)*log(tanh(c/2 + d*x/2) - b/a - sqrt(a**2 + b**2)/a)/(
b**2*d*tanh(c/2 + d*x/2)**2 - b**2*d) + sqrt(a**2 + b**2)*log(tanh(c/2 + d*
x/2) - b/a + sqrt(a**2 + b**2)/a)*tanh(c/2 + d*x/2)**2/(b**2*d*tanh(c/2 + d
*x/2)**2 - b**2*d) - sqrt(a**2 + b**2)*log(tanh(c/2 + d*x/2) - b/a + sqrt(a
**2 + b**2)/a)/(b**2*d*tanh(c/2 + d*x/2)**2 - b**2*d), True))
```

3.298 $\int \frac{\cosh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{\cosh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Cosh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][Cosh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\cosh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\cosh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 25.27, size = 0, normalized size = 0.00

$$\int \frac{\cosh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cosh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Integrate[Cosh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.79, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\cosh\left(dx+c\right)^2}{afx+ae+\left(bfx+be\right)\sinh\left(dx+c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(cosh(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)^2}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] integrate(cosh(d*x + c)^2/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\cosh^2(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] int(cosh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$2\left(a^2e^c+b^2e^c\right)\int -\frac{e^{(dx)}}{b^3fx+b^3e-\left(b^3fxe^{(2c)}+b^3ee^{(2c)}\right)e^{(2dx)}-2\left(ab^2fxe^c+ab^2ee^c\right)e^{(dx)}}\,dx+\frac{e^{\left(-c+\frac{de}{f}\right)}E_1\left(\frac{(fx+e)d}{f}\right)}{2bf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] 2*(a^2*e^c + b^2*e^c)*integrate(-e^(d*x)/(b^3*f*x + b^3*e - (b^3*f*x*e^(2*c
) + b^3*e*e^(2*c))*e^(2*d*x) - 2*(a*b^2*f*x*e^c + a*b^2*e*e^c)*e^(d*x)), x)
 + 1/2*e^(-c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b*f) - 1/2*e^(c - d
*e/f)*exp_integral_e(1, -(f*x + e)*d/f)/(b*f) - a*log(f*x + e)/(b^2*f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh(c+d\,x)^2}{(e+f\,x)\,(a+b\sinh(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)^2/((e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int(cosh(c + d*x)^2/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.299 $\int \frac{(e+fx)^3 \cosh^3(c+dx)}{a+b\sinh(c+dx)} dx$

Optimal. Leaf size=642

$$\frac{6f^3(a^2+b^2)\operatorname{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^4}+\frac{6f^3(a^2+b^2)\operatorname{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^4}-\frac{6f^2(a^2+b^2)(e+fx)\operatorname{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3}-\frac{6f^2(a^2}{}$$

[Out] 3/8*f^3*x/b/d^3+1/4*(f*x+e)^3/b/d-1/4*(a^2+b^2)*(f*x+e)^4/b^3/f+6*a*f^3*cosh(d*x+c)/b^2/d^4+3*a*f*(f*x+e)^2*cosh(d*x+c)/b^2/d^2+(a^2+b^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d+(a^2+b^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d+3*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^2+3*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^2-6*(a^2+b^2)*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^3-6*(a^2+b^2)*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^3+6*(a^2+b^2)*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^4+6*(a^2+b^2)*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^4-6*a*f^2*(f*x+e)*sinh(d*x+c)/b^2/d^3-a*(f*x+e)^3*sinh(d*x+c)/b^2/d-3/8*f^3*cosh(d*x+c)*sinh(d*x+c)/b/d^4-3/4*f*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/b/d^2+3/4*f^2*(f*x+e)*sinh(d*x+c)^2/b/d^3+1/2*(f*x+e)^3*sinh(d*x+c)^2/b/d

Rubi [A] time = 0.78, antiderivative size = 642, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 14, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5565, 3296, 2638, 5446, 3311, 32, 2635, 8, 5561, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6f^2(a^2+b^2)(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3}-\frac{6f^2(a^2+b^2)(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^3}+\frac{3f(a^2+b^2)(}{}$$

Antiderivative was successfully verified.

[In] Int[((e + f*x)^3*Cosh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]

[Out] (3*f^3*x)/(8*b*d^3) + (e + f*x)^3/(4*b*d) - ((a^2 + b^2)*(e + f*x)^4)/(4*b^3*f) + (6*a*f^3*Cosh[c + d*x])/(b^2*d^4) + (3*a*f*(e + f*x)^2*Cosh[c + d*x])/(b^2*d^2) + ((a^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^3*d) + ((a^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^3*d) + (3*(a^2 + b^2)*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^2) + (3*(a^2 + b^2)*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^2) - (6*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^3) - (6*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a

```
 + Sqrt[a^2 + b^2]))])/(b^3*d^3) + (6*(a^2 + b^2)*f^3*PolyLog[4, -((b*E^(c
+ d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^4) + (6*(a^2 + b^2)*f^3*PolyLog[4,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^4) - (6*a*f^2*(e + f*x)*S
inh[c + d*x])/(b^2*d^3) - (a*(e + f*x)^3*Sinh[c + d*x])/(b^2*d) - (3*f^3*Co
sh[c + d*x]*Sinh[c + d*x])/(8*b*d^4) - (3*f*(e + f*x)^2*Cosh[c + d*x]*Sinh[
c + d*x])/(4*b*d^2) + (3*f^2*(e + f*x)*Sinh[c + d*x]^2)/(4*b*d^3) + ((e + f
*x)^3*Sinh[c + d*x]^2)/(2*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
```

```
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
```

```
&& IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{a\int (e+fx)^3\cosh(c+dx)\,dx}{b^2} + \frac{\int (e+fx)^3\cosh(c+dx)\sinh(c+dx)\,dx}{b} + \frac{(a^2 \cdots}{\cdots}$$

$$= -\frac{\left(a^2+b^2\right)(e+fx)^4}{4b^3f} - \frac{a(e+fx)^3\sinh(c+dx)}{b^2d} + \frac{(e+fx)^3\sinh^2(c+dx)}{2bd} + \frac{(a^2 \cdots}{\cdots}$$

$$= -\frac{\left(a^2+b^2\right)(e+fx)^4}{4b^3f} + \frac{3af(e+fx)^2\cosh(c+dx)}{b^2d^2} + \frac{\left(a^2+b^2\right)(e+fx)^3\log\left(1+\cdots\right.}{b^3d}$$

$$= \frac{(e+fx)^3}{4bd} - \frac{\left(a^2+b^2\right)(e+fx)^4}{4b^3f} + \frac{3af(e+fx)^2\cosh(c+dx)}{b^2d^2} + \frac{\left(a^2+b^2\right)(e+f \cdots}{\cdots}$$

$$= \frac{3f^3x}{8bd^3} + \frac{(e+fx)^3}{4bd} - \frac{\left(a^2+b^2\right)(e+fx)^4}{4b^3f} + \frac{6af^3\cosh(c+dx)}{b^2d^4} + \frac{3af(e+fx)^2\text{co}\cdots}{b^2d^2}$$

$$= \frac{3f^3x}{8bd^3} + \frac{(e+fx)^3}{4bd} - \frac{\left(a^2+b^2\right)(e+fx)^4}{4b^3f} + \frac{6af^3\cosh(c+dx)}{b^2d^4} + \frac{3af(e+fx)^2\text{co}\cdots}{b^2d^2}$$

$$= \frac{3f^3x}{8bd^3} + \frac{(e+fx)^3}{4bd} - \frac{\left(a^2+b^2\right)(e+fx)^4}{4b^3f} + \frac{6af^3\cosh(c+dx)}{b^2d^4} + \frac{3af(e+fx)^2\text{co}\cdots}{b^2d^2}$$

Mathematica [B] time = 23.92, size = 10263, normalized size = 15.99

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] Result too large to show
```

fricas [C] time = 0.67, size = 4371, normalized size = 6.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/32*(4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 + 6*b^2*d^2*e^2*f + 6*b^2*d*e*f^2 +
 3*b^2*f^3 + (4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f + 6*b^2*d
*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2*b^2*d^3*e
^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c)^4 + (4*b^2*d^3*f^3*x^3
 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f + 6*b^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d
^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2*b^2*d^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*
f^3)*x)*sinh(d*x + c)^4 - 16*(a*b*d^3*f^3*x^3 + a*b*d^3*e^3 - 3*a*b*d^2*e^2
*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(a
*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c)^3 - 4*(4*a*b
*d^3*f^3*x^3 + 4*a*b*d^3*e^3 - 12*a*b*d^2*e^2*f + 24*a*b*d*e*f^2 - 24*a*b*f
^3 + 12*(a*b*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 12*(a*b*d^3*e^2*f - 2*a*b*d^2*e
*f^2 + 2*a*b*d*f^3)*x - (4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*
f + 6*b^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(
2*b^2*d^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c))*sinh(d*x +
 c)^3 + 6*(2*b^2*d^3*e*f^2 + b^2*d^2*f^3)*x^2 - 8*((a^2 + b^2)*d^4*f^3*x^4
+ 4*(a^2 + b^2)*d^4*e*f^2*x^3 + 6*(a^2 + b^2)*d^4*e^2*f*x^2 + 4*(a^2 + b^2)
*d^4*e^3*x + 8*(a^2 + b^2)*c*d^3*e^3 - 12*(a^2 + b^2)*c^2*d^2*e^2*f + 8*(a^
2 + b^2)*c^3*d*e*f^2 - 2*(a^2 + b^2)*c^4*f^3)*cosh(d*x + c)^2 - 2*(4*(a^2 +
 b^2)*d^4*f^3*x^4 + 16*(a^2 + b^2)*d^4*e*f^2*x^3 + 24*(a^2 + b^2)*d^4*e^2*f
*x^2 + 16*(a^2 + b^2)*d^4*e^3*x + 32*(a^2 + b^2)*c*d^3*e^3 - 48*(a^2 + b^2)
*c^2*d^2*e^2*f + 32*(a^2 + b^2)*c^3*d*e*f^2 - 8*(a^2 + b^2)*c^4*f^3 - 3*(4*
b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f + 6*b^2*d*e*f^2 - 3*b^2*f
^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2*b^2*d^3*e^2*f - 2*b^2*d^2
*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c)^2 + 24*(a*b*d^3*f^3*x^3 + a*b*d^3*e^3
- 3*a*b*d^2*e^2*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*d^3*e*f^2 - a*b*d^2*
f^3)*x^2 + 3*(a*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x +
c))*sinh(d*x + c)^2 + 6*(2*b^2*d^3*e^2*f + 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x +
 16*(a*b*d^3*f^3*x^3 + a*b*d^3*e^3 + 3*a*b*d^2*e^2*f + 6*a*b*d*e*f^2 + 6*a*
```

b*f^3 + 3*(a*b*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(a*b*d^3*e^2*f + 2*a*b*d^2*
e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c) + 96*(((a^2 + b^2)*d^2*f^3*x^2 + 2*(a
^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*cosh(d*x + c)^2 + 2*((a^2 +
b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*cosh(
d*x + c)*sinh(d*x + c) + ((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2
*x + (a^2 + b^2)*d^2*e^2*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sin
h(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)
/b + 1) + 96*(((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 +
 b^2)*d^2*e^2*f)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^
2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + ((a^2
 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*si
nh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 32*(((a^2 + b^2)*d^3
e^3 - 3(a^2 + b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*
c^3*f^3)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2
f + 3(a^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*
x + c) + ((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c
^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) +
2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 32*(((a^2 + b^2)*d^3
e^3 - 3(a^2 + b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*
c^3*f^3)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2
f + 3(a^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*
x + c) + ((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c
^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) +
2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 32*(((a^2 + b^2)*d^3
*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2
 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*f^3)*cosh
(d*x + c)^2 + 2*((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*
(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e
*f^2 + (a^2 + b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + ((a^2 + b^2)*d^3*
f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2
+ b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*f^3)*sinh(
d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*
sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 32*(((a^2 + b^2)*d^3*f^3*x^3
 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*
c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*f^3)*cosh(d*x + c
)^2 + 2*((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b
^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (
a^2 + b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + ((a^2 + b^2)*d^3*f^3*x^3
+ 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c
*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*f^3)*sinh(d*x + c)
^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 192*((a^2 + b^2)*f^3*cosh(d*x + c)^2
 + 2*(a^2 + b^2)*f^3*cosh(d*x + c)*sinh(d*x + c) + (a^2 + b^2)*f^3*sinh(d*x
 + c)^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +

```
b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 192*((a^2 + b^2)*f^3*cosh(d*x
 + c)^2 + 2*(a^2 + b^2)*f^3*cosh(d*x + c)*sinh(d*x + c) + (a^2 + b^2)*f^3*s
inh(d*x + c)^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
 + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 192*(((a^2 + b^2)*d*f^
3*x + (a^2 + b^2)*d*e*f^2)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*d*f^3*x + (a^2
+ b^2)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + ((a^2 + b^2)*d*f^3*x + (a^2 +
 b^2)*d*e*f^2)*sinh(d*x + c)^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x +
c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 192*((
(a^2 + b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*cosh(d*x + c)^2 + 2*((a^2 + b^2)
*d*f^3*x + (a^2 + b^2)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + ((a^2 + b^2)*
d*f^3*x + (a^2 + b^2)*d*e*f^2)*sinh(d*x + c)^2)*polylog(3, (a*cosh(d*x + c)
 + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2))/b) + 4*(4*a*b*d^3*f^3*x^3 + 4*a*b*d^3*e^3 + 12*a*b*d^2*e^2*f + 24*a*b*
d*e*f^2 + 24*a*b*f^3 + (4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f
 + 6*b^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2
*b^2*d^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c)^3 + 12*(a*b*
d^3*e*f^2 + a*b*d^2*f^3)*x^2 - 12*(a*b*d^3*f^3*x^3 + a*b*d^3*e^3 - 3*a*b*d^
2*e^2*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*d^3*e*f^2 - a*b*d^2*f^3)*x^2 +
 3*(a*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c)^2 + 12*
(a*b*d^3*e^2*f + 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x - 4*((a^2 + b^2)*d^4*f^3*
x^4 + 4*(a^2 + b^2)*d^4*e*f^2*x^3 + 6*(a^2 + b^2)*d^4*e^2*f*x^2 + 4*(a^2 +
b^2)*d^4*e^3*x + 8*(a^2 + b^2)*c*d^3*e^3 - 12*(a^2 + b^2)*c^2*d^2*e^2*f + 8
*(a^2 + b^2)*c^3*d*e*f^2 - 2*(a^2 + b^2)*c^4*f^3)*cosh(d*x + c))*sinh(d*x +
 c))/(b^3*d^4*cosh(d*x + c)^2 + 2*b^3*d^4*cosh(d*x + c)*sinh(d*x + c) + b^3
*d^4*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)^{3}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)^3/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.72, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\left(\cosh^{3}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

[Out] int((f*x+e)^3*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{8}e^{3}\left(\frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{b^{2}d}-\frac{8\left(a^{2}+b^{2}\right)(dx+c)}{b^{3}d}-\frac{4\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}}{b^{2}d}-\frac{8\left(a^{2}+b^{2}\right)\log\left(-2\,ae^{(-dx-c)}+\right.}{b^{3}d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^3*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")

[Out] -1/8*e^3*((4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(b^2*d) - 8*(a^2 + b^2)*(d*x + c)/(b^3*d) - (4*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c))/(b^2*d) - 8*(a^2 + b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^3*d)) + 1/32*(8*(a^2*d^4*f^3*e^(2*c) + b^2*d^4*f^3*e^(2*c))*x^4 + 32*(a^2*d^4*e*f^2*e^(2*c) + b^2*d^4*e*f^2*e^(2*c))*x^3 + 48*(a^2*d^4*e^2*f*e^(2*c) + b^2*d^4*e^2*f*e^(2*c))*x^2 + (4*b^2*d^3*f^3*x^3*e^(4*c) + 6*(2*d^3*e*f^2 - d^2*f^3)*b^2*x^2*e^(4*c) + 6*(2*d^3*e^2*f - 2*d^2*e*f^2 + d*f^3)*b^2*x*e^(4*c) - 3*(2*d^2*e^2*f - 2*d*e*f^2 + f^3)*b^2*e^(4*c))*e^(2*d*x) - 16*(a*b*d^3*f^3*x^3*e^(3*c) + 3*(d^3*e*f^2 - d^2*f^3)*a*b*x^2*e^(3*c) + 3*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*a*b*x*e^(3*c) - 3*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a*b*e^(3*c))*e^(d*x) + 16*(a*b*d^3*f^3*x^3*e^c + 3*(d^3*e*f^2 + d^2*f^3)*a*b*x^2*e^c + 3*(d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*a*b*x*e^c + 3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a*b*e^c)*e^(-d*x) + (4*b^2*d^3*f^3*x^3 + 6*(2*d^3*e*f^2 + d^2*f^3)*b^2*x^2 + 6*(2*d^3*e^2*f + 2*d^2*e*f^2 + d*f^3)*b^2*x + 3*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)*b^2)*e^(-2*d*x))*e^(-2*c)/(b^3*d^4) - integrate(-2*((a^2*b*f^3 + b^3*f^3)*x^3 + 3*(a^2*b*e*f^2 + b^3*e*f^2)*x^2 + 3*(a^2*b*e^2*f + b^3*e^2*f)*x - ((a^3*f^3*e^c + a*b^2*f^3*e^c)*x^3 + 3*(a^3*e*f^2*e^c + a*b^2*e*f^2*e^c)*x^2 + 3*(a^3*e^2*f*e^c + a*b^2*e^2*f*e^c)*x)*e^(d*x))/(b^4*e^(2*d*x + 2*c) + 2*a*b^3*e^(d*x + c) - b^4), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)^3\,{\left(e+f\,x\right)}^3}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((cosh(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)

[Out] int((cosh(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.300 $\int \frac{(e+fx)^2\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=477

$$-\frac{2f^2\left(a^2+b^2\right)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3}-\frac{2f^2\left(a^2+b^2\right)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^3}+\frac{2f\left(a^2+b^2\right)(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{2f\left(a^2+\right.}{}$$

```
[Out] 1/2*e*f*x/b/d+1/4*f^2*x^2/b/d-1/3*(a^2+b^2)*(f*x+e)^3/b^3/f+2*a*f*(f*x+e)*c
osh(d*x+c)/b^2/d^2+(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)
))/b^3/d+(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d+2
*(a^2+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^2+2
*(a^2+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^2-2
*(a^2+b^2)*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^3-2*(a^2+
b^2)*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^3-2*a*f^2*sinh(
d*x+c)/b^2/d^3-a*(f*x+e)^2*sinh(d*x+c)/b^2/d-1/2*f*(f*x+e)*cosh(d*x+c)*sinh
(d*x+c)/b/d^2+1/4*f^2*sinh(d*x+c)^2/b/d^3+1/2*(f*x+e)^2*sinh(d*x+c)^2/b/d
```

Rubi [A] time = 0.64, antiderivative size = 477, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {5565, 3296, 2637, 5446, 3310, 5561, 2190, 2531, 2282, 6589}

$$\frac{2f\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{2f\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^2}-\frac{2f^2\left(a^2+b^2\right)\text{Poly}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e*f*x)/(2*b*d) + (f^2*x^2)/(4*b*d) - ((a^2 + b^2)*(e + f*x)^3)/(3*b^3*f) +
 (2*a*f*(e + f*x)*Cosh[c + d*x])/(b^2*d^2) + ((a^2 + b^2)*(e + f*x)^2*Log[1
 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^3*d) + ((a^2 + b^2)*(e + f*x)
^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^3*d) + (2*(a^2 + b^2)
*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^2
) + (2*(a^2 + b^2)*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))])/(b^3*d^2) - (2*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(c + d*x))/(a -
Sqrt[a^2 + b^2]))])/(b^3*d^3) - (2*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^3) - (2*a*f^2*Sinh[c + d*x])/(b^2*d^3)
 - (a*(e + f*x)^2*Sinh[c + d*x])/(b^2*d) - (f*(e + f*x)*Cosh[c + d*x]*Sinh[
c + d*x])/(2*b*d^2) + (f^2*Sinh[c + d*x]^2)/(4*b*d^3) + ((e + f*x)^2*Sinh[c
 + d*x]^2)/(2*b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
```

```
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{a\int (e+fx)^2\cosh(c+dx)\,dx}{b^2} + \frac{\int (e+fx)^2\cosh(c+dx)\sinh(c+dx)\,dx}{b} + -$$

$$= -\frac{(a^2+b^2)(e+fx)^3}{3b^3f} - \frac{a(e+fx)^2\sinh(c+dx)}{b^2d} + \frac{(e+fx)^2\sinh^2(c+dx)}{2bd} + -$$

$$= -\frac{(a^2+b^2)(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cosh(c+dx)}{b^2d^2} + \frac{(a^2+b^2)(e+fx)^2\log(1}{b^3d}$$

$$= \frac{efx}{2bd} + \frac{f^2x^2}{4bd} - \frac{(a^2+b^2)(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cosh(c+dx)}{b^2d^2} + \frac{(a^2+b^2)(e+}{}$$

$$= \frac{efx}{2bd} + \frac{f^2x^2}{4bd} - \frac{(a^2+b^2)(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cosh(c+dx)}{b^2d^2} + \frac{(a^2+b^2)(e+}{}$$

$$= \frac{efx}{2bd} + \frac{f^2x^2}{4bd} - \frac{(a^2+b^2)(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cosh(c+dx)}{b^2d^2} + \frac{(a^2+b^2)(e+}{}$$

Mathematica [B] time = 16.40, size = 3021, normalized size = 6.33

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/3*((a^2 + b^2)*(6*e^2*E^(2*c)*x + 6*e*E^(2*c)*f*x^2 + 2*E^(2*c)*f^2*x^3
+ (6*a*Sqrt[a^2 + b^2]*e^2*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/(S
qrt[-(a^2 + b^2)^2]*d) + (6*a*Sqrt[-(a^2 + b^2)^2]*e^2*E^(2*c)*ArcTan[(a +
b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) - (6*a*Sqrt[-(a^2 +
 b^2)^2]*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3
/2)*d) + (6*a*Sqrt[-(a^2 + b^2)^2]*e^2*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/
Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (3*e^2*Log[2*a*E^(c + d*x) + b*(
-1 + E^(2*(c + d*x)))])/d - (3*e^2*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^
(2*(c + d*x)))])/d + (6*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2
+ b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c -
Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (3*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^
c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (3*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c +
 d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f*x*Log[1 + (b*E^(2*c
 + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f*x*Log[1 +
```

```
(b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (3*f^2*x^2*Log
[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (3*E^(2*c)
*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d
- (6*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqr
t[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -
((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*f^2*Poly
Log[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (6*
E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c
)]))])/d^3 - (6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2
)*E^(2*c)]))])/d^3 + (6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c +
 Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3))/(b^3*(-1 + E^(2*c))) + Csch[c]*(Cosh[2
*c + 2*d*x]/(96*b^3*d^3) - Sinh[2*c + 2*d*x]/(96*b^3*d^3))*(-24*a*b*d^2*e^2
*Cosh[d*x] - 48*a*b*d*e*f*Cosh[d*x] - 48*a*b*f^2*Cosh[d*x] - 48*a*b*d^2*e*f
*x*Cosh[d*x] - 48*a*b*d*f^2*x*Cosh[d*x] - 24*a*b*d^2*f^2*x^2*Cosh[d*x] + 24
*a*b*d^2*e^2*Cosh[2*c + d*x] + 48*a*b*d*e*f*Cosh[2*c + d*x] + 48*a*b*f^2*Co
sh[2*c + d*x] + 48*a*b*d^2*e*f*x*Cosh[2*c + d*x] + 48*a*b*d*f^2*x*Cosh[2*c
+ d*x] + 24*a*b*d^2*f^2*x^2*Cosh[2*c + d*x] + 48*a^2*d^3*e^2*x*Cosh[c + 2*d
*x] + 48*b^2*d^3*e^2*x*Cosh[c + 2*d*x] + 48*a^2*d^3*e*f*x^2*Cosh[c + 2*d*x]
 + 48*b^2*d^3*e*f*x^2*Cosh[c + 2*d*x] + 16*a^2*d^3*f^2*x^3*Cosh[c + 2*d*x]
+ 16*b^2*d^3*f^2*x^3*Cosh[c + 2*d*x] + 48*a^2*d^3*e^2*x*Cosh[3*c + 2*d*x] +
 48*b^2*d^3*e^2*x*Cosh[3*c + 2*d*x] + 48*a^2*d^3*e*f*x^2*Cosh[3*c + 2*d*x]
+ 48*b^2*d^3*e*f*x^2*Cosh[3*c + 2*d*x] + 16*a^2*d^3*f^2*x^3*Cosh[3*c + 2*d*
x] + 16*b^2*d^3*f^2*x^3*Cosh[3*c + 2*d*x] + 24*a*b*d^2*e^2*Cosh[2*c + 3*d*x
] - 48*a*b*d*e*f*Cosh[2*c + 3*d*x] + 48*a*b*f^2*Cosh[2*c + 3*d*x] + 48*a*b*
d^2*e*f*x*Cosh[2*c + 3*d*x] - 48*a*b*d*f^2*x*Cosh[2*c + 3*d*x] + 24*a*b*d^2
*f^2*x^2*Cosh[2*c + 3*d*x] - 24*a*b*d^2*e^2*Cosh[4*c + 3*d*x] + 48*a*b*d*e*
f*Cosh[4*c + 3*d*x] - 48*a*b*f^2*Cosh[4*c + 3*d*x] - 48*a*b*d^2*e*f*x*Cosh[
4*c + 3*d*x] + 48*a*b*d*f^2*x*Cosh[4*c + 3*d*x] - 24*a*b*d^2*f^2*x^2*Cosh[4
*c + 3*d*x] - 6*b^2*d^2*e^2*Cosh[3*c + 4*d*x] + 6*b^2*d*e*f*Cosh[3*c + 4*d*
x] - 3*b^2*f^2*Cosh[3*c + 4*d*x] - 12*b^2*d^2*e*f*x*Cosh[3*c + 4*d*x] + 6*b
^2*d*f^2*x*Cosh[3*c + 4*d*x] - 6*b^2*d^2*f^2*x^2*Cosh[3*c + 4*d*x] + 6*b^2*
d^2*e^2*Cosh[5*c + 4*d*x] - 6*b^2*d*e*f*Cosh[5*c + 4*d*x] + 3*b^2*f^2*Cosh[
5*c + 4*d*x] + 12*b^2*d^2*e*f*x*Cosh[5*c + 4*d*x] - 6*b^2*d*f^2*x*Cosh[5*c
+ 4*d*x] + 6*b^2*d^2*f^2*x^2*Cosh[5*c + 4*d*x] + 12*b^2*d^2*e^2*Sinh[c] + 1
2*b^2*d*e*f*Sinh[c] + 6*b^2*f^2*Sinh[c] + 24*b^2*d^2*e*f*x*Sinh[c] + 12*b^2
*d*f^2*x*Sinh[c] + 12*b^2*d^2*f^2*x^2*Sinh[c] - 24*a*b*d^2*e^2*Sinh[d*x] -
48*a*b*d*e*f*Sinh[d*x] - 48*a*b*f^2*Sinh[d*x] - 48*a*b*d^2*e*f*x*Sinh[d*x]
- 48*a*b*d*f^2*x*Sinh[d*x] - 24*a*b*d^2*f^2*x^2*Sinh[d*x] + 24*a*b*d^2*e^2*
Sinh[2*c + d*x] + 48*a*b*d*e*f*Sinh[2*c + d*x] + 48*a*b*f^2*Sinh[2*c + d*x]
 + 48*a*b*d^2*e*f*x*Sinh[2*c + d*x] + 48*a*b*d*f^2*x*Sinh[2*c + d*x] + 24*a
*b*d^2*f^2*x^2*Sinh[2*c + d*x] + 48*a^2*d^3*e^2*x*Sinh[c + 2*d*x] + 48*b^2*
d^3*e^2*x*Sinh[c + 2*d*x] + 48*a^2*d^3*e*f*x^2*Sinh[c + 2*d*x] + 48*b^2*d^3
*e*f*x^2*Sinh[c + 2*d*x] + 16*a^2*d^3*f^2*x^3*Sinh[c + 2*d*x] + 16*b^2*d^3*
f^2*x^3*Sinh[c + 2*d*x] + 48*a^2*d^3*e^2*x*Sinh[3*c + 2*d*x] + 48*b^2*d^3*e
^2*x*Sinh[3*c + 2*d*x] + 48*a^2*d^3*e*f*x^2*Sinh[3*c + 2*d*x] + 48*b^2*d^3*
```

```
e*f*x^2*Sinh[3*c + 2*d*x] + 16*a^2*d^3*f^2*x^3*Sinh[3*c + 2*d*x] + 16*b^2*d
^3*f^2*x^3*Sinh[3*c + 2*d*x] + 24*a*b*d^2*e^2*Sinh[2*c + 3*d*x] - 48*a*b*d*
e*f*Sinh[2*c + 3*d*x] + 48*a*b*f^2*Sinh[2*c + 3*d*x] + 48*a*b*d^2*e*f*x*Sin
h[2*c + 3*d*x] - 48*a*b*d*f^2*x*Sinh[2*c + 3*d*x] + 24*a*b*d^2*f^2*x^2*Sinh
[2*c + 3*d*x] - 24*a*b*d^2*e^2*Sinh[4*c + 3*d*x] + 48*a*b*d*e*f*Sinh[4*c +
3*d*x] - 48*a*b*f^2*Sinh[4*c + 3*d*x] - 48*a*b*d^2*e*f*x*Sinh[4*c + 3*d*x]
+ 48*a*b*d*f^2*x*Sinh[4*c + 3*d*x] - 24*a*b*d^2*f^2*x^2*Sinh[4*c + 3*d*x] -
 6*b^2*d^2*e^2*Sinh[3*c + 4*d*x] + 6*b^2*d*e*f*Sinh[3*c + 4*d*x] - 3*b^2*f^
2*Sinh[3*c + 4*d*x] - 12*b^2*d^2*e*f*x*Sinh[3*c + 4*d*x] + 6*b^2*d*f^2*x*Si
nh[3*c + 4*d*x] - 6*b^2*d^2*f^2*x^2*Sinh[3*c + 4*d*x] + 6*b^2*d^2*e^2*Sinh[
5*c + 4*d*x] - 6*b^2*d*e*f*Sinh[5*c + 4*d*x] + 3*b^2*f^2*Sinh[5*c + 4*d*x]
+ 12*b^2*d^2*e*f*x*Sinh[5*c + 4*d*x] - 6*b^2*d*f^2*x*Sinh[5*c + 4*d*x] + 6*
b^2*d^2*f^2*x^2*Sinh[5*c + 4*d*x])
```

fricas [C] time = 0.53, size = 2726, normalized size = 5.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/48*(6*b^2*d^2*f^2*x^2 + 6*b^2*d^2*e^2 + 6*b^2*d*e*f + 3*(2*b^2*d^2*f^2*x^
2 + 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x
)*cosh(d*x + c)^4 + 3*(2*b^2*d^2*f^2*x^2 + 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^
2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x)*sinh(d*x + c)^4 + 3*b^2*f^2 - 24*(
a*b*d^2*f^2*x^2 + a*b*d^2*e^2 - 2*a*b*d*e*f + 2*a*b*f^2 + 2*(a*b*d^2*e*f -
a*b*d*f^2)*x)*cosh(d*x + c)^3 - 12*(2*a*b*d^2*f^2*x^2 + 2*a*b*d^2*e^2 - 4*a
*b*d*e*f + 4*a*b*f^2 + 4*(a*b*d^2*e*f - a*b*d*f^2)*x - (2*b^2*d^2*f^2*x^2 +
 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x)*c
osh(d*x + c))*sinh(d*x + c)^3 - 16*((a^2 + b^2)*d^3*f^2*x^3 + 3*(a^2 + b^2)
*d^3*e*f*x^2 + 3*(a^2 + b^2)*d^3*e^2*x + 6*(a^2 + b^2)*c*d^2*e^2 - 6*(a^2 +
 b^2)*c^2*d*e*f + 2*(a^2 + b^2)*c^3*f^2)*cosh(d*x + c)^2 - 2*(8*(a^2 + b^2)
*d^3*f^2*x^3 + 24*(a^2 + b^2)*d^3*e*f*x^2 + 24*(a^2 + b^2)*d^3*e^2*x + 48*(
a^2 + b^2)*c*d^2*e^2 - 48*(a^2 + b^2)*c^2*d*e*f + 16*(a^2 + b^2)*c^3*f^2 -
9*(2*b^2*d^2*f^2*x^2 + 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2
*e*f - b^2*d*f^2)*x)*cosh(d*x + c)^2 + 36*(a*b*d^2*f^2*x^2 + a*b*d^2*e^2 -
2*a*b*d*e*f + 2*a*b*f^2 + 2*(a*b*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c))*sin
h(d*x + c)^2 + 6*(2*b^2*d^2*e*f + b^2*d*f^2)*x + 24*(a*b*d^2*f^2*x^2 + a*b*
d^2*e^2 + 2*a*b*d*e*f + 2*a*b*f^2 + 2*(a*b*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x
 + c) + 96*(((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)^2 + 2*(
(a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + ((a^
2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x +
c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2) - b)/b + 1) + 96*(((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x
+ c)^2 + 2*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x
```

```
 + c) + ((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*sinh(d*x + c)^2)*dilog((a
*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b + 1) + 48*(((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*
d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*d^2*e^2 - 2*(
a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + ((a
^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*sinh(d*x +
 c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2
) + 2*a) + 48*(((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c
^2*f^2)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f +
(a^2 + b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + ((a^2 + b^2)*d^2*e^2 - 2
*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*sinh(d*x + c)^2)*log(2*b*cosh(d
*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 48*(((a^2
+ b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2
 + b^2)*c^2*f^2)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^
2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)*s
inh(d*x + c) + ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2
+ b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c
) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2) - b)/b) + 48*(((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(
a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*
d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)
*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 +
 b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*sinh(d*x + c
)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*
x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 96*((a^2 + b^2)*f^2*cosh(d*x + c)^2
 + 2*(a^2 + b^2)*f^2*cosh(d*x + c)*sinh(d*x + c) + (a^2 + b^2)*f^2*sinh(d*x
 + c)^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
 b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 96*((a^2 + b^2)*f^2*cosh(d*x
+ c)^2 + 2*(a^2 + b^2)*f^2*cosh(d*x + c)*sinh(d*x + c) + (a^2 + b^2)*f^2*si
nh(d*x + c)^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 4*(6*a*b*d^2*f^2*x^2 +
6*a*b*d^2*e^2 + 12*a*b*d*e*f + 12*a*b*f^2 + 3*(2*b^2*d^2*f^2*x^2 + 2*b^2*d^
2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x)*cosh(d*x +
 c)^3 - 18*(a*b*d^2*f^2*x^2 + a*b*d^2*e^2 - 2*a*b*d*e*f + 2*a*b*f^2 + 2*(a*
b*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c)^2 + 12*(a*b*d^2*e*f + a*b*d*f^2)*x
- 8*((a^2 + b^2)*d^3*f^2*x^3 + 3*(a^2 + b^2)*d^3*e*f*x^2 + 3*(a^2 + b^2)*d^
3*e^2*x + 6*(a^2 + b^2)*c*d^2*e^2 - 6*(a^2 + b^2)*c^2*d*e*f + 2*(a^2 + b^2)
*c^3*f^2)*cosh(d*x + c))*sinh(d*x + c))/(b^3*d^3*cosh(d*x + c)^2 + 2*b^3*d^
3*cosh(d*x + c)*sinh(d*x + c) + b^3*d^3*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\cosh\left(dx+c\right)^{3}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)^3/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \left(\cosh^{3}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{8}\,e^{2}\left(\frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{b^{2}d}-\frac{8\left(a^{2}+b^{2}\right)(dx+c)}{b^{3}d}-\frac{4\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}}{b^{2}d}-\frac{8\left(a^{2}+b^{2}\right)\log\left(-2\,ae^{(-dx-c)}\right.}{b^{3}d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/8*e^2*((4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(b^2*d) - 8*(a^2 + b^2)*(d
*x + c)/(b^3*d) - (4*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c))/(b^2*d) - 8*(a^2
+ b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^3*d)) + 1/48*(16*
(a^2*d^3*f^2*e^(2*c) + b^2*d^3*f^2*e^(2*c))*x^3 + 48*(a^2*d^3*e*f*e^(2*c) +
 b^2*d^3*e*f*e^(2*c))*x^2 + 3*(2*b^2*d^2*f^2*x^2*e^(4*c) + 2*(2*d^2*e*f - d
*f^2)*b^2*x*e^(4*c) - (2*d*e*f - f^2)*b^2*e^(4*c))*e^(2*d*x) - 24*(a*b*d^2*
f^2*x^2*e^(3*c) + 2*(d^2*e*f - d*f^2)*a*b*x*e^(3*c) - 2*(d*e*f - f^2)*a*b*e
^(3*c))*e^(d*x) + 24*(a*b*d^2*f^2*x^2*e^c + 2*(d^2*e*f + d*f^2)*a*b*x*e^c +
 2*(d*e*f + f^2)*a*b*e^c)*e^(-d*x) + 3*(2*b^2*d^2*f^2*x^2 + 2*(2*d^2*e*f +
d*f^2)*b^2*x + (2*d*e*f + f^2)*b^2)*e^(-2*d*x))*e^(-2*c)/(b^3*d^3) - integr
ate(-2*((a^2*b*f^2 + b^3*f^2)*x^2 + 2*(a^2*b*e*f + b^3*e*f)*x - ((a^3*f^2*e
^c + a*b^2*f^2*e^c)*x^2 + 2*(a^3*e*f*e^c + a*b^2*e*f*e^c)*x)*e^(d*x))/(b^4*
e^(2*d*x + 2*c) + 2*a*b^3*e^(d*x + c) - b^4), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\cosh\left(c+d\,x\right)}^3\,{\left(e+f\,x\right)}^2}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.301 $\int \frac{(e+fx)\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=298

$$\frac{f\left(a^2+b^2\right)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{f\left(a^2+b^2\right)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{\left(a^2+b^2\right)(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^3d}+\frac{\left(a^2+b^2\right)(e-$$

```
[Out] 1/4*f*x/b/d-1/2*(a^2+b^2)*(f*x+e)^2/b^3/f+a*f*cosh(d*x+c)/b^2/d^2+(a^2+b^2)
*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d+(a^2+b^2)*(f*x+e)*ln(
1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d+(a^2+b^2)*f*polylog(2,-b*exp(d*x+
c)/(a-(a^2+b^2)^(1/2)))/b^3/d^2+(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/(a+(a^2
+b^2)^(1/2)))/b^3/d^2-a*(f*x+e)*sinh(d*x+c)/b^2/d-1/4*f*cosh(d*x+c)*sinh(d*
x+c)/b/d^2+1/2*(f*x+e)*sinh(d*x+c)^2/b/d
```

Rubi [A] time = 0.36, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {5565, 3296, 2638, 5446, 2635, 8, 5561, 2190, 2279, 2391}

$$\frac{f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^2}+\frac{\left(a^2+b^2\right)(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^3d}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (f*x)/(4*b*d) - ((a^2 + b^2)*(e + f*x)^2)/(2*b^3*f) + (a*f*Cosh[c + d*x])/(
b^2*d^2) + ((a^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b
^2])])/(b^3*d) + ((a^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a
^2 + b^2])])/(b^3*d) + ((a^2 + b^2)*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqr
t[a^2 + b^2]))])/(b^3*d^2) + ((a^2 + b^2)*f*PolyLog[2, -((b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2]))])/(b^3*d^2) - (a*(e + f*x)*Sinh[c + d*x])/(b^2*d) - (f
*Cosh[c + d*x]*Sinh[c + d*x])/(4*b*d^2) + ((e + f*x)*Sinh[c + d*x]^2)/(2*b*
d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
```

```
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{a\int (e+fx)\cosh(c+dx)\,dx}{b^2} + \frac{\int (e+fx)\cosh(c+dx)\sinh(c+dx)\,dx}{b} + \frac{\left(a^2\right.}{}$$

$$= -\frac{\left(a^2+b^2\right)(e+fx)^2}{2b^3 f} - \frac{a(e+fx)\sinh(c+dx)}{b^2 d} + \frac{(e+fx)\sinh^2(c+dx)}{2bd} + \frac{\left(a^2+\right.}{}$$

$$= -\frac{\left(a^2+b^2\right)(e+fx)^2}{2b^3 f} + \frac{af\cosh(c+dx)}{b^2 d^2} + \frac{\left(a^2+b^2\right)(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3 d}$$

$$= \frac{fx}{4bd} - \frac{\left(a^2+b^2\right)(e+fx)^2}{2b^3 f} + \frac{af\cosh(c+dx)}{b^2 d^2} + \frac{\left(a^2+b^2\right)(e+fx)\log\left(1+\frac{be^{c}}{a-\sqrt{a}}\right.}{b^3 d}$$

$$= \frac{fx}{4bd} - \frac{\left(a^2+b^2\right)(e+fx)^2}{2b^3 f} + \frac{af\cosh(c+dx)}{b^2 d^2} + \frac{\left(a^2+b^2\right)(e+fx)\log\left(1+\frac{be^{c}}{a-\sqrt{a}}\right.}{b^3 d}$$

Mathematica [A] time = 1.28, size = 251, normalized size = 0.84

$$\frac{8\left(a^2+b^2\right)\left(f\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (8*a*b*f*Cosh[c + d*x] + 2*b^2*d*(e + f*x)*Cosh[2*(c + d*x)] + 8*(a^2 + b^2
)*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2
```

```
 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d*
e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c + d*x]] + f*PolyLog[2, (b
*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2]))]) - 8*a*b*d*(e + f*x)*Sinh[c + d*x] - b^2*f*Sinh[2*(c +
d*x)])/(8*b^3*d^2)
```

fricas [B] time = 0.50, size = 1416, normalized size = 4.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/16*(2*b^2*d*f*x + (2*b^2*d*f*x + 2*b^2*d*e - b^2*f)*cosh(d*x + c)^4 + (2*
b^2*d*f*x + 2*b^2*d*e - b^2*f)*sinh(d*x + c)^4 + 2*b^2*d*e - 8*(a*b*d*f*x +
 a*b*d*e - a*b*f)*cosh(d*x + c)^3 - 4*(2*a*b*d*f*x + 2*a*b*d*e - 2*a*b*f -
(2*b^2*d*f*x + 2*b^2*d*e - b^2*f)*cosh(d*x + c))*sinh(d*x + c)^3 + b^2*f -
8*((a^2 + b^2)*d^2*f*x^2 + 2*(a^2 + b^2)*d^2*e*x + 4*(a^2 + b^2)*c*d*e - 2*
(a^2 + b^2)*c^2*f)*cosh(d*x + c)^2 - 2*(4*(a^2 + b^2)*d^2*f*x^2 + 8*(a^2 +
b^2)*d^2*e*x + 16*(a^2 + b^2)*c*d*e - 8*(a^2 + b^2)*c^2*f - 3*(2*b^2*d*f*x
+ 2*b^2*d*e - b^2*f)*cosh(d*x + c)^2 + 12*(a*b*d*f*x + a*b*d*e - a*b*f)*cos
h(d*x + c))*sinh(d*x + c)^2 + 8*(a*b*d*f*x + a*b*d*e + a*b*f)*cosh(d*x + c)
 + 16*((a^2 + b^2)*f*cosh(d*x + c)^2 + 2*(a^2 + b^2)*f*cosh(d*x + c)*sinh(d
*x + c) + (a^2 + b^2)*f*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sinh(d*
x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b +
 1) + 16*((a^2 + b^2)*f*cosh(d*x + c)^2 + 2*(a^2 + b^2)*f*cosh(d*x + c)*sin
h(d*x + c) + (a^2 + b^2)*f*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sinh
(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/
b + 1) + 16*(((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c)^2 + 2*((a^2
+ b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c) + ((a^2 + b^2)*d*
e - (a^2 + b^2)*c*f)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x
+ c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 16*(((a^2 + b^2)*d*e - (a^2 + b^2
)*c*f)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c
)*sinh(d*x + c) + ((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*sinh(d*x + c)^2)*log(
2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) +
16*(((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*
d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c) + ((a^2 + b^2)*d*f*x +
 (a^2 + b^2)*c*f)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c)
+ (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 16*((
(a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*d*f*x
 + (a^2 + b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c) + ((a^2 + b^2)*d*f*x + (a^2
 + b^2)*c*f)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 4*(2*a*b*d
*f*x + 2*a*b*d*e + (2*b^2*d*f*x + 2*b^2*d*e - b^2*f)*cosh(d*x + c)^3 + 2*a*
b*f - 6*(a*b*d*f*x + a*b*d*e - a*b*f)*cosh(d*x + c)^2 - 4*((a^2 + b^2)*d^2*
```

```
f*x^2 + 2*(a^2 + b^2)*d^2*e*x + 4*(a^2 + b^2)*c*d*e - 2*(a^2 + b^2)*c^2*f)*
cosh(d*x + c))*sinh(d*x + c))/(b^3*d^2*cosh(d*x + c)^2 + 2*b^3*d^2*cosh(d*x
 + c)*sinh(d*x + c) + b^3*d^2*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cosh(dx+c)^3}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)*cosh(d*x + c)^3/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.21, size = 975, normalized size = 3.27

$$-\frac{f\,x^2}{2b}+\frac{a^2 f\ln\left(\frac{-b\,e^{dx+c}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)c}{d^2b^3}-\frac{2f\,a^2cx}{d\,b^3}+\frac{a^2 f\ln\left(\frac{b\,e^{dx+c}+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{d\,b^3}+\frac{a^2 f\ln\left(\frac{b\,e^{dx+c}+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)c}{d^2b^3}+\frac{a^2 f\ln\left(\frac{-}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
[Out] -1/2*f*x^2/b+1/d^2/b^3*a^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+
b^2)^(1/2)))*c-2/d/b^3*f*a^2*c*x+1/d/b^3*a^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(
1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2/b^3*a^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(
1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/d/b^3*a^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1
/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2/b^3*a^2*f*c*ln(b*exp(2*d*x+2*c)+2*a*ex
p(d*x+c)-b)+2/d^2/b^3*a^2*f*c*ln(exp(d*x+c))+a^2*e*x/b^3+e*x/b-1/2*a^2*f*x^
2/b^3+1/16*(2*d*f*x+2*d*e-f)/d^2/b*exp(2*d*x+2*c)+1/16*(2*d*f*x+2*d*e+f)/d^
2/b*exp(-2*d*x-2*c)-1/d^2/b*f*c^2+1/d/b*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c
)-b)-2/d/b*e*ln(exp(d*x+c))+1/d^2/b*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a
)/(a+(a^2+b^2)^(1/2)))+1/d^2/b*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-
a+(a^2+b^2)^(1/2)))+1/2*a*(d*f*x+d*e+f)/b^2/d^2*exp(-d*x-c)-2/d/b*f*c*x-1/d
^2/b*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d^2/b*f*c*ln(exp(d*x+c))+1
/d/b*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d^2/b
*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d/b*f*ln(
(b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2/b*f*ln((b*exp
(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/2*a*(d*f*x+d*e-f)/b^2/d
^2*exp(d*x+c)-1/d^2/b^3*f*a^2*c^2+1/d^2/b^3*a^2*f*dilog((b*exp(d*x+c)+(a^2+
b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/d^2/b^3*a^2*f*dilog((-b*exp(d*x+c)+(a^
2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d/b^3*a^2*e*ln(b*exp(2*d*x+2*c)+2*a
*exp(d*x+c)-b)-2/d/b^3*a^2*e*ln(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{8}\,e\left(\frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{b^2d}-\frac{8\left(a^2+b^2\right)(dx+c)}{b^3d}-\frac{4\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}}{b^2d}-\frac{8\left(a^2+b^2\right)\log\left(-2\,ae^{(-dx-c)}+b\right.}{b^3d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/8*e*((4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(b^2*d) - 8*(a^2 + b^2)*(d*x
 + c)/(b^3*d) - (4*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c))/(b^2*d) - 8*(a^2 +
b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^3*d)) + 1/16*f*((8*
(a^2*d^2*e^(2*c) + b^2*d^2*e^(2*c))*x^2 + (2*b^2*d*x*e^(4*c) - b^2*e^(4*c))
*e^(2*d*x) - 8*(a*b*d*x*e^(3*c) - a*b*e^(3*c))*e^(d*x) + 8*(a*b*d*x*e^c + a
*b*e^c)*e^(-d*x) + (2*b^2*d*x + b^2)*e^(-2*d*x))*e^(-2*c)/(b^3*d^2) - 2*int
egrate(16*((a^3*e^c + a*b^2*e^c)*x*e^(d*x) - (a^2*b + b^3)*x)/(b^4*e^(2*d*x
 + 2*c) + 2*a*b^3*e^(d*x + c) - b^4), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\mathrm{cosh}\left(c+d\,x\right)}^3\,\left(e+f\,x\right)}{a+b\,\mathrm{sinh}\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.302 $\int \frac{\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=59

$$\frac{(a^2+b^2)\log(a+b\sinh(c+dx))}{b^3d}-\frac{a\sinh(c+dx)}{b^2d}+\frac{\sinh^2(c+dx)}{2bd}$$

```
[Out] (a^2+b^2)*ln(a+b*sinh(d*x+c))/b^3/d-a*sinh(d*x+c)/b^2/d+1/2*sinh(d*x+c)^2/b
/d
```

Rubi [A] time = 0.07, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2668, 697}

$$\frac{(a^2+b^2)\log(a+b\sinh(c+dx))}{b^3d}-\frac{a\sinh(c+dx)}{b^2d}+\frac{\sinh^2(c+dx)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[Cosh[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((a^2 + b^2)*Log[a + b*Sinh[c + d*x]])/(b^3*d) - (a*Sinh[c + d*x])/(b^2*d)
+ Sinh[c + d*x]^2/(2*b*d)
```

Rule 697

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[
ExpandIntegrand[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m},
 x] && NeQ[c*d^2 + a*e^2, 0] && IGtQ[p, 0]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\operatorname{Subst}\left(\int \frac{-b^2-x^2}{a+x}\,dx, x, b\sinh(c+dx)\right)}{b^3d}$$
$$= -\frac{\operatorname{Subst}\left(\int \left(a-x+\frac{-a^2-b^2}{a+x}\right)dx, x, b\sinh(c+dx)\right)}{b^3d}$$
$$= \frac{\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{b^3d} - \frac{a\sinh(c+dx)}{b^2d} + \frac{\sinh^2(c+dx)}{2bd}$$

Mathematica [A] time = 0.05, size = 53, normalized size = 0.90

$$-\frac{-\left(a^2+b^2\right)\log(a+b\sinh(c+dx))+ab\sinh(c+dx)-\frac{1}{2}b^2\sinh^2(c+dx)}{b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cosh[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((-((a^2 + b^2)*Log[a + b*Sinh[c + d*x]]) + a*b*Sinh[c + d*x] - (b^2*Sinh[
c + d*x]^2)/2)/(b^3*d))
```

fricas [B] time = 0.56, size = 327, normalized size = 5.54

$$b^2\cosh(dx+c)^4 + b^2\sinh(dx+c)^4 - 8\left(a^2+b^2\right)dx\cosh(dx+c)^2 - 4\,ab\cosh(dx+c)^3 + 4\left(b^2\cosh(dx+c) - \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/8*(b^2*cosh(d*x + c)^4 + b^2*sinh(d*x + c)^4 - 8*(a^2 + b^2)*d*x*cosh(d*x
 + c)^2 - 4*a*b*cosh(d*x + c)^3 + 4*(b^2*cosh(d*x + c) - a*b)*sinh(d*x + c)
^3 + 4*a*b*cosh(d*x + c) + 2*(3*b^2*cosh(d*x + c)^2 - 4*(a^2 + b^2)*d*x - 6
*a*b*cosh(d*x + c))*sinh(d*x + c)^2 + b^2 + 8*((a^2 + b^2)*cosh(d*x + c)^2
+ 2*(a^2 + b^2)*cosh(d*x + c)*sinh(d*x + c) + (a^2 + b^2)*sinh(d*x + c)^2)*
log(2*(b*sinh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) + 4*(b^2*cosh(
d*x + c)^3 - 4*(a^2 + b^2)*d*x*cosh(d*x + c) - 3*a*b*cosh(d*x + c)^2 + a*b)
*sinh(d*x + c))/(b^3*d*cosh(d*x + c)^2 + 2*b^3*d*cosh(d*x + c)*sinh(d*x + c
) + b^3*d*sinh(d*x + c)^2)
```

giac [A] time = 0.23, size = 92, normalized size = 1.56

$$\frac{\frac{b\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2-4\,a\left(e^{(dx+c)}-e^{(-dx-c)}\right)}{b^2}+\frac{8\left(a^2+b^2\right)\log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{b^3}}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/8*((b*(e^(d*x + c) - e^(-d*x - c))^2 - 4*a*(e^(d*x + c) - e^(-d*x - c)))/
b^2 + 8*(a^2 + b^2)*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/b^3)/d
```

maple [B] time = 0.07, size = 291, normalized size = 4.93

$$\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^{2}}+\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}+\frac{a}{d\,b^{2}\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)a^{2}}{d\,b^{3}}-\frac{\ln\left(\mathrm{t}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2/d/b/(tanh(1/2*d*x+1/2*c)-1)^2+1/2/d/b/(tanh(1/2*d*x+1/2*c)-1)+1/d/b^2/(
tanh(1/2*d*x+1/2*c)-1)*a-1/d/b^3*ln(tanh(1/2*d*x+1/2*c)-1)*a^2-1/d/b*ln(tan
h(1/2*d*x+1/2*c)-1)+1/2/d/b/(tanh(1/2*d*x+1/2*c)+1)^2-1/2/d/b/(tanh(1/2*d*x
+1/2*c)+1)+1/d/b^2/(tanh(1/2*d*x+1/2*c)+1)*a-1/d/b^3*ln(tanh(1/2*d*x+1/2*c)
+1)*a^2-1/d/b*ln(tanh(1/2*d*x+1/2*c)+1)+1/d/b^3*ln(tanh(1/2*d*x+1/2*c)^2*a-
2*tanh(1/2*d*x+1/2*c)*b-a)*a^2+1/d/b*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*
d*x+1/2*c)*b-a)
```

maxima [B] time = 0.32, size = 127, normalized size = 2.15

$$-\frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{8\,b^{2}d}+\frac{\left(a^{2}+b^{2}\right)(dx+c)}{b^{3}d}+\frac{4\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}}{8\,b^{2}d}+\frac{\left(a^{2}+b^{2}\right)\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c}\right.}{b^{3}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/8*(4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(b^2*d) + (a^2 + b^2)*(d*x + c)
/(b^3*d) + 1/8*(4*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c))/(b^2*d) + (a^2 + b^2
)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^3*d)
```

mupad [B] time = 0.33, size = 120, normalized size = 2.03

$$\frac{\mathrm{e}^{-2\,c-2\,d\,x}}{8\,b\,d}-\frac{x\,\left(a^2+b^2\right)}{b^3}+\frac{\mathrm{e}^{2\,c+2\,d\,x}}{8\,b\,d}+\frac{\ln\left(2\,a\,\mathrm{e}^{d\,x}\,\mathrm{e}^{c}-b+b\,\mathrm{e}^{2\,c}\,\mathrm{e}^{2\,d\,x}\right)\,\left(a^2+b^2\right)}{b^3\,d}+\frac{a\,\mathrm{e}^{-c-d\,x}}{2\,b^2\,d}-\frac{a\,\mathrm{e}^{c+d\,x}}{2\,b^2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)^3/(a + b*sinh(c + d*x)),x)
```

```
[Out] exp(- 2*c - 2*d*x)/(8*b*d) - (x*(a^2 + b^2))/b^3 + exp(2*c + 2*d*x)/(8*b*d)
 + (log(2*a*exp(d*x)*exp(c) - b + b*exp(2*c)*exp(2*d*x))*(a^2 + b^2))/(b^3*
d) + (a*exp(- c - d*x))/(2*b^2*d) - (a*exp(c + d*x))/(2*b^2*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.303 $\int \frac{\cosh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\cosh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx$$

Verification is Not applicable to the result.

```
[In] Int[Cosh[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Cosh[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\cosh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx = \int \frac{\cosh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx$$

Mathematica [A] time = 77.19, size = 0, normalized size = 0.00

$$\int \frac{\cosh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cosh[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Integrate[Cosh[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)^3}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(cosh(d*x + c)^3/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\cosh^3(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{e^{\left(-2c+\frac{2de}{f}\right)}E_1\left(\frac{2(fx+e)d}{f}\right)}{4bf}+\frac{ae^{\left(-c+\frac{de}{f}\right)}E_1\left(\frac{(fx+e)d}{f}\right)}{2b^2f}+\frac{ae^{\left(c-\frac{de}{f}\right)}E_1\left(-\frac{(fx+e)d}{f}\right)}{2b^2f}-\frac{e^{\left(2c-\frac{2de}{f}\right)}E_1\left(-\frac{2(fx+e)d}{f}\right)}{4bf}+\frac{(a^2+b^2)\log(fx}{b^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/4*e^(-2*c + 2*d*e/f)*exp_integral_e(1, 2*(f*x + e)*d/f)/(b*f) + 1/2*a*e^(
-c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b^2*f) + 1/2*a*e^(c - d*e/f)*
exp_integral_e(1, -(f*x + e)*d/f)/(b^2*f) - 1/4*e^(2*c - 2*d*e/f)*exp_integ
ral_e(1, -2*(f*x + e)*d/f)/(b*f) + (a^2 + b^2)*log(f*x + e)/(b^3*f) - 1/8*i
ntegrate(16*(a^2*b + b^3 - (a^3*e^c + a*b^2*e^c)*e^(d*x))/(b^4*f*x + b^4*e
- (b^4*f*x*e^(2*c) + b^4*e*e^(2*c))*e^(2*d*x) - 2*(a*b^3*f*x*e^c + a*b^3*e*
e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh(c+d\,x)^3}{(e+f\,x)\,(a+b\sinh(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(c + d*x)^3/((e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int(cosh(c + d*x)^3/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.304 $\int \frac{(e+fx)^3\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=786

$$-\frac{6iaf^3\text{Li}_4\left(-ie^{c+dx}\right)}{d^4\left(a^2+b^2\right)}+\frac{6iaf^3\text{Li}_4\left(ie^{c+dx}\right)}{d^4\left(a^2+b^2\right)}+\frac{6bf^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^4\left(a^2+b^2\right)}+\frac{6bf^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^4\left(a^2+b^2\right)}-\frac{3bf^3\text{Li}_4\left(-e^{2(c+dx)}\right)}{4d^4\left(a^2+b^2\right)}+\frac{6iaf}{}$$

```
[Out] 2*a*(f*x+e)^3*arctan(exp(d*x+c))/(a^2+b^2)/d-b*(f*x+e)^3*ln(1+exp(2*d*x+2*c
))/(a^2+b^2)/d+b*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)
/d+b*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d+6*I*a*f^2
*(f*x+e)*polylog(3,-I*exp(d*x+c))/(a^2+b^2)/d^3+3*I*a*f*(f*x+e)^2*polylog(2
,I*exp(d*x+c))/(a^2+b^2)/d^2-3/2*b*f*(f*x+e)^2*polylog(2,-exp(2*d*x+2*c))/(
a^2+b^2)/d^2+3*b*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(
a^2+b^2)/d^2+3*b*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(
a^2+b^2)/d^2+6*I*a*f^3*polylog(4,I*exp(d*x+c))/(a^2+b^2)/d^4-3*I*a*f*(f*x+e
)^2*polylog(2,-I*exp(d*x+c))/(a^2+b^2)/d^2+3/2*b*f^2*(f*x+e)*polylog(3,-exp
(2*d*x+2*c))/(a^2+b^2)/d^3-6*b*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+
b^2)^(1/2)))/(a^2+b^2)/d^3-6*b*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+
b^2)^(1/2)))/(a^2+b^2)/d^3-6*I*a*f^2*(f*x+e)*polylog(3,I*exp(d*x+c))/(a^2+b
^2)/d^3-6*I*a*f^3*polylog(4,-I*exp(d*x+c))/(a^2+b^2)/d^4-3/4*b*f^3*polylog(
4,-exp(2*d*x+2*c))/(a^2+b^2)/d^4+6*b*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^
2)^(1/2)))/(a^2+b^2)/d^4+6*b*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)
))/(a^2+b^2)/d^4
```

Rubi [A] time = 1.46, antiderivative size = 786, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {5573, 5561, 2190, 2531, 6609, 2282, 6589, 6742, 4180, 3718}

$$\frac{6iaf^2(e+fx)\text{PolyLog}\left(3,-ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}-\frac{6iaf^2(e+fx)\text{PolyLog}\left(3,ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}-\frac{6bf^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)}-\frac{6b}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a*(e + f*x)^3*ArcTan[E^(c + d*x)])/((a^2 + b^2)*d) + (b*(e + f*x)^3*Log[
1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)*d) + (b*(e + f*x)^
3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)*d) - (b*(e +
 f*x)^3*Log[1 + E^(2*(c + d*x))])/((a^2 + b^2)*d) - ((3*I)*a*f*(e + f*x)^2*
PolyLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^2) + ((3*I)*a*f*(e + f*x)^2*Po
lyLog[2, I*E^(c + d*x)])/((a^2 + b^2)*d^2) + (3*b*f*(e + f*x)^2*PolyLog[2,
```

```
-((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d^2) + (3*b*f*(e +
f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d
^2) - (3*b*f*(e + f*x)^2*PolyLog[2, -E^(2*(c + d*x))])/(2*(a^2 + b^2)*d^2)
+ ((6*I)*a*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^3) -
((6*I)*a*f^2*(e + f*x)*PolyLog[3, I*E^(c + d*x)])/((a^2 + b^2)*d^3) - (6*b*
f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 +
 b^2)*d^3) - (6*b*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2
+ b^2]))])/((a^2 + b^2)*d^3) + (3*b*f^2*(e + f*x)*PolyLog[3, -E^(2*(c + d*x
))])/(2*(a^2 + b^2)*d^3) - ((6*I)*a*f^3*PolyLog[4, (-I)*E^(c + d*x)])/((a^2
 + b^2)*d^4) + ((6*I)*a*f^3*PolyLog[4, I*E^(c + d*x)])/((a^2 + b^2)*d^4) +
(6*b*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)
*d^4) + (6*b*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^
2 + b^2)*d^4) - (3*b*f^3*PolyLog[4, -E^(2*(c + d*x))])/(4*(a^2 + b^2)*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\text{sech}(c+dx)(a-b\sinh(c+dx))\,dx}{a^2+b^2}+\frac{b^2\int \frac{(e+fx)^3\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= -\frac{b(e+fx)^4}{4\left(a^2+b^2\right)f}+\frac{\int \left(a(e+fx)^3\text{sech}(c+dx)-b(e+fx)^3\tanh(c+dx)\right)dx}{a^2+b^2}+\frac{b^2}{}$$

$$= -\frac{b(e+fx)^4}{4\left(a^2+b^2\right)f}+\frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d}$$

$$= \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\right.}{\left(a^2+b^2\right)}$$

$$= \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\right.}{\left(a^2+b^2\right)}$$

$$= \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\right.}{\left(a^2+b^2\right)}$$

$$= \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\right.}{\left(a^2+b^2\right)}$$

$$= \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\right.}{\left(a^2+b^2\right)}$$

$$= \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d}+\frac{b(e+fx)^3\log\left(1+\right.}{\left(a^2+b^2\right)}$$

Mathematica [B] time = 26.61, size = 3214, normalized size = 4.09

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/4*(-8*b*d^4*e^3*E^(2*c)*x - 12*b*d^4*e^2*E^(2*c)*f*x^2 - 8*b*d^4*e*E^(2*
c)*f^2*x^3 - 2*b*d^4*E^(2*c)*f^3*x^4 - 8*a*d^3*e^3*ArcTan[E^(c + d*x)] - 8*
a*d^3*e^3*E^(2*c)*ArcTan[E^(c + d*x)] - (12*I)*a*d^3*e^2*f*x*Log[1 - I*E^(c
 + d*x)] - (12*I)*a*d^3*e^2*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] - (12*I)*a*d
^3*e*f^2*x^2*Log[1 - I*E^(c + d*x)] - (12*I)*a*d^3*e*E^(2*c)*f^2*x^2*Log[1
- I*E^(c + d*x)] - (4*I)*a*d^3*f^3*x^3*Log[1 - I*E^(c + d*x)] - (4*I)*a*d^3
*E^(2*c)*f^3*x^3*Log[1 - I*E^(c + d*x)] + (12*I)*a*d^3*e^2*f*x*Log[1 + I*E^
(c + d*x)] + (12*I)*a*d^3*e^2*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] + (12*I)*a
*d^3*e*f^2*x^2*Log[1 + I*E^(c + d*x)] + (12*I)*a*d^3*e*E^(2*c)*f^2*x^2*Log[
1 + I*E^(c + d*x)] + (4*I)*a*d^3*f^3*x^3*Log[1 + I*E^(c + d*x)] + (4*I)*a*d
^3*E^(2*c)*f^3*x^3*Log[1 + I*E^(c + d*x)] + 4*b*d^3*e^3*Log[1 + E^(2*(c + d
*x))] + 4*b*d^3*e^3*E^(2*c)*Log[1 + E^(2*(c + d*x))] + 12*b*d^3*e^2*f*x*Log
[1 + E^(2*(c + d*x))] + 12*b*d^3*e^2*E^(2*c)*f*x*Log[1 + E^(2*(c + d*x))] +
 12*b*d^3*e*f^2*x^2*Log[1 + E^(2*(c + d*x))] + 12*b*d^3*e*E^(2*c)*f^2*x^2*L
og[1 + E^(2*(c + d*x))] + 4*b*d^3*f^3*x^3*Log[1 + E^(2*(c + d*x))] + 4*b*d^
3*E^(2*c)*f^3*x^3*Log[1 + E^(2*(c + d*x))] + (12*I)*a*d^2*(1 + E^(2*c))*f*(
e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)] - (12*I)*a*d^2*(1 + E^(2*c))*f*(e +
 f*x)^2*PolyLog[2, I*E^(c + d*x)] + 6*b*d^2*e^2*f*PolyLog[2, -E^(2*(c + d*x
))] + 6*b*d^2*e^2*E^(2*c)*f*PolyLog[2, -E^(2*(c + d*x))] + 12*b*d^2*e*f^2*x
*PolyLog[2, -E^(2*(c + d*x))] + 12*b*d^2*e*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(
c + d*x))] + 6*b*d^2*f^3*x^2*PolyLog[2, -E^(2*(c + d*x))] + 6*b*d^2*E^(2*c)
*f^3*x^2*PolyLog[2, -E^(2*(c + d*x))] - (24*I)*a*d*e*f^2*PolyLog[3, (-I)*E^
(c + d*x)] - (24*I)*a*d*e*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] - (24*I)
*a*d*f^3*x*PolyLog[3, (-I)*E^(c + d*x)] - (24*I)*a*d*E^(2*c)*f^3*x*PolyLog[
3, (-I)*E^(c + d*x)] + (24*I)*a*d*e*f^2*PolyLog[3, I*E^(c + d*x)] + (24*I)*
a*d*e*E^(2*c)*f^2*PolyLog[3, I*E^(c + d*x)] + (24*I)*a*d*f^3*x*PolyLog[3, I
*E^(c + d*x)] + (24*I)*a*d*E^(2*c)*f^3*x*PolyLog[3, I*E^(c + d*x)] - 6*b*d*
e*f^2*PolyLog[3, -E^(2*(c + d*x))] - 6*b*d*e*E^(2*c)*f^2*PolyLog[3, -E^(2*(
c + d*x))] - 6*b*d*f^3*x*PolyLog[3, -E^(2*(c + d*x))] - 6*b*d*E^(2*c)*f^3*x
*PolyLog[3, -E^(2*(c + d*x))] + (24*I)*a*f^3*PolyLog[4, (-I)*E^(c + d*x)] +
 (24*I)*a*E^(2*c)*f^3*PolyLog[4, (-I)*E^(c + d*x)] - (24*I)*a*f^3*PolyLog[4
, I*E^(c + d*x)] - (24*I)*a*E^(2*c)*f^3*PolyLog[4, I*E^(c + d*x)] + 3*b*f^3
*PolyLog[4, -E^(2*(c + d*x))] + 3*b*E^(2*c)*f^3*PolyLog[4, -E^(2*(c + d*x))
])/((a^2 + b^2)*d^4*(1 + E^(2*c))) - (b*(4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*
x^2 + 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*f^3*x^4 + (4*a*Sqrt[a^2 + b^2]*e^3*ArcT
an[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/(Sqrt[-(a^2 + b^2)^2]*d) + (4*a*S
qrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]
])/((a^2 + b^2)^(3/2)*d) - (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*ArcTanh[(a + b*E^(
c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (4*a*Sqrt[-(a^2 + b^2)
^2]*e^3*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)
^(3/2)*d) + (2*e^3*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d - (2*
e^3*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d + (6*e^2*f*x
*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2
*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])]
)/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2
```

```
*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a
^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqr
t[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/
(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*
x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b
*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[
1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c
)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d
 + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])
])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^
2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c +
 d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(-1 + E^(2*c))*f*(e
+ f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])
)])/d^2 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2
)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^
c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c +
d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLo
g[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*e
*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/
d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 +
 b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c +
Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*
c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*f^3*PolyLog[4, -
((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)
*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/
d^4 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2
*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt
[(a^2 + b^2)*E^(2*c)]))])/d^4))/(2*(a^2 + b^2)*(-1 + E^(2*c))) + (b*x*(4*e^
3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3)*Csch[c/2]*Sech[c/2]*Sech[c])/(8*(a^2
 + b^2))
```

fricas [C] time = 0.76, size = 1718, normalized size = 2.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (6*b*f^3*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
 b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*b*f^3*polylog(4, (a*cosh(d*
x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
b^2)/b^2))/b) + 3*(b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*dilog((a*
cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2) - b)/b + 1) + 3*(b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e
^2*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(
```

```
d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (3*I*a*d^2*f^3*x^2 - 3*b*d^2*
f^3*x^2 + 6*I*a*d^2*e*f^2*x - 6*b*d^2*e*f^2*x + 3*I*a*d^2*e^2*f - 3*b*d^2*e
^2*f)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + (-3*I*a*d^2*f^3*x^2 - 3*b*
d^2*f^3*x^2 - 6*I*a*d^2*e*f^2*x - 6*b*d^2*e*f^2*x - 3*I*a*d^2*e^2*f - 3*b*d
^2*e^2*f)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + (b*d^3*e^3 - 3*b*c*d^
2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x
 + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3
*b*c^2*d*e*f^2 - b*c^3*f^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b
*sqrt((a^2 + b^2)/b^2) + 2*a) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^
3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*log(-(a*cosh(d*x
 + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2) - b)/b) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3
*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*log(-(a*cosh(d*x + c) + a*sin
h(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)
/b) + (I*a*d^3*e^3 - b*d^3*e^3 - 3*I*a*c*d^2*e^2*f + 3*b*c*d^2*e^2*f + 3*I*
a*c^2*d*e*f^2 - 3*b*c^2*d*e*f^2 - I*a*c^3*f^3 + b*c^3*f^3)*log(cosh(d*x + c
) + sinh(d*x + c) + I) + (-I*a*d^3*e^3 - b*d^3*e^3 + 3*I*a*c*d^2*e^2*f + 3*
b*c*d^2*e^2*f - 3*I*a*c^2*d*e*f^2 - 3*b*c^2*d*e*f^2 + I*a*c^3*f^3 + b*c^3*f
^3)*log(cosh(d*x + c) + sinh(d*x + c) - I) + (-I*a*d^3*f^3*x^3 - b*d^3*f^3*
x^3 - 3*I*a*d^3*e*f^2*x^2 - 3*b*d^3*e*f^2*x^2 - 3*I*a*d^3*e^2*f*x - 3*b*d^3
*e^2*f*x - 3*I*a*c*d^2*e^2*f - 3*b*c*d^2*e^2*f + 3*I*a*c^2*d*e*f^2 + 3*b*c^
2*d*e*f^2 - I*a*c^3*f^3 - b*c^3*f^3)*log(I*cosh(d*x + c) + I*sinh(d*x + c)
+ 1) + (I*a*d^3*f^3*x^3 - b*d^3*f^3*x^3 + 3*I*a*d^3*e*f^2*x^2 - 3*b*d^3*e*f
^2*x^2 + 3*I*a*d^3*e^2*f*x - 3*b*d^3*e^2*f*x + 3*I*a*c*d^2*e^2*f - 3*b*c*d^
2*e^2*f - 3*I*a*c^2*d*e*f^2 + 3*b*c^2*d*e*f^2 + I*a*c^3*f^3 - b*c^3*f^3)*lo
g(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) - 6*(-I*a*f^3 + b*f^3)*polylog(4,
 I*cosh(d*x + c) + I*sinh(d*x + c)) - 6*(I*a*f^3 + b*f^3)*polylog(4, -I*cos
h(d*x + c) - I*sinh(d*x + c)) - 6*(b*d*f^3*x + b*d*e*f^2)*polylog(3, (a*cos
h(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2))/b) - 6*(b*d*f^3*x + b*d*e*f^2)*polylog(3, (a*cosh(d*x + c) +
 a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2
))/b) + (-6*I*a*d*f^3*x + 6*b*d*f^3*x - 6*I*a*d*e*f^2 + 6*b*d*e*f^2)*polylo
g(3, I*cosh(d*x + c) + I*sinh(d*x + c)) + (6*I*a*d*f^3*x + 6*b*d*f^3*x + 6*
I*a*d*e*f^2 + 6*b*d*e*f^2)*polylog(3, -I*cosh(d*x + c) - I*sinh(d*x + c)))/
((a^2 + b^2)*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \operatorname{sech}(dx+c)}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

[Out] integrate((f*x + e)^3*sech(d*x + c)/(b*sinh(d*x + c) + a), x)

maple [F] time = 0.57, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{sech}\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f*x+e)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)

[Out] int((f*x+e)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^{3}\left(\frac{2\,a\arctan\left(e^{(-dx-c)}\right)}{\left(a^{2}+b^{2}\right)d}-\frac{b\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^{2}+b^{2}\right)d}+\frac{b\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d}\right)+\int \frac{}{\left(b\left(e^{(dx+c)}-e^{(-dx-}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")

[Out] -e^3*(2*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) - b*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^2 + b^2)*d) + b*log(e^(-2*d*x - 2*c) + 1)/((a^2 + b^2)*d)) + integrate(4*f^3*x^3/((b*(e^(d*x + c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c) + e^(-d*x - c))) + 12*e*f^2*x^2/((b*(e^(d*x + c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c) + e^(-d*x - c))) + 12*e^2*f*x/((b*(e^(d*x + c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c) + e^(-d*x - c))), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(e+f\,x\right)}^3}{\mathrm{cosh}\left(c+d\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((e + f*x)^3/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)

[Out] int((e + f*x)^3/(cosh(c + d*x)*(a + b*sinh(c + d*x))), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{3} \operatorname{sech}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)

[Out] Integral((e + f*x)**3*sech(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.305 $\int \frac{(e+fx)^2\mathbf{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=558

$$\frac{2iaf^2\mathrm{Li}_3\left(-ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}-\frac{2iaf^2\mathrm{Li}_3\left(ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}-\frac{2bf^2\mathrm{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)}-\frac{2bf^2\mathrm{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)}+\frac{bf^2\mathrm{Li}_3\left(-e^{2(c+dx)}\right)}{2d^3\left(a^2+b^2\right)}-\frac{2iaf(e}{}$$

```
[Out] 2*a*(f*x+e)^2*arctan(exp(d*x+c))/(a^2+b^2)/d-b*(f*x+e)^2*ln(1+exp(2*d*x+2*c
))/(a^2+b^2)/d+b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)
/d+b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d-2*I*a*f*(
f*x+e)*polylog(2,-I*exp(d*x+c))/(a^2+b^2)/d^2+2*I*a*f*(f*x+e)*polylog(2,I*e
xp(d*x+c))/(a^2+b^2)/d^2-b*f*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2)/d
^2+2*b*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d^2
+2*b*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d^2+2
*I*a*f^2*polylog(3,-I*exp(d*x+c))/(a^2+b^2)/d^3-2*I*a*f^2*polylog(3,I*exp(d
*x+c))/(a^2+b^2)/d^3+1/2*b*f^2*polylog(3,-exp(2*d*x+2*c))/(a^2+b^2)/d^3-2*b
*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d^3-2*b*f^2*pol
ylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d^3
```

Rubi [A] time = 1.03, antiderivative size = 558, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {5573, 5561, 2190, 2531, 2282, 6589, 6742, 4180, 3718}

$$-\frac{2iaf(e+fx)\mathrm{PolyLog}\left(2,-ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)}+\frac{2iaf(e+fx)\mathrm{PolyLog}\left(2,ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)}+\frac{2bf(e+fx)\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)}+$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a*(e + f*x)^2*ArcTan[E^(c + d*x)])/((a^2 + b^2)*d) + (b*(e + f*x)^2*Log[
1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)*d) + (b*(e + f*x)^
2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)*d) - (b*(e +
 f*x)^2*Log[1 + E^(2*(c + d*x))])/((a^2 + b^2)*d) - ((2*I)*a*f*(e + f*x)*Po
lyLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^2) + ((2*I)*a*f*(e + f*x)*PolyLo
g[2, I*E^(c + d*x)])/((a^2 + b^2)*d^2) + (2*b*f*(e + f*x)*PolyLog[2, -((b*E
^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d^2) + (2*b*f*(e + f*x)*P
olyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d^2) - (b
*f*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/((a^2 + b^2)*d^2) + ((2*I)*a*f^2
*PolyLog[3, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^3) - ((2*I)*a*f^2*PolyLog[3,
I*E^(c + d*x)])/((a^2 + b^2)*d^3) - (2*b*f^2*PolyLog[3, -((b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d^3) - (2*b*f^2*PolyLog[3, -((b*E^(c +
```

```
 d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d^3) + (b*f^2*PolyLog[3, -E^(2
*(c + d*x))])/(2*(a^2 + b^2)*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{sech}(c+dx)(a-b\sinh(c+dx))\,dx}{a^2+b^2} + \frac{b^2\int \frac{(e+fx)^2\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= -\frac{b(e+fx)^3}{3\left(a^2+b^2\right)f} + \frac{\int \left(a(e+fx)^2\text{sech}(c+dx) - b(e+fx)^2\tanh(c+dx)\right)dx}{a^2+b^2} + \frac{b^2\int$$

$$= -\frac{b(e+fx)^3}{3\left(a^2+b^2\right)f} + \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} +$$

$$= \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{}{a}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{}{a}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{}{a}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{}{a}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\log\left(1+\frac{}{a}\right.}{\left(a^2+b^2\right)d}$$

Mathematica [B] time = 16.55, size = 1639, normalized size = 2.94

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (12*b*d^3*e^2*E^(2*c)*x - 12*b*d^3*e^2*(1 + E^(2*c))*x - 12*b*d^3*e*f*x^2 -
 4*b*d^3*f^2*x^3 + 12*a*d^2*e^2*(1 + E^(2*c))*ArcTan[E^(c + d*x)] + 6*b*d^2
*e^2*(1 + E^(2*c))*(2*d*x - Log[1 + E^(2*(c + d*x))]) + (12*I)*a*d*e*(1 + E
^(2*c))*f*(d*x*(Log[1 - I*E^(c + d*x)] - Log[1 + I*E^(c + d*x)]) - PolyLog[
2, (-I)*E^(c + d*x)] + PolyLog[2, I*E^(c + d*x)]) + 6*b*d*e*(1 + E^(2*c))*f
```

```
*(2*d*x*(d*x - Log[1 + E^(2*(c + d*x))]) - PolyLog[2, -E^(2*(c + d*x))]) +
(6*I)*a*(1 + E^(2*c))*f^2*(d^2*x^2*Log[1 - I*E^(c + d*x)] - d^2*x^2*Log[1 +
 I*E^(c + d*x)] - 2*d*x*PolyLog[2, (-I)*E^(c + d*x)] + 2*d*x*PolyLog[2, I*E
^(c + d*x)] + 2*PolyLog[3, (-I)*E^(c + d*x)] - 2*PolyLog[3, I*E^(c + d*x)])
 + b*(1 + E^(2*c))*f^2*(2*d^2*x^2*(2*d*x - 3*Log[1 + E^(2*(c + d*x))]) - 6*
d*x*PolyLog[2, -E^(2*(c + d*x))] + 3*PolyLog[3, -E^(2*(c + d*x))]))/(6*(a^2
 + b^2)*d^3*(1 + E^(2*c))) - (b*(6*e^2*E^(2*c)*x + 6*e*E^(2*c)*f*x^2 + 2*E^
(2*c)*f^2*x^3 + (6*a*Sqrt[a^2 + b^2]*e^2*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a
^2 - b^2]])/(Sqrt[-(a^2 + b^2)^2]*d) + (6*a*Sqrt[-(a^2 + b^2)^2]*e^2*E^(2*c
)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) - (6*
a*Sqrt[-(a^2 + b^2)^2]*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((
-a^2 - b^2)^(3/2)*d) + (6*a*Sqrt[-(a^2 + b^2)^2]*e^2*E^(2*c)*ArcTanh[(a + b
*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (3*e^2*Log[2*a*E^(
c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d - (3*e^2*E^(2*c)*Log[2*a*E^(c + d*x
) + b*(-1 + E^(2*(c + d*x)))])/d + (6*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^
c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d
*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (3*f^2*x^2*Log[1 + (b*E^(2*c
 + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (3*E^(2*c)*f^2*x^2*Log[1
 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f*x*Log
[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*
c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d +
(3*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/
d - (3*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*
E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x)
)/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(-1 + E^(2*c))*f*(e + f*x
)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2
 - (6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]
))])/d^3 + (6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2
 + b^2)*E^(2*c)]))])/d^3 - (6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + S
qrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c +
d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3))/(3*(a^2 + b^2)*(-1 + E^(
2*c))) + (b*x*(3*e^2 + 3*e*f*x + f^2*x^2)*Csch[c/2]*Sech[c/2]*Sech[c])/(6*(
a^2 + b^2))
```

fricas [C] time = 0.48, size = 1098, normalized size = 1.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*b*f^2*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 2*b*f^2*polylog(3, (a*cosh(d
*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
 b^2)/b^2))/b) - 2*(b*d*f^2*x + b*d*e*f)*dilog((a*cosh(d*x + c) + a*sinh(d*
```

```
x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b +
 1) - 2*(b*d*f^2*x + b*d*e*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b
*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (2*I*
a*d*f^2*x - 2*b*d*f^2*x + 2*I*a*d*e*f - 2*b*d*e*f)*dilog(I*cosh(d*x + c) +
I*sinh(d*x + c)) - (-2*I*a*d*f^2*x - 2*b*d*f^2*x - 2*I*a*d*e*f - 2*b*d*e*f)
*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) - (b*d^2*e^2 - 2*b*c*d*e*f + b*c
^2*f^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^
2) + 2*a) - (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*log(2*b*cosh(d*x + c) + 2
*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b*d^2*f^2*x^2 + 2*b*
d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c
) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b*
d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*log(-(a*cosh(d*x + c
) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2) - b)/b) - (I*a*d^2*e^2 - b*d^2*e^2 - 2*I*a*c*d*e*f + 2*b*c*d*e*f + I*a
*c^2*f^2 - b*c^2*f^2)*log(cosh(d*x + c) + sinh(d*x + c) + I) - (-I*a*d^2*e^
2 - b*d^2*e^2 + 2*I*a*c*d*e*f + 2*b*c*d*e*f - I*a*c^2*f^2 - b*c^2*f^2)*log(
cosh(d*x + c) + sinh(d*x + c) - I) - (-I*a*d^2*f^2*x^2 - b*d^2*f^2*x^2 - 2*
I*a*d^2*e*f*x - 2*b*d^2*e*f*x - 2*I*a*c*d*e*f - 2*b*c*d*e*f + I*a*c^2*f^2 +
 b*c^2*f^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) - (I*a*d^2*f^2*x^2 -
 b*d^2*f^2*x^2 + 2*I*a*d^2*e*f*x - 2*b*d^2*e*f*x + 2*I*a*c*d*e*f - 2*b*c*d*
e*f - I*a*c^2*f^2 + b*c^2*f^2)*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1)
+ 2*(I*a*f^2 - b*f^2)*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) + 2*(-I
*a*f^2 - b*f^2)*polylog(3, -I*cosh(d*x + c) - I*sinh(d*x + c)))/((a^2 + b^2
)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \operatorname{sech}(dx+c)}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sech(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \operatorname{sech}(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

[Out] int((f*x+e)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^{2}\left(\frac{2\,a\arctan\left(e^{(-dx-c)}\right)}{\left(a^{2}+b^{2}\right)d}-\frac{b\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^{2}+b^{2}\right)d}+\frac{b\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d}\right)+\int\frac{}{\left(b\left(e^{(dx+c)}-e^{(-dx-}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")

[Out] -e^2*(2*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) - b*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^2 + b^2)*d) + b*log(e^(-2*d*x - 2*c) + 1)/((a^2 + b^2)*d)) + integrate(4*f^2*x^2/((b*(e^(d*x + c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c) + e^(-d*x - c))) + 8*e*f*x/((b*(e^(d*x + c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c) + e^(-d*x - c))), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(e+f\,x\right)}^2}{\mathrm{cosh}\left(c+d\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((e + f*x)^2/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)

[Out] int((e + f*x)^2/(cosh(c + d*x)*(a + b*sinh(c + d*x))), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(e+fx\right)^{2}\operatorname{sech}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)**2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)

[Out] Integral((e + f*x)**2*sech(c + d*x)/(a + b*sinh(c + d*x)), x)

3.306 $\int \frac{(e+fx)\mathbf{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=334

$$-\frac{iaf\text{Li}_2\left(-ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)}+\frac{iaf\text{Li}_2\left(ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)}+\frac{bf\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)}+\frac{bf\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)}-\frac{bf\text{Li}_2\left(-e^{2(c+dx)}\right)}{2d^2\left(a^2+b^2\right)}+\frac{b(e+fx)\log\left(-\right.}{d\left(a^2+\right.}$$

```
[Out] 2*a*(f*x+e)*arctan(exp(d*x+c))/(a^2+b^2)/d-b*(f*x+e)*ln(1+exp(2*d*x+2*c))/(
a^2+b^2)/d+b*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d+b*(
f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d-I*a*f*polylog(2,-
I*exp(d*x+c))/(a^2+b^2)/d^2+I*a*f*polylog(2,I*exp(d*x+c))/(a^2+b^2)/d^2-1/2
*b*f*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2)/d^2+b*f*polylog(2,-b*exp(d*x+c)/(
a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d^2+b*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^
(1/2)))/(a^2+b^2)/d^2
```

Rubi [A] time = 0.60, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {5573, 5561, 2190, 2279, 2391, 6742, 4180, 3718}

$$-\frac{iaf\text{PolyLog}\left(2,-ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)}+\frac{iaf\text{PolyLog}\left(2,ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)}+\frac{bf\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)}+\frac{bf\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{d^2\left(a^2+b^2\right)}-\frac{bf}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a*(e + f*x)*ArcTan[E^(c + d*x)])/((a^2 + b^2)*d) + (b*(e + f*x)*Log[1 +
(b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)*d) + (b*(e + f*x)*Log[
1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)*d) - (b*(e + f*x)*
Log[1 + E^(2*(c + d*x))])/((a^2 + b^2)*d) - (I*a*f*PolyLog[2, (-I)*E^(c + d
*x)])/((a^2 + b^2)*d^2) + (I*a*f*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^2)*d^
2) + (b*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2
)*d^2) + (b*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 +
 b^2)*d^2) - (b*f*PolyLog[2, -E^(2*(c + d*x))])/(2*(a^2 + b^2)*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\operatorname{sech}(c+dx)(a-b\sinh(c+dx))\,dx}{a^2+b^2} + \frac{b^2\int \frac{(e+fx)\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= -\frac{b(e+fx)^2}{2\left(a^2+b^2\right)f} + \frac{\int (a(e+fx)\operatorname{sech}(c+dx) - b(e+fx)\tanh(c+dx))\,dx}{a^2+b^2} + \frac{b^2\int \frac{e}{a-\sqrt{}}}{a}$$

$$= -\frac{b(e+fx)^2}{2\left(a^2+b^2\right)f} + \frac{b(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{a}{}$$

$$= \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)\log\left(1+\frac{be^{c+}}{a+\sqrt{a^2}}\right)}{\left(a^2+b^2\right)d}$$

$$= \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)\log\left(1+\frac{be^{c+}}{a+\sqrt{a^2}}\right)}{\left(a^2+b^2\right)d}$$

$$= \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)\log\left(1+\frac{be^{c+}}{a+\sqrt{a^2}}\right)}{\left(a^2+b^2\right)d}$$

$$= \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} + \frac{b(e+fx)\log\left(1+\frac{be^{c+}}{a+\sqrt{a^2}}\right)}{\left(a^2+b^2\right)d}$$

Mathematica [A] time = 2.61, size = 439, normalized size = 1.31

$$\frac{2bf\operatorname{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right) + 2bf\operatorname{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right) + 2bcf\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) + 2bcf\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right) + 2bdfx\log\left(\frac{be}{a-\sqrt{}}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*b*c*d*e - 2*b*c^2*f + 2*b*d^2*e*x - 2*b*c*d*f*x + 4*a*d*e*ArcTan[Cosh[c
+ d*x] + Sinh[c + d*x]] + 4*a*d*f*x*ArcTan[Cosh[c + d*x] + Sinh[c + d*x]] +
```

```
2*b*c*f*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*b*d*f*x*Log[1 +
 (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*b*c*f*Log[1 + (b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2])] + 2*b*d*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b
^2])] + 2*b*d*e*Log[a + b*Sinh[c + d*x]] - 2*b*c*f*Log[a + b*Sinh[c + d*x]]
 - 2*b*d*e*Log[1 + Cosh[2*(c + d*x)] + Sinh[2*(c + d*x)]] - 2*b*d*f*x*Log[1
 + Cosh[2*(c + d*x)] + Sinh[2*(c + d*x)]] + 2*b*f*PolyLog[2, (b*E^(c + d*x)
)/(-a + Sqrt[a^2 + b^2])] + 2*b*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2]))] - (2*I)*a*f*PolyLog[2, (-I)*(Cosh[c + d*x] + Sinh[c + d*x])] +
(2*I)*a*f*PolyLog[2, I*(Cosh[c + d*x] + Sinh[c + d*x])] - b*f*PolyLog[2, -C
osh[2*(c + d*x)] - Sinh[2*(c + d*x)]])/(2*(a^2 + b^2)*d^2)
```

fricas [A] time = 0.82, size = 588, normalized size = 1.76

$$bf\text{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}-b}{b}+1\right)+bf\text{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)-(b\cosh(dx+c)+b\sin}{b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (b*f*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + b*f*dilog((a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b + 1) + (I*a*f - b*f)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + (-I*
a*f - b*f)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + (b*d*e - b*c*f)*log(
2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) +
(b*d*e - b*c*f)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 +
 b^2)/b^2) + 2*a) + (b*d*f*x + b*c*f)*log(-(a*cosh(d*x + c) + a*sinh(d*x +
c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (b
*d*f*x + b*c*f)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (I*a*d*e - b*d*e - I*a*c
*f + b*c*f)*log(cosh(d*x + c) + sinh(d*x + c) + I) + (-I*a*d*e - b*d*e + I*
a*c*f + b*c*f)*log(cosh(d*x + c) + sinh(d*x + c) - I) + (-I*a*d*f*x - b*d*f
*x - I*a*c*f - b*c*f)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) + (I*a*d*f
*x - b*d*f*x + I*a*c*f - b*c*f)*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1)
)/((a^2 + b^2)*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\,\mathrm{sech}\,(dx+c)}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sech(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.28, size = 954, normalized size = 2.86

$$\frac{2eb\ln\left(b\,e^{2dx+2c}+2a\,e^{dx+c}-b\right)}{d\left(2a^2+2b^2\right)}-\frac{2eb\ln\left(1+e^{2dx+2c}\right)}{d\left(2a^2+2b^2\right)}+\frac{4ea\arctan\left(e^{dx+c}\right)}{d\left(2a^2+2b^2\right)}+\frac{2fb\ln\left(\frac{-b\,e^{dx+c}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{d\left(2a^2+2b^2\right)}+\frac{2fb\ln\left(\right.}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 2/d*e*b/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/d*e/(2*a^2+2*
b^2)*b*ln(1+exp(2*d*x+2*c))+4/d*e/(2*a^2+2*b^2)*a*arctan(exp(d*x+c))+2/d*f*
b/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*
x+2/d^2*f*b/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2
)^(1/2)))*c+2/d*f*b/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a
^2+b^2)^(1/2)))*x+2/d^2*f*b/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+
a)/(a+(a^2+b^2)^(1/2)))*c+2/d^2*f*b/(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^2
+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+2/d^2*f*b/(2*a^2+2*b^2)*dilog((b*exp(d
*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-2/d*f/(2*a^2+2*b^2)*ln(1+I*ex
p(d*x+c))*b*x-2/d^2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*b*c-2*I/d*f/(2*a^2+2
*b^2)*ln(1+I*exp(d*x+c))*a*x-2/d*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*b*x-2/d
^2*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*b*c+2*I/d*f/(2*a^2+2*b^2)*ln(1-I*exp(
d*x+c))*a*x-2*I/d^2*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))*a-2/d^2*f/(2*a^2+
2*b^2)*dilog(1+I*exp(d*x+c))*b-2*I/d^2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*a
*c-2/d^2*f/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+c))*b+2*I/d^2*f/(2*a^2+2*b^2)*di
log(1-I*exp(d*x+c))*a+2*I/d^2*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*a*c-2/d^2*
f*c*b/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d^2*f*c/(2*a^2+
2*b^2)*b*ln(1+exp(2*d*x+2*c))-4/d^2*f*c/(2*a^2+2*b^2)*a*arctan(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e\left(\frac{2\,a\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}-\frac{b\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^2+b^2\right)d}+\frac{b\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}\right)+2\,f\int\frac{}{\left(b\left(e^{(dx+c)}-e^{(-dx}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e*(2*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) - b*log(-2*a*e^(-d*x - c) + b*
e^(-2*d*x - 2*c) - b)/((a^2 + b^2)*d) + b*log(e^(-2*d*x - 2*c) + 1)/((a^2 +
 b^2)*d)) + 2*f*integrate(2*x/((b*(e^(d*x + c) - e^(-d*x - c)) + 2*a)*(e^(d
*x + c) + e^(-d*x - c))), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{\cosh\left(c+d\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)/(cosh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\operatorname{sech}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)*sech(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.307 $\int \frac{\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=69

$$\frac{b\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)}+\frac{a\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)}-\frac{b\log(\cosh(c+dx))}{d\left(a^2+b^2\right)}$$

```
[Out] a*arctan(sinh(d*x+c))/(a^2+b^2)/d-b*ln(cosh(d*x+c))/(a^2+b^2)/d+b*ln(a+b*si
nh(d*x+c))/(a^2+b^2)/d
```

Rubi [A] time = 0.07, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316, Rules used = {2668, 706, 31, 635, 204, 260}

$$\frac{b\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)}+\frac{a\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)}-\frac{b\log(\cosh(c+dx))}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Sech[c + d*x]/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)*d) - (b*Log[Cosh[c + d*x]])/((a^2 +
b^2)*d) + (b*Log[a + b*Sinh[c + d*x]])/((a^2 + b^2)*d)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
```

```
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{b\,\text{Subst}\left(\int \frac{1}{(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{d}$$
$$= \frac{b\,\text{Subst}\left(\int \frac{1}{a+x}\,dx, x, b\sinh(c+dx)\right)}{\left(a^2+b^2\right)d} + \frac{b\,\text{Subst}\left(\int \frac{-a+x}{-b^2-x^2}\,dx, x, b\sinh(c+dx)\right)}{\left(a^2+b^2\right)d}$$
$$= \frac{b\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)d} + \frac{b\,\text{Subst}\left(\int \frac{x}{-b^2-x^2}\,dx, x, b\sinh(c+dx)\right)}{\left(a^2+b^2\right)d} - \frac{(ab)\,\text{Subst}\left(\int\right.}{}$$
$$= \frac{a\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d} - \frac{b\log(\cosh(c+dx))}{\left(a^2+b^2\right)d} + \frac{b\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)d}$$

Mathematica [A] time = 0.09, size = 114, normalized size = 1.65

$$-\frac{b\left(\left(\sqrt{-b^2}-a\right)\log\left(\sqrt{-b^2}-b\sinh(c+dx)\right)-2\sqrt{-b^2}\log(a+b\sinh(c+dx))+\left(a+\sqrt{-b^2}\right)\log\left(\sqrt{-b^2}+b\,\text{si}\right.\right.}{2\sqrt{-b^2}\,d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sech[c + d*x]/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(b*((-a + Sqrt[-b^2])*Log[Sqrt[-b^2] - b*Sinh[c + d*x]] - 2*Sqrt[-b^2]
*Log[a + b*Sinh[c + d*x]] + (a + Sqrt[-b^2])*Log[Sqrt[-b^2] + b*Sinh[c + d*
x]]))/(Sqrt[-b^2]*(a^2 + b^2)*d)
```

fricas [A] time = 0.50, size = 92, normalized size = 1.33

$$\frac{2\,a\arctan\left(\cosh\left(dx+c\right)+\sinh\left(dx+c\right)\right)+b\log\left(\frac{2\,(b\sinh(dx+c)+a)}{\cosh(dx+c)-\sinh(dx+c)}\right)-b\log\left(\frac{2\,\cosh(dx+c)}{\cosh(dx+c)-\sinh(dx+c)}\right)}{\left(a^2+b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*a*arctan(cosh(d*x + c) + sinh(d*x + c)) + b*log(2*(b*sinh(d*x + c) + a)/
(cosh(d*x + c) - sinh(d*x + c))) - b*log(2*cosh(d*x + c)/(cosh(d*x + c) - s
inh(d*x + c))))/((a^2 + b^2)*d)
```

giac [A] time = 0.16, size = 121, normalized size = 1.75

$$\frac{\frac{2\,b^2\log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{a^2b+b^3}+\frac{\left(\pi+2\,\arctan\left(\frac{1}{2}\left(e^{(2\,dx+2\,c)}-1\right)e^{(-dx-c)}\right)\right)a}{a^2+b^2}-\frac{b\log\left(\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+4\right)}{a^2+b^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(2*b^2*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/(a^2*b + b^3) + (
pi + 2*arctan(1/2*(e^(2*d*x + 2*c) - 1)*e^(-d*x - c)))*a/(a^2 + b^2) - b*lo
g((e^(d*x + c) - e^(-d*x - c))^2 + 4)/(a^2 + b^2))/d
```

maple [A] time = 0.00, size = 100, normalized size = 1.45

$$\frac{b\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\left(a^2+b^2\right)}-\frac{b\ln\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{d\left(a^2+b^2\right)}+\frac{2a\arctan\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\left(a^2+b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/d*b/(a^2+b^2)*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)-1/d/(
a^2+b^2)*b*ln(tanh(1/2*d*x+1/2*c)^2+1)+2/d/(a^2+b^2)*a*arctan(tanh(1/2*d*x+
1/2*c))
```

maxima [A] time = 0.44, size = 95, normalized size = 1.38

$$-\frac{2\,a\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}+\frac{b\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^2+b^2\right)d}-\frac{b\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + b*log(-2*a*e^(-d*x - c) + b*e^(
-2*d*x - 2*c) - b)/((a^2 + b^2)*d) - b*log(e^(-2*d*x - 2*c) + 1)/((a^2 + b^
2)*d)
```

mupad [B] time = 1.23, size = 129, normalized size = 1.87

$$\frac{b\,\ln\left(2\,a^3\,e^{d\,x}\,e^{c}-4\,b^3-a^2\,b+4\,b^3\,e^{2\,c}\,e^{2\,d\,x}+a^2\,b\,e^{2\,c}\,e^{2\,d\,x}+8\,a\,b^2\,e^{d\,x}\,e^{c}\right)}{d\,a^2+d\,b^2}-\frac{\ln\left(e^{c+d\,x}+1\mathrm{i}\right)}{b\,d+a\,d\,1\mathrm{i}}-\frac{\ln\left(1+e^{c+d\,x}\,1\mathrm{i}\right)\,1}{a\,d+b\,d\,1\mathrm{i}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] (b*log(2*a^3*exp(d*x)*exp(c) - 4*b^3 - a^2*b + 4*b^3*exp(2*c)*exp(2*d*x) +
a^2*b*exp(2*c)*exp(2*d*x) + 8*a*b^2*exp(d*x)*exp(c)))/(a^2*d + b^2*d) - (lo
g(exp(c + d*x)*1i + 1)*1i)/(a*d + b*d*1i) - log(exp(c + d*x) + 1i)/(a*d*1i
+ b*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(sech(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.308 $\int \frac{\text{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\text{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sech[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][Sech[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\text{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\text{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 17.72, size = 0, normalized size = 0.00

$$\int \frac{\text{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sech[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Integrate[Sech[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 1.01, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{sech}\left(dx+c\right)}{afx+ae+\left(bfx+be\right)\sinh\left(dx+c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(sech(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] integrate(sech(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)}{(fx+e)\,(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] int(sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] integrate(sech(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+d\,x)\,\left(e+f\,x\right)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(sech(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.309 $\int \frac{(e+fx)^3 \mathbf{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=780

$$-\frac{6ibf^3\text{Li}_3\left(-ie^{c+dx}\right)}{d^4\left(a^2+b^2\right)}+\frac{6ibf^3\text{Li}_3\left(ie^{c+dx}\right)}{d^4\left(a^2+b^2\right)}+\frac{3af^3\text{Li}_3\left(-e^{2(c+dx)}\right)}{2d^4\left(a^2+b^2\right)}+\frac{6b^2f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^4\left(a^2+b^2\right)^{3/2}}-\frac{6b^2f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^4\left(a^2+b^2\right)^{3/2}}+$$

```
[Out] a*(f*x+e)^3/(a^2+b^2)/d-6*b*f*(f*x+e)^2*arctan(exp(d*x+c))/(a^2+b^2)/d^2-3*
a*f*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/(a^2+b^2)/d^2+b^2*(f*x+e)^3*ln(1+b*exp(d
*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d-b^2*(f*x+e)^3*ln(1+b*exp(d*x+c
)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d+6*I*b*f^2*(f*x+e)*polylog(2,-I*exp
(d*x+c))/(a^2+b^2)/d^3-6*I*b*f^2*(f*x+e)*polylog(2,I*exp(d*x+c))/(a^2+b^2)/
d^3-3*a*f^2*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2)/d^3+3*b^2*f*(f*x+e
)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-3*b^2*
f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^
2-6*I*b*f^3*polylog(3,-I*exp(d*x+c))/(a^2+b^2)/d^4+6*I*b*f^3*polylog(3,I*ex
p(d*x+c))/(a^2+b^2)/d^4+3/2*a*f^3*polylog(3,-exp(2*d*x+2*c))/(a^2+b^2)/d^4-
6*b^2*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3
/2)/d^3+6*b^2*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2
+b^2)^(3/2)/d^3+6*b^2*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2
+b^2)^(3/2)/d^4-6*b^2*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2
+b^2)^(3/2)/d^4+b*(f*x+e)^3*sech(d*x+c)/(a^2+b^2)/d+a*(f*x+e)^3*tanh(d*x+c)
/(a^2+b^2)/d
```

Rubi [A] time = 1.69, antiderivative size = 780, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 13, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.464$, Rules used = {5573, 3322, 2264, 2190, 2531, 6609, 2282, 6589, 6742, 4184, 3718, 5451, 4180}

$$\frac{6ibf^2(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}-\frac{6ibf^2(e+fx)\text{PolyLog}\left(2,ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}-\frac{3af^2(e+fx)\text{PolyLog}\left(2,-e^{2(c+dx)}\right)}{d^3\left(a^2+b^2\right)}-$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(e + f*x)^3)/((a^2 + b^2)*d) - (6*b*f*(e + f*x)^2*ArcTan[E^(c + d*x)])/(
(a^2 + b^2)*d^2) + (b^2*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2])])/((a^2 + b^2)^(3/2)*d) - (b^2*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) - (3*a*f*(e + f*x)^2*Log[1 + E
^(2*(c + d*x))])/((a^2 + b^2)*d^2) + ((6*I)*b*f^2*(e + f*x)*PolyLog[2, (-I)
```

```
*E^(c + d*x)])/((a^2 + b^2)*d^3) - ((6*I)*b*f^2*(e + f*x)*PolyLog[2, I*E^(c
 + d*x)])/((a^2 + b^2)*d^3) + (3*b^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d
*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) - (3*b^2*f*(e + f*x)^
2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*
d^2) - (3*a*f^2*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/((a^2 + b^2)*d^3) -
 ((6*I)*b*f^3*PolyLog[3, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^4) + ((6*I)*b*f^
3*PolyLog[3, I*E^(c + d*x)])/((a^2 + b^2)*d^4) - (6*b^2*f^2*(e + f*x)*PolyL
og[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^3) +
(6*b^2*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/
((a^2 + b^2)^(3/2)*d^3) + (3*a*f^3*PolyLog[3, -E^(2*(c + d*x))])/(2*(a^2 +
b^2)*d^4) + (6*b^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))]
)/((a^2 + b^2)^(3/2)*d^4) - (6*b^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sq
rt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^4) + (b*(e + f*x)^3*Sech[c + d*x])/(
(a^2 + b^2)*d) + (a*(e + f*x)^3*Tanh[c + d*x])/((a^2 + b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
```

```
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\operatorname{sech}^2(c+dx)(a-b\sinh(c+dx))\,dx}{a^2+b^2} + \frac{b^2\int \frac{(e+fx)^3}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= \frac{\int \left(a(e+fx)^3\operatorname{sech}^2(c+dx) - b(e+fx)^3\operatorname{sech}(c+dx)\tanh(c+dx)\right)dx}{a^2+b^2} + \frac{(2b^2)}{}$$

$$= \frac{\left(2b^3\right)\int \frac{e^{c+dx}(e+fx)^3}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\left(a^2+b^2\right)^{3/2}} - \frac{\left(2b^3\right)\int \frac{e^{c+dx}(e+fx)^3}{2a+2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\left(a^2+b^2\right)^{3/2}} + \frac{a\int (e+fx)^3\operatorname{sec}}{a^2+}$$

$$= \frac{b^2(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} + \frac{b(e+fx)^3\operatorname{s}}{\left(a^2+\right.}$$

$$= \frac{a(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6bf(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2}{}$$

$$= \frac{a(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6bf(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2}{}$$

$$= \frac{a(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6bf(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2}{}$$

$$= \frac{a(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6bf(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2}{}$$

$$= \frac{a(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6bf(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2}{}$$

Mathematica [A] time = 13.46, size = 1143, normalized size = 1.47

$$\frac{\left(-2e^3\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^3 + f^3x^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3 + 3ef^2x^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3 + 3e^2fx\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(f*(-12*a*d^3*e^2*E^(2*c)*x + 12*a*d^3*e^2*(1 + E^(2*c))*x + 12*a*d^3*
e*f*x^2 + 4*a*d^3*f^2*x^3 + 12*b*d^2*e^2*(1 + E^(2*c))*ArcTan[E^(c + d*x)]
- 6*a*d^2*e^2*(1 + E^(2*c))*(2*d*x - Log[1 + E^(2*(c + d*x))]) + (12*I)*b*d
*e*(1 + E^(2*c))*f*(d*x*(Log[1 - I*E^(c + d*x)] - Log[1 + I*E^(c + d*x)]) -
 PolyLog[2, (-I)*E^(c + d*x)] + PolyLog[2, I*E^(c + d*x)]) - 6*a*d*e*(1 + E
^(2*c))*f*(2*d*x*(d*x - Log[1 + E^(2*(c + d*x))]) - PolyLog[2, -E^(2*(c + d
*x))]) + (6*I)*b*(1 + E^(2*c))*f^2*(d^2*x^2*Log[1 - I*E^(c + d*x)] - d^2*x^
2*Log[1 + I*E^(c + d*x)] - 2*d*x*PolyLog[2, (-I)*E^(c + d*x)] + 2*d*x*PolyL
og[2, I*E^(c + d*x)] + 2*PolyLog[3, (-I)*E^(c + d*x)] - 2*PolyLog[3, I*E^(c
 + d*x)]) - a*(1 + E^(2*c))*f^2*(2*d^2*x^2*(2*d*x - 3*Log[1 + E^(2*(c + d*x
))]) - 6*d*x*PolyLog[2, -E^(2*(c + d*x))] + 3*PolyLog[3, -E^(2*(c + d*x))])
))/((a^2 + b^2)*d^4*(1 + E^(2*c))) + (b^2*(-2*d^3*e^3*ArcTanh[(a + b*E^(c +
 d*x))/Sqrt[a^2 + b^2]] + 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a
^2 + b^2])] + 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])
] + d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 3*d^3*e^2*
f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 3*d^3*e*f^2*x^2*Log[1
+ (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - d^3*f^3*x^3*Log[1 + (b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2])] + 3*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))
/(-a + Sqrt[a^2 + b^2])] - 3*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))
/(a + Sqrt[a^2 + b^2]))] - 6*d*e*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[
a^2 + b^2])] - 6*d*f^3*x*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
 + 6*d*e*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 6*d*f^3
*x*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 6*f^3*PolyLog[4,
(b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 6*f^3*PolyLog[4, -((b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2]))]))/((a^2 + b^2)^(3/2)*d^4) + (Sech[c]*Sech[c + d*x
]*(b*e^3*Cosh[c] + 3*b*e^2*f*x*Cosh[c] + 3*b*e*f^2*x^2*Cosh[c] + b*f^3*x^3*
Cosh[c] + a*e^3*Sinh[d*x] + 3*a*e^2*f*x*Sinh[d*x] + 3*a*e*f^2*x^2*Sinh[d*x]
 + a*f^3*x^3*Sinh[d*x]))/((a^2 + b^2)*d)
```

fricas [C] time = 0.77, size = 6397, normalized size = 8.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(4*(a^3 + a*b^2)*d^3*e^3 - 12*(a^3 + a*b^2)*c*d^2*e^2*f + 12*(a^3 + a*
b^2)*c^2*d*e*f^2 - 4*(a^3 + a*b^2)*c^3*f^3 - 4*((a^3 + a*b^2)*d^3*f^3*x^3 +
 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b
^2)*c*d^2*e^2*f - 3*(a^3 + a*b^2)*c^2*d*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*cosh
(d*x + c)^2 - 4*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2
+ 3*(a^3 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 + a*b^
2)*c^2*d*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*sinh(d*x + c)^2 - 6*(b^3*d^2*f^3*x^
2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f + (b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*
x + b^3*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x
```

```
 + b^3*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d^2*f^3*x^2 + 2*b^3*d^
2*e*f^2*x + b^3*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*
cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2) - b)/b + 1) + 6*(b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3
*d^2*e^2*f + (b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*cosh(d*x
 + c)^2 + 2*(b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*cosh(d*x
+ c)*sinh(d*x + c) + (b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*
sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x
+ c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1
) + 2*(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3 +
(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*cosh(d*
x + c)^2 + 2*(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3
*f^3)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^
3*c^2*d*e*f^2 - b^3*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b
*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(
b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3 + (b^3*d^
3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*cosh(d*x + c)^
2 + 2*(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*c
osh(d*x + c)*sinh(d*x + c) + (b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d
*e*f^2 - b^3*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d
*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(b^3*d^3
*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*
b^3*c^2*d*e*f^2 + b^3*c^3*f^3 + (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*
b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*cosh
(d*x + c)^2 + 2*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x
+ 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*cosh(d*x + c)*sinh(d
*x + c) + (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^
3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2
 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b
*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(b^3*d^3*f^3*x^3 + 3*b^3*
d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 +
 b^3*c^3*f^3 + (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x +
 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*cosh(d*x + c)^2 + 2*(
b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2
*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d^
3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3
*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(
-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*s
qrt((a^2 + b^2)/b^2) - b)/b) - 12*(b^3*f^3*cosh(d*x + c)^2 + 2*b^3*f^3*cosh
(d*x + c)*sinh(d*x + c) + b^3*f^3*sinh(d*x + c)^2 + b^3*f^3)*sqrt((a^2 + b^
2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 12*(b^3*f^3*cosh(d*x + c)^2 +
2*b^3*f^3*cosh(d*x + c)*sinh(d*x + c) + b^3*f^3*sinh(d*x + c)^2 + b^3*f^3)*
sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*co
sh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 12*(b^3*d*f^3*x
```

+ b^3*d*e*f^2 + (b^3*d*f^3*x + b^3*d*e*f^2)*cosh(d*x + c)^2 + 2*(b^3*d*f^3*
x + b^3*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d*f^3*x + b^3*d*e*f^2)*
sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh
(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) -
12*(b^3*d*f^3*x + b^3*d*e*f^2 + (b^3*d*f^3*x + b^3*d*e*f^2)*cosh(d*x + c)^
2 + 2*(b^3*d*f^3*x + b^3*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d*f^3*
x + b^3*d*e*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(
d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2))/b) - 4*((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*d^3*e*f^2*
x^2 + 3*(a^2*b + b^3)*d^3*e^2*f*x + (a^2*b + b^3)*d^3*e^3)*cosh(d*x + c) +
(12*(a^3 + a*b^2)*d*f^3*x + 12*I*(a^2*b + b^3)*d*f^3*x + 12*(a^3 + a*b^2)*d
*e*f^2 + 12*I*(a^2*b + b^3)*d*e*f^2 + (12*(a^3 + a*b^2)*d*f^3*x + 12*I*(a^2
*b + b^3)*d*f^3*x + 12*(a^3 + a*b^2)*d*e*f^2 + 12*I*(a^2*b + b^3)*d*e*f^2)*
cosh(d*x + c)^2 + (24*(a^3 + a*b^2)*d*f^3*x + 24*I*(a^2*b + b^3)*d*f^3*x +
24*(a^3 + a*b^2)*d*e*f^2 + 24*I*(a^2*b + b^3)*d*e*f^2)*cosh(d*x + c)*sinh(d
x + c) + (12(a^3 + a*b^2)*d*f^3*x + 12*I*(a^2*b + b^3)*d*f^3*x + 12*(a^3
+ a*b^2)*d*e*f^2 + 12*I*(a^2*b + b^3)*d*e*f^2)*sinh(d*x + c)^2)*dilog(I*cos
h(d*x + c) + I*sinh(d*x + c)) + (12*(a^3 + a*b^2)*d*f^3*x - 12*I*(a^2*b + b
^3)*d*f^3*x + 12*(a^3 + a*b^2)*d*e*f^2 - 12*I*(a^2*b + b^3)*d*e*f^2 + (12*(
a^3 + a*b^2)*d*f^3*x - 12*I*(a^2*b + b^3)*d*f^3*x + 12*(a^3 + a*b^2)*d*e*f^
2 - 12*I*(a^2*b + b^3)*d*e*f^2)*cosh(d*x + c)^2 + (24*(a^3 + a*b^2)*d*f^3*x
 - 24*I*(a^2*b + b^3)*d*f^3*x + 24*(a^3 + a*b^2)*d*e*f^2 - 24*I*(a^2*b + b^
3)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (12*(a^3 + a*b^2)*d*f^3*x - 12*I*
(a^2*b + b^3)*d*f^3*x + 12*(a^3 + a*b^2)*d*e*f^2 - 12*I*(a^2*b + b^3)*d*e*f
^2)*sinh(d*x + c)^2)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + (6*(a^3 +
a*b^2)*d^2*e^2*f + 6*I*(a^2*b + b^3)*d^2*e^2*f - 12*(a^3 + a*b^2)*c*d*e*f^2
 - 12*I*(a^2*b + b^3)*c*d*e*f^2 + 6*(a^3 + a*b^2)*c^2*f^3 + 6*I*(a^2*b + b^
3)*c^2*f^3 + (6*(a^3 + a*b^2)*d^2*e^2*f + 6*I*(a^2*b + b^3)*d^2*e^2*f - 12*
(a^3 + a*b^2)*c*d*e*f^2 - 12*I*(a^2*b + b^3)*c*d*e*f^2 + 6*(a^3 + a*b^2)*c^
2*f^3 + 6*I*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)^2 + (12*(a^3 + a*b^2)*d^2*
e^2*f + 12*I*(a^2*b + b^3)*d^2*e^2*f - 24*(a^3 + a*b^2)*c*d*e*f^2 - 24*I*(a
^2*b + b^3)*c*d*e*f^2 + 12*(a^3 + a*b^2)*c^2*f^3 + 12*I*(a^2*b + b^3)*c^2*f
^3)*cosh(d*x + c)*sinh(d*x + c) + (6*(a^3 + a*b^2)*d^2*e^2*f + 6*I*(a^2*b +
 b^3)*d^2*e^2*f - 12*(a^3 + a*b^2)*c*d*e*f^2 - 12*I*(a^2*b + b^3)*c*d*e*f^2
 + 6*(a^3 + a*b^2)*c^2*f^3 + 6*I*(a^2*b + b^3)*c^2*f^3)*sinh(d*x + c)^2)*lo
g(cosh(d*x + c) + sinh(d*x + c) + I) + (6*(a^3 + a*b^2)*d^2*e^2*f - 6*I*(a^
2*b + b^3)*d^2*e^2*f - 12*(a^3 + a*b^2)*c*d*e*f^2 + 12*I*(a^2*b + b^3)*c*d*
e*f^2 + 6*(a^3 + a*b^2)*c^2*f^3 - 6*I*(a^2*b + b^3)*c^2*f^3 + (6*(a^3 + a*b
^2)*d^2*e^2*f - 6*I*(a^2*b + b^3)*d^2*e^2*f - 12*(a^3 + a*b^2)*c*d*e*f^2 +
12*I*(a^2*b + b^3)*c*d*e*f^2 + 6*(a^3 + a*b^2)*c^2*f^3 - 6*I*(a^2*b + b^3)*
c^2*f^3)*cosh(d*x + c)^2 + (12*(a^3 + a*b^2)*d^2*e^2*f - 12*I*(a^2*b + b^3)
*d^2*e^2*f - 24*(a^3 + a*b^2)*c*d*e*f^2 + 24*I*(a^2*b + b^3)*c*d*e*f^2 + 12
*(a^3 + a*b^2)*c^2*f^3 - 12*I*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)*sinh(d*x
 + c) + (6*(a^3 + a*b^2)*d^2*e^2*f - 6*I*(a^2*b + b^3)*d^2*e^2*f - 12*(a^3
+ a*b^2)*c*d*e*f^2 + 12*I*(a^2*b + b^3)*c*d*e*f^2 + 6*(a^3 + a*b^2)*c^2*f^3

```
 - 6*I*(a^2*b + b^3)*c^2*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x
 + c) - I) + (6*(a^3 + a*b^2)*d^2*f^3*x^2 - 6*I*(a^2*b + b^3)*d^2*f^3*x^2 +
 12*(a^3 + a*b^2)*d^2*e*f^2*x - 12*I*(a^2*b + b^3)*d^2*e*f^2*x + 12*(a^3 +
a*b^2)*c*d*e*f^2 - 12*I*(a^2*b + b^3)*c*d*e*f^2 - 6*(a^3 + a*b^2)*c^2*f^3 +
 6*I*(a^2*b + b^3)*c^2*f^3 + (6*(a^3 + a*b^2)*d^2*f^3*x^2 - 6*I*(a^2*b + b^
3)*d^2*f^3*x^2 + 12*(a^3 + a*b^2)*d^2*e*f^2*x - 12*I*(a^2*b + b^3)*d^2*e*f^
2*x + 12*(a^3 + a*b^2)*c*d*e*f^2 - 12*I*(a^2*b + b^3)*c*d*e*f^2 - 6*(a^3 +
a*b^2)*c^2*f^3 + 6*I*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)^2 + (12*(a^3 + a*
b^2)*d^2*f^3*x^2 - 12*I*(a^2*b + b^3)*d^2*f^3*x^2 + 24*(a^3 + a*b^2)*d^2*e*
f^2*x - 24*I*(a^2*b + b^3)*d^2*e*f^2*x + 24*(a^3 + a*b^2)*c*d*e*f^2 - 24*I*
(a^2*b + b^3)*c*d*e*f^2 - 12*(a^3 + a*b^2)*c^2*f^3 + 12*I*(a^2*b + b^3)*c^2
*f^3)*cosh(d*x + c)*sinh(d*x + c) + (6*(a^3 + a*b^2)*d^2*f^3*x^2 - 6*I*(a^2
*b + b^3)*d^2*f^3*x^2 + 12*(a^3 + a*b^2)*d^2*e*f^2*x - 12*I*(a^2*b + b^3)*d
^2*e*f^2*x + 12*(a^3 + a*b^2)*c*d*e*f^2 - 12*I*(a^2*b + b^3)*c*d*e*f^2 - 6*
(a^3 + a*b^2)*c^2*f^3 + 6*I*(a^2*b + b^3)*c^2*f^3)*sinh(d*x + c)^2)*log(I*c
osh(d*x + c) + I*sinh(d*x + c) + 1) + (6*(a^3 + a*b^2)*d^2*f^3*x^2 + 6*I*(a
^2*b + b^3)*d^2*f^3*x^2 + 12*(a^3 + a*b^2)*d^2*e*f^2*x + 12*I*(a^2*b + b^3)
*d^2*e*f^2*x + 12*(a^3 + a*b^2)*c*d*e*f^2 + 12*I*(a^2*b + b^3)*c*d*e*f^2 -
6*(a^3 + a*b^2)*c^2*f^3 - 6*I*(a^2*b + b^3)*c^2*f^3 + (6*(a^3 + a*b^2)*d^2*
f^3*x^2 + 6*I*(a^2*b + b^3)*d^2*f^3*x^2 + 12*(a^3 + a*b^2)*d^2*e*f^2*x + 12
*I*(a^2*b + b^3)*d^2*e*f^2*x + 12*(a^3 + a*b^2)*c*d*e*f^2 + 12*I*(a^2*b + b
^3)*c*d*e*f^2 - 6*(a^3 + a*b^2)*c^2*f^3 - 6*I*(a^2*b + b^3)*c^2*f^3)*cosh(d
*x + c)^2 + (12*(a^3 + a*b^2)*d^2*f^3*x^2 + 12*I*(a^2*b + b^3)*d^2*f^3*x^2
+ 24*(a^3 + a*b^2)*d^2*e*f^2*x + 24*I*(a^2*b + b^3)*d^2*e*f^2*x + 24*(a^3 +
 a*b^2)*c*d*e*f^2 + 24*I*(a^2*b + b^3)*c*d*e*f^2 - 12*(a^3 + a*b^2)*c^2*f^3
 - 12*I*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)*sinh(d*x + c) + (6*(a^3 + a*b^
2)*d^2*f^3*x^2 + 6*I*(a^2*b + b^3)*d^2*f^3*x^2 + 12*(a^3 + a*b^2)*d^2*e*f^2
*x + 12*I*(a^2*b + b^3)*d^2*e*f^2*x + 12*(a^3 + a*b^2)*c*d*e*f^2 + 12*I*(a^
2*b + b^3)*c*d*e*f^2 - 6*(a^3 + a*b^2)*c^2*f^3 - 6*I*(a^2*b + b^3)*c^2*f^3)
*sinh(d*x + c)^2)*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) - 12*((a^3 +
a*b^2)*f^3 + I*(a^2*b + b^3)*f^3 + ((a^3 + a*b^2)*f^3 + I*(a^2*b + b^3)*f^3
)*cosh(d*x + c)^2 + 2*((a^3 + a*b^2)*f^3 + I*(a^2*b + b^3)*f^3)*cosh(d*x +
c)*sinh(d*x + c) + ((a^3 + a*b^2)*f^3 + I*(a^2*b + b^3)*f^3)*sinh(d*x + c)^
2)*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) - 12*((a^3 + a*b^2)*f^3 -
I*(a^2*b + b^3)*f^3 + ((a^3 + a*b^2)*f^3 - I*(a^2*b + b^3)*f^3)*cosh(d*x +
c)^2 + 2*((a^3 + a*b^2)*f^3 - I*(a^2*b + b^3)*f^3)*cosh(d*x + c)*sinh(d*x +
 c) + ((a^3 + a*b^2)*f^3 - I*(a^2*b + b^3)*f^3)*sinh(d*x + c)^2)*polylog(3,
 -I*cosh(d*x + c) - I*sinh(d*x + c)) - 4*((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^
2*b + b^3)*d^3*e*f^2*x^2 + 3*(a^2*b + b^3)*d^3*e^2*f*x + (a^2*b + b^3)*d^3*
e^3 + 2*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3
 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 + a*b^2)*c^2*d
*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c))*sinh(d*x + c))/((a^4 + 2*a^2
*b^2 + b^4)*d^4*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^4*cosh(d*x +
c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*d^4*sinh(d*x + c)^2 + (a^4 + 2*a
^2*b^2 + b^4)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 1.93, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{sech}\left(dx+c\right)^{2}}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$3\,ae^{2}f\left(\frac{2\,(dx+c)}{\left(a^{2}+b^{2}\right)d^{2}}-\frac{\log\left(e^{(2\,dx+2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d^{2}}\right)-6\,bf^{3}\int\frac{x^{2}e^{(dx+c)}}{a^{2}de^{(2\,dx+2\,c)}+b^{2}de^{(2\,dx+2\,c)}+a^{2}d+b^{2}d}\,dx+6\,af^{3}\int\frac{}{a^{2}de^{(2\,dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] 3*a*e^2*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2 +
 b^2)*d^2)) - 6*b*f^3*integrate(x^2*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^
2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) + 6*a*f^3*integrate(x^2/(a^2*d*e^(
2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 12*b*e*f^2*inte
grate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d
+ b^2*d), x) + 12*a*e*f^2*integrate(x/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d
*x + 2*c) + a^2*d + b^2*d), x) + e^3*(b^2*log((b*e^(-d*x - c) - a - sqrt(a^
2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^2 + b^2)^(3/2)*d) + 2
*(b*e^(-d*x - c) + a)/((a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d)) - 6*b
*e^2*f*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) - 2*(a*f^3*x^3 + 3*a*e*f^2*x^2
 + 3*a*e^2*f*x - (b*f^3*x^3*e^c + 3*b*e*f^2*x^2*e^c + 3*b*e^2*f*x*e^c)*e^(d
*x))/(a^2*d + b^2*d + (a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) + integrat
e(-2*(b^2*f^3*x^3*e^c + 3*b^2*e*f^2*x^2*e^c + 3*b^2*e^2*f*x*e^c)*e^(d*x)/(a
```

```
^2*b + b^3 - (a^2*b*e^(2*c) + b^3*e^(2*c))*e^(2*d*x) - 2*(a^3*e^c + a*b^2*e
^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e+f\,x)^3}{\cosh\left(c+d\,x\right)^2\,\left(a+b\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^3/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^3\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**3*sech(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.310 $\int \frac{(e+fx)^2\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=548

$$-\frac{2b^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)^{3/2}}+\frac{2b^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)^{3/2}}+\frac{2ibf^2\text{Li}_2\left(-ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}-\frac{2ibf^2\text{Li}_2\left(ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}-\frac{af^2\text{Li}_2\left(-e^{2(c+dx)}\right)}{d^3\left(a^2+b^2\right)}+\frac{2b^2 \ldots}{\ldots}$$

```
[Out] a*(f*x+e)^2/(a^2+b^2)/d-4*b*f*(f*x+e)*arctan(exp(d*x+c))/(a^2+b^2)/d^2-2*a*
f*(f*x+e)*ln(1+exp(2*d*x+2*c))/(a^2+b^2)/d^2+b^2*(f*x+e)^2*ln(1+b*exp(d*x+c
)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d-b^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a
+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d+2*I*b*f^2*polylog(2,-I*exp(d*x+c))/(a^
2+b^2)/d^3-2*I*b*f^2*polylog(2,I*exp(d*x+c))/(a^2+b^2)/d^3-a*f^2*polylog(2,
-exp(2*d*x+2*c))/(a^2+b^2)/d^3+2*b^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(
a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-2*b^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c
)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-2*b^2*f^2*polylog(3,-b*exp(d*x+c
)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^3+2*b^2*f^2*polylog(3,-b*exp(d*x+c
)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^3+b*(f*x+e)^2*sech(d*x+c)/(a^2+b^2
)/d+a*(f*x+e)^2*tanh(d*x+c)/(a^2+b^2)/d
```

Rubi [A] time = 1.30, antiderivative size = 548, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 14, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5573, 3322, 2264, 2190, 2531, 2282, 6589, 6742, 4184, 3718, 2279, 2391, 5451, 4180}

$$\frac{2b^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{2b^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{2b^2f^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)^{3/2}}+\frac{2b \ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(e + f*x)^2)/((a^2 + b^2)*d) - (4*b*f*(e + f*x)*ArcTan[E^(c + d*x)])/((a
^2 + b^2)*d^2) + (b^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b
^2])])/((a^2 + b^2)^(3/2)*d) - (b^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) - (2*a*f*(e + f*x)*Log[1 + E^(2*
(c + d*x))])/((a^2 + b^2)*d^2) + ((2*I)*b*f^2*PolyLog[2, (-I)*E^(c + d*x)])
/((a^2 + b^2)*d^3) - ((2*I)*b*f^2*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^2)*d
^3) + (2*b^2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])
)])/((a^2 + b^2)^(3/2)*d^2) - (2*b^2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) - (a*f^2*PolyLog[2, -E^
(2*(c + d*x))])/((a^2 + b^2)*d^3) - (2*b^2*f^2*PolyLog[3, -((b*E^(c + d*x))
```

```
/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^3) + (2*b^2*f^2*PolyLog[3, -
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^3) + (b*(e +
 f*x)^2*Sech[c + d*x])/((a^2 + b^2)*d) + (a*(e + f*x)^2*Tanh[c + d*x])/((a^
2 + b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
```

```
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{sech}^2(c+dx)(a-b\sinh(c+dx))\,dx}{a^2+b^2} + \frac{b^2\int \frac{(e+fx)^2}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= \frac{\int \left(a(e+fx)^2\text{sech}^2(c+dx) - b(e+fx)^2\text{sech}(c+dx)\tanh(c+dx)\right)dx}{a^2+b^2} + \frac{\left(2b^2\right)\int}{}$$

$$= \frac{\left(2b^3\right)\int \frac{e^{c+dx}(e+fx)^2}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\left(a^2+b^2\right)^{3/2}} - \frac{\left(2b^3\right)\int \frac{e^{c+dx}(e+fx)^2}{2a+2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\left(a^2+b^2\right)^{3/2}} + \frac{a\int (e+fx)^2\text{sech}}{a^2+b}$$

$$= \frac{b^2(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} + \frac{b(e+fx)^2\text{sec}}{\left(a^2+b\right.}$$

$$= \frac{a(e+fx)^2}{\left(a^2+b^2\right)d} - \frac{4bf(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2(e}{}$$

$$= \frac{a(e+fx)^2}{\left(a^2+b^2\right)d} - \frac{4bf(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2(e}{}$$

$$= \frac{a(e+fx)^2}{\left(a^2+b^2\right)d} - \frac{4bf(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2(e}{}$$

$$= \frac{a(e+fx)^2}{\left(a^2+b^2\right)d} - \frac{4bf(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2(e}{}$$

Mathematica [A] time = 8.13, size = 905, normalized size = 1.65

$$\frac{\left(-2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^2 + f^2x^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^2 + 2efx\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^2 - f^2x^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)d\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b^2*(-2*d^2*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 2*d^2*e*f*x
*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2])] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b
^2])] + 2*d*f*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
- 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*
f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*f^2*PolyLog[3, -
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/((a^2 + b^2)^(3/2)*d^3) - (2*a*e
*f*Sech[c]*(Cosh[c]*Log[Cosh[c]*Cosh[d*x] + Sinh[c]*Sinh[d*x]] - d*x*Sinh[c
]))/((a^2 + b^2)*d^2*(Cosh[c]^2 - Sinh[c]^2)) - (4*b*e*f*ArcTan[(Sinh[c] +
Cosh[c]*Tanh[(d*x)/2])/Sqrt[Cosh[c]^2 - Sinh[c]^2]])/((a^2 + b^2)*d^2*Sqrt[
Cosh[c]^2 - Sinh[c]^2]) - (a*f^2*Csch[c]*((d^2*x^2)/E^ArcTanh[Coth[c]] - (I
*Coth[c]*(-(d*x*(-Pi + (2*I)*ArcTanh[Coth[c]])) - Pi*Log[1 + E^(2*d*x)] - 2
*(I*d*x + I*ArcTanh[Coth[c]])*Log[1 - E^((2*I)*(I*d*x + I*ArcTanh[Coth[c]])
)] + Pi*Log[Cosh[d*x]] + (2*I)*ArcTanh[Coth[c]]*Log[I*Sinh[d*x + ArcTanh[Co
th[c]]]] + I*PolyLog[2, E^((2*I)*(I*d*x + I*ArcTanh[Coth[c]]))]))/Sqrt[1 -
Coth[c]^2])*Sech[c])/((a^2 + b^2)*d^3*Sqrt[Csch[c]^2*(-Cosh[c]^2 + Sinh[c]^
2)]) - (2*b*f^2*(((-I)*Csch[c]*(I*(d*x + ArcTanh[Coth[c]])*(Log[1 - E^(-(d*
x) - ArcTanh[Coth[c]])] - Log[1 + E^(-(d*x) - ArcTanh[Coth[c]])]) + I*(Poly
Log[2, -E^(-(d*x) - ArcTanh[Coth[c]])] - PolyLog[2, E^(-(d*x) - ArcTanh[Cot
h[c]])])))/Sqrt[1 - Coth[c]^2] - (2*ArcTan[(Sinh[c] + Cosh[c]*Tanh[(d*x)/2]
)/Sqrt[Cosh[c]^2 - Sinh[c]^2]]*ArcTanh[Coth[c]])/Sqrt[Cosh[c]^2 - Sinh[c]^2
]))/((a^2 + b^2)*d^3) + (Sech[c]*Sech[c + d*x]*(b*e^2*Cosh[c] + 2*b*e*f*x*C
osh[c] + b*f^2*x^2*Cosh[c] + a*e^2*Sinh[d*x] + 2*a*e*f*x*Sinh[d*x] + a*f^2*
x^2*Sinh[d*x]))/((a^2 + b^2)*d)
```

fricas [C] time = 1.06, size = 3600, normalized size = 6.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(4*(a^3 + a*b^2)*d^2*e^2 - 8*(a^3 + a*b^2)*c*d*e*f + 4*(a^3 + a*b^2)*c
^2*f^2 - 4*((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3
+ a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c)^2 - 4*((a^3 + a*b^2
)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3
+ a*b^2)*c^2*f^2)*sinh(d*x + c)^2 - 4*(b^3*d*f^2*x + b^3*d*e*f + (b^3*d*f^2
*x + b^3*d*e*f)*cosh(d*x + c)^2 + 2*(b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)
*sinh(d*x + c) + (b^3*d*f^2*x + b^3*d*e*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2
)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 4*(b^3*d*f^2*x + b^3*d*e*f +
 (b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)^2 + 2*(b^3*d*f^2*x + b^3*d*e*f)*co
sh(d*x + c)*sinh(d*x + c) + (b^3*d*f^2*x + b^3*d*e*f)*sinh(d*x + c)^2)*sqrt
((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x +
```

c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2 + (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)^2 + 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2 + (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)^2 + 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2 + (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)^2 + 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2 + (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)^2 + 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 4*(b^3*f^2*cosh(d*x + c)^2 + 2*b^3*f^2*cosh(d*x + c)*sinh(d*x + c) + b^3*f^2*sinh(d*x + c)^2 + b^3*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 4*(b^3*f^2*cosh(d*x + c)^2 + 2*b^3*f^2*cosh(d*x + c)*sinh(d*x + c) + b^3*f^2*sinh(d*x + c)^2 + b^3*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 4*((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*d^2*e*f*x + (a^2*b + b^3)*d^2*e^2)*cosh(d*x + c) + 4*((a^3 + a*b^2)*f^2 + I*(a^2*b + b^3)*f^2 + ((a^3 + a*b^2)*f^2 + I*(a^2*b + b^3)*f^2)*cosh(d*x + c)^2 + 2*((a^3 + a*b^2)*f^2 + I*(a^2*b + b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c) + ((a^3 + a*b^2)*f^2 + I*(a^2*b + b^3)*f^2)*sinh(d*x + c)^2)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + 4*((a^3 + a*b^2)*f^2 - I*(a^2*b + b^3)*f^2 + ((a^3 + a*b^2)*f^2 - I*(a^2*b + b^3)*f^2)*cosh(d*x + c)^2 + 2*((a^3 + a*b^2)*f^2 - I*(a^2*b + b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c) + ((a^3 + a*b^2)*f^2 - I*(a^2*b + b^3)*f^2)*sinh(d*x + c)^2)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + (4*(a^3 + a*b^2)*d*e*f + 4*I*(a^2*b + b^3)*d*e*f - 4*(a^3 + a*b^2)*c*f^2 - 4*I*(a^2*b + b^3)*c*f^2 + (4*(a^3 + a*b^2)*d*e*f + 4*I*(a^2*b + b^3)*d*e*f - 4*(a^3 + a*b^2)*c*f^2 - 4*I*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)^2 + (8*(a^3 + a*b^2)*d*e*f + 8*I*(a^2*b + b^3)*d*e*f - 8*(a^3 + a*b^2)*c*f^2 - 8*I*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (4*(a^3 + a*b^2)*d*e*f + 4*I*(a^2*b + b^3)*d*e*f - 4*(a^3 + a*b^2)*c*f^2 - 4*I*(a^2*b + b^3)*c*f^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) + I) + (4*(a^3 + a*b^2)*d*e*f - 4*I*(a^2*b + b^3)*d*e*

```
f - 4*(a^3 + a*b^2)*c*f^2 + 4*I*(a^2*b + b^3)*c*f^2 + (4*(a^3 + a*b^2)*d*e*
f - 4*I*(a^2*b + b^3)*d*e*f - 4*(a^3 + a*b^2)*c*f^2 + 4*I*(a^2*b + b^3)*c*f
^2)*cosh(d*x + c)^2 + (8*(a^3 + a*b^2)*d*e*f - 8*I*(a^2*b + b^3)*d*e*f - 8*
(a^3 + a*b^2)*c*f^2 + 8*I*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c)
+ (4*(a^3 + a*b^2)*d*e*f - 4*I*(a^2*b + b^3)*d*e*f - 4*(a^3 + a*b^2)*c*f^2
+ 4*I*(a^2*b + b^3)*c*f^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x +
c) - I) + (4*(a^3 + a*b^2)*d*f^2*x - 4*I*(a^2*b + b^3)*d*f^2*x + 4*(a^3 + a
*b^2)*c*f^2 - 4*I*(a^2*b + b^3)*c*f^2 + (4*(a^3 + a*b^2)*d*f^2*x - 4*I*(a^2
*b + b^3)*d*f^2*x + 4*(a^3 + a*b^2)*c*f^2 - 4*I*(a^2*b + b^3)*c*f^2)*cosh(d
*x + c)^2 + (8*(a^3 + a*b^2)*d*f^2*x - 8*I*(a^2*b + b^3)*d*f^2*x + 8*(a^3 +
 a*b^2)*c*f^2 - 8*I*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (4*(
a^3 + a*b^2)*d*f^2*x - 4*I*(a^2*b + b^3)*d*f^2*x + 4*(a^3 + a*b^2)*c*f^2 -
4*I*(a^2*b + b^3)*c*f^2)*sinh(d*x + c)^2)*log(I*cosh(d*x + c) + I*sinh(d*x
+ c) + 1) + (4*(a^3 + a*b^2)*d*f^2*x + 4*I*(a^2*b + b^3)*d*f^2*x + 4*(a^3 +
 a*b^2)*c*f^2 + 4*I*(a^2*b + b^3)*c*f^2 + (4*(a^3 + a*b^2)*d*f^2*x + 4*I*(a
^2*b + b^3)*d*f^2*x + 4*(a^3 + a*b^2)*c*f^2 + 4*I*(a^2*b + b^3)*c*f^2)*cosh
(d*x + c)^2 + (8*(a^3 + a*b^2)*d*f^2*x + 8*I*(a^2*b + b^3)*d*f^2*x + 8*(a^3
 + a*b^2)*c*f^2 + 8*I*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (4
*(a^3 + a*b^2)*d*f^2*x + 4*I*(a^2*b + b^3)*d*f^2*x + 4*(a^3 + a*b^2)*c*f^2
+ 4*I*(a^2*b + b^3)*c*f^2)*sinh(d*x + c)^2)*log(-I*cosh(d*x + c) - I*sinh(d
*x + c) + 1) - 4*((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*d^2*e*f*x + (
a^2*b + b^3)*d^2*e^2 + 2*((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e
*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c))*sinh
(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^
2 + b^4)*d^3*cosh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*d^3*sinh
(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 1.24, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{sech}\left(dx+c\right)^{2}}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

[Out] int((f*x+e)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,aef\left(\frac{2\,(dx+c)}{\left(a^2+b^2\right)d^2}-\frac{\log\left(e^{(2\,dx+2\,c)}+1\right)}{\left(a^2+b^2\right)d^2}\right)-4\,bf^2\int\frac{xe^{(dx+c)}}{a^2de^{(2\,dx+2\,c)}+b^2de^{(2\,dx+2\,c)}+a^2d+b^2d}\,dx+4\,af^2\int\frac{}{a^2de^{(2\,dx+}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")

[Out] 2*a*e*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2 + b^2)*d^2)) - 4*b*f^2*integrate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) + 4*a*f^2*integrate(x/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) + e^2*(b^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^2 + b^2)^(3/2)*d) + 2*(b*e^(-d*x - c) + a)/((a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d)) - 4*b*e*f*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) - 2*(a*f^2*x^2 + 2*a*e*f*x - (b*f^2*x^2*e^c + 2*b*e*f*x*e^c)*e^(d*x))/(a^2*d + b^2*d + (a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) + integrate(-2*(b^2*f^2*x^2*e^c + 2*b^2*e*f*x*e^c)*e^(d*x)/(a^2*b + b^3 - (a^2*b*e^(2*c) + b^3*e^(2*c))*e^(2*d*x) - 2*(a^3*e^c + a*b^2*e^c)*e^(d*x)), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(e+f\,x\right)^2}{{\cosh\left(c+d\,x\right)}^2\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((e + f*x)^2/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))),x)

[Out] int((e + f*x)^2/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(e+fx\right)^2\operatorname{sech}^2\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)**2*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)

[Out] Integral((e + f*x)**2*sech(c + d*x)**2/(a + b*sinh(c + d*x)), x)

3.311 $\int \frac{(e+fx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=295

$$\frac{b^2 f \operatorname{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{b^2 f \operatorname{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{bf\tan^{-1}(\sinh(c+dx))}{d^2\left(a^2+b^2\right)}-\frac{af\log(\cosh(c+dx))}{d^2\left(a^2+b^2\right)}+\frac{b^2(e+fx)\log\left(\frac{be}{a-\sqrt{}}\right.}{d\left(a^2+b^2\right)^{3}}$$

```
[Out] -b*f*arctan(sinh(d*x+c))/(a^2+b^2)/d^2-a*f*ln(cosh(d*x+c))/(a^2+b^2)/d^2+b^
2*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d-b^2*(f*x
+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d+b^2*f*polylog(
2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-b^2*f*polylog(2,-b
*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2+b*(f*x+e)*sech(d*x+c)/
(a^2+b^2)/d+a*(f*x+e)*tanh(d*x+c)/(a^2+b^2)/d
```

Rubi [A] time = 0.72, antiderivative size = 295, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423, Rules used = {5573, 3322, 2264, 2190, 2279, 2391, 6742, 4184, 3475, 5451, 3770}

$$\frac{b^2 f \operatorname{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{b^2 f \operatorname{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{bf\tan^{-1}(\sinh(c+dx))}{d^2\left(a^2+b^2\right)}-\frac{af\log(\cosh(c+dx))}{d^2\left(a^2+b^2\right)}+\frac{b^2(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((b*f*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)*d^2)) + (b^2*(e + f*x)*Log[1 + (
b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) - (b^2*(e + f*
x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) -
(a*f*Log[Cosh[c + d*x]])/((a^2 + b^2)*d^2) + (b^2*f*PolyLog[2, -((b*E^(c +
d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) - (b^2*f*PolyLog[2,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) + (b*(e
+ f*x)*Sech[c + d*x])/((a^2 + b^2)*d) + (a*(e + f*x)*Tanh[c + d*x])/((a^2 +
 b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\operatorname{sech}^2(c+dx)(a-b\sinh(c+dx))\,dx}{a^2+b^2} + \frac{b^2\int \frac{e+fx}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= \frac{\int \left(a(e+fx)\operatorname{sech}^2(c+dx) - b(e+fx)\operatorname{sech}(c+dx)\tanh(c+dx)\right)dx}{a^2+b^2} + \frac{\left(2b^2\right)\int$$

$$= \frac{\left(2b^3\right)\int \frac{e^{c+dx}(e+fx)}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\left(a^2+b^2\right)^{3/2}} - \frac{\left(2b^3\right)\int \frac{e^{c+dx}(e+fx)}{2a+2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\left(a^2+b^2\right)^{3/2}} + \frac{a\int (e+fx)\operatorname{sech}^2}{a^2+b}$$

$$= \frac{b^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} + \frac{b(e+fx)\operatorname{sech}(}{\left(a^2+b^2\right)}$$

$$= -\frac{bf\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2(e+fx)\log\left(1+\right.}{\left(a^2+b^2\right)^{3/2}}$$

$$= -\frac{bf\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d^2} + \frac{b^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{b^2(e+fx)\log\left(1+\right.}{\left(a^2+b^2\right)^{3/2}}$$

Mathematica [A] time = 2.86, size = 284, normalized size = 0.96

$$\frac{\frac{b^2\left(-2de\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)+f\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)-f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)+2cf\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)\right)}{\left(a^2+b^2\right)^{3/2}} -}{d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((-2*b*f*ArcTan[Tanh[(c + d*x)/2]])/(a^2 + b^2) - (a*f*Log[Cosh[c + d*x]])/
(a^2 + b^2) + (b^2*(-2*d*e*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 2
*c*f*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + f*(c + d*x)*Log[1 + (b*
E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2])] + f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])
] - f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(a^2 + b^2)^(3
/2) + (d*(e + f*x)*Sech[c + d*x]*(b + a*Sinh[c + d*x]))/(a^2 + b^2))/d^2
```

fricas [B] time = 0.78, size = 1296, normalized size = 4.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*(a^3 + a*b^2)*d*f*x*cosh(d*x + c)^2 + 2*(a^3 + a*b^2)*d*f*x*sinh(d*x + c
)^2 - 2*(a^3 + a*b^2)*d*e + (b^3*f*cosh(d*x + c)^2 + 2*b^3*f*cosh(d*x + c)*
sinh(d*x + c) + b^3*f*sinh(d*x + c)^2 + b^3*f)*sqrt((a^2 + b^2)/b^2)*dilog(
(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sq
rt((a^2 + b^2)/b^2) - b)/b + 1) - (b^3*f*cosh(d*x + c)^2 + 2*b^3*f*cosh(d*x
 + c)*sinh(d*x + c) + b^3*f*sinh(d*x + c)^2 + b^3*f)*sqrt((a^2 + b^2)/b^2)*
dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^3*d*e - b^3*c*f + (b^3*d*e - b^3
*c*f)*cosh(d*x + c)^2 + 2*(b^3*d*e - b^3*c*f)*cosh(d*x + c)*sinh(d*x + c) +
 (b^3*d*e - b^3*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*
x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^3*d*e -
b^3*c*f + (b^3*d*e - b^3*c*f)*cosh(d*x + c)^2 + 2*(b^3*d*e - b^3*c*f)*cosh(
d*x + c)*sinh(d*x + c) + (b^3*d*e - b^3*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b
^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b
^2) + 2*a) + (b^3*d*f*x + b^3*c*f + (b^3*d*f*x + b^3*c*f)*cosh(d*x + c)^2 +
 2*(b^3*d*f*x + b^3*c*f)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d*f*x + b^3*c*f
)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x
 + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) -
 (b^3*d*f*x + b^3*c*f + (b^3*d*f*x + b^3*c*f)*cosh(d*x + c)^2 + 2*(b^3*d*f*
```

```
x + b^3*c*f)*cosh(d*x + c)*sinh(d*x + c) + (b^3*d*f*x + b^3*c*f)*sinh(d*x +
 c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*c
osh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*((a^2*b +
 b^3)*f*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f*cosh(d*x + c)*sinh(d*x + c) + (
a^2*b + b^3)*f*sinh(d*x + c)^2 + (a^2*b + b^3)*f)*arctan(cosh(d*x + c) + si
nh(d*x + c)) + 2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e)*cosh(d*x + c) -
((a^3 + a*b^2)*f*cosh(d*x + c)^2 + 2*(a^3 + a*b^2)*f*cosh(d*x + c)*sinh(d*x
 + c) + (a^3 + a*b^2)*f*sinh(d*x + c)^2 + (a^3 + a*b^2)*f)*log(2*cosh(d*x +
 c)/(cosh(d*x + c) - sinh(d*x + c))) + 2*(2*(a^3 + a*b^2)*d*f*x*cosh(d*x +
c) + (a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e)*sinh(d*x + c))/((a^4 + 2*a^2*
b^2 + b^4)*d^2*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c
)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*d^2*sinh(d*x + c)^2 + (a^4 + 2*a^
2*b^2 + b^4)*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\operatorname{sech}\left(dx+c\right)^{2}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sech(d*x + c)^2/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.27, size = 1928, normalized size = 6.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -2/(a^2+b^2)^(3/2)/d*b^4*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(
a^2+b^2)^(1/2))-2/(a^2+b^2)^(1/2)/d*b^2*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*ex
p(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/(a^2+b^2)^(5/2)/d^2*a^2*b^2*f*arctanh(1/2*
(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-4/(a^2+b^2)/d^2*a^2*b*f/(2*a^2+2*b^2)
*arctan(exp(d*x+c))-4/(a^2+b^2)^(1/2)/d^2*a^2*f/(2*a^2+2*b^2)*arctanh(1/2*(
2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/(a^2+b^2)^(3/2)/d^2*b^4*f/(2*a^2+2*b
^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/(a^2+b^2)^(1/2)/d^2
*b^2*f/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/(a
^2+b^2)^(3/2)/d^2*b^4*f/(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-
a)/(-a+(a^2+b^2)^(1/2)))-2/(a^2+b^2)^(3/2)/d^2*b^4*f/(2*a^2+2*b^2)*dilog((b
*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-2/(a^2+b^2)/d^2*b^2*f/(
2*a^2+2*b^2)*a*ln(1+exp(2*d*x+2*c))+1/(a^2+b^2)/d^2*b^2*f/(2*a^2+2*b^2)*a*l
n(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/(a^2+b^2)^(3/2)/d^2*b^2*f/(2*a^2+2*b
```

```
^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a^2*c+2/(a^2+b
^2)^(3/2)/d^2*b^2*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+
(a^2+b^2)^(1/2)))*a^2*c+2/(a^2+b^2)^(3/2)/d^2*b^2*f*c/(2*a^2+2*b^2)*arctanh
(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2-2/(a^2+b^2)^(3/2)/d*b^2*f/(2
*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a^2*x+
2/(a^2+b^2)^(3/2)/d*b^2*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a
)/(-a+(a^2+b^2)^(1/2)))*a^2*x-2/(a^2+b^2)/d^2*a^3*f/(2*a^2+2*b^2)*ln(1+exp(
2*d*x+2*c))-1/2/(a^2+b^2)^2/d^2*a*b^2*f*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-
b)-4/(a^2+b^2)/d^2*b^3*f/(2*a^2+2*b^2)*arctan(exp(d*x+c))+2/(a^2+b^2)^(5/2)
/d^2*a^4*f*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/(a^2+b^2)/d^
2*a^3*f/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2*(f*x+e)*(-b*e
xp(d*x+c)+a)/d/(a^2+b^2)/(1+exp(2*d*x+2*c))+2/(a^2+b^2)^(3/2)/d^2*b^4*f*c/(
2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/(a^2+b^2)^
(3/2)/d^2*b^2*f/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1
/2))*a^2+2/(a^2+b^2)^(3/2)/d^2*b^2*f/(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^
2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a^2-2/(a^2+b^2)^(3/2)/d^2*b^2*f/(2*a^
2+2*b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a^2-2/
(a^2+b^2)^(3/2)/d^2*b^4*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)
/(a+(a^2+b^2)^(1/2)))*c+2/(a^2+b^2)^(3/2)/d^2*b^4*f/(2*a^2+2*b^2)*ln((-b*ex
p(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-2/(a^2+b^2)^(3/2)/d*b^4
*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x
+2/(a^2+b^2)^(3/2)/d*b^4*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-
a)/(-a+(a^2+b^2)^(1/2)))*x-2/(a^2+b^2)^(3/2)/d*b^2*e/(2*a^2+2*b^2)*arctanh(
1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2+2/(a^2+b^2)^(1/2)/d^2*b^2*f*c
/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/(a^2+b^2
)/d^2*a*f*ln(exp(d*x+c))-1/(a^2+b^2)^2/d^2*a^3*f*ln(b*exp(2*d*x+2*c)+2*a*ex
p(d*x+c)-b)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(4\,b^2\int -\frac{xe^{(dx+c)}}{2\left(a^2b+b^3-\left(a^2be^{(2\,c)}+b^3e^{(2\,c)}\right)e^{(2\,dx)}-2\left(a^3e^c+ab^2e^c\right)e^{(dx)}\right)}\,dx+\frac{2\left(bxe^{(dx+c)}-ax\right)}{a^2d+b^2d+\left(a^2de^{(2\,c)}+b^2de^{(2\,c)}\right)e^{(2\,}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] (4*b^2*integrate(-1/2*x*e^(d*x + c)/(a^2*b + b^3 - (a^2*b*e^(2*c) + b^3*e^(
2*c))*e^(2*d*x) - 2*(a^3*e^c + a*b^2*e^c)*e^(d*x)), x) + 2*(b*x*e^(d*x + c)
 - a*x)/(a^2*d + b^2*d + (a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) + 2*a*x
/((a^2 + b^2)*d) - 2*b*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) - a*log(e^(2*d
*x + 2*c) + 1)/((a^2 + b^2)*d^2))*f + e*(b^2*log((b*e^(-d*x - c) - a - sqrt
(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^2 + b^2)^(3/2)*d)
+ 2*(b*e^(-d*x - c) + a)/((a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{{\mathrm{cosh}\left(c+d\,x\right)}^2\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + f x\right) \operatorname{sech}^{2}{\left(c + d x \right)}}{a + b \sinh{\left(c + d x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)*sech(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.312 $\int \frac{\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=77

$$\frac{\text{sech}(c+dx)(a\sinh(c+dx)+b)}{d\left(a^2+b^2\right)}-\frac{2b^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{d\left(a^2+b^2\right)^{3/2}}$$

```
[Out] -2*b^2*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))/(a^2+b^2)^(3/2)/d
+sech(d*x+c)*(b+a*sinh(d*x+c))/(a^2+b^2)/d
```

Rubi [A] time = 0.10, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2696, 12, 2660, 618, 204}

$$\frac{\text{sech}(c+dx)(a\sinh(c+dx)+b)}{d\left(a^2+b^2\right)}-\frac{2b^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{d\left(a^2+b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sech[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*b^2*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/((a^2 + b^2)^(3
/2)*d) + (Sech[c + d*x]*(b + a*Sinh[c + d*x]))/((a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2696

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_), x_Symbol] :> Simp[((g*Cos[e + f*x])^(p + 1)*(a + b*Sin[e + f*x])
^(m + 1)*(b - a*Sin[e + f*x]))/(f*g*(a^2 - b^2)*(p + 1)), x] + Dist[1/(g^2*
(a^2 - b^2)*(p + 1)), Int[(g*Cos[e + f*x])^(p + 2)*(a + b*Sin[e + f*x])^m*(
a^2*(p + 2) - b^2*(m + p + 2) + a*b*(m + p + 3)*Sin[e + f*x]), x], x] /; Fr
eeQ[{a, b, e, f, g, m}, x] && NeQ[a^2 - b^2, 0] && LtQ[p, -1] && IntegersQ[
2*m, 2*p]
```

Rubi steps

$$\int \frac{\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\operatorname{sech}(c+dx)(b+a\sinh(c+dx))}{(a^2+b^2)\,d}+\frac{\int \frac{b^2}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= \frac{\operatorname{sech}(c+dx)(b+a\sinh(c+dx))}{(a^2+b^2)\,d}+\frac{b^2\int \frac{1}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= \frac{\operatorname{sech}(c+dx)(b+a\sinh(c+dx))}{(a^2+b^2)\,d}-\frac{(2ib^2)\operatorname{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(ic+idx)\right.\right.}{(a^2+b^2)\,d}$$

$$= \frac{\operatorname{sech}(c+dx)(b+a\sinh(c+dx))}{(a^2+b^2)\,d}+\frac{(4ib^2)\operatorname{Subst}\left(\int \frac{1}{-4(a^2+b^2)-x^2}\,dx,x,-2ib+2a\tan\right.}{(a^2+b^2)\,d}$$

$$= -\frac{2b^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2}\,d}+\frac{\operatorname{sech}(c+dx)(b+a\sinh(c+dx))}{(a^2+b^2)\,d}$$

Mathematica [A] time = 0.16, size = 104, normalized size = 1.35

$$-\frac{a\sqrt{-a^2-b^2}\tanh(c+dx)+b\sqrt{-a^2-b^2}\operatorname{sech}(c+dx)+2b^2\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{d\left(-a^2-b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sech[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((2*b^2*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]] + b*Sqrt[-a^2 -
 b^2]*Sech[c + d*x] + a*Sqrt[-a^2 - b^2]*Tanh[c + d*x])/((-a^2 - b^2)^(3/2)
*d))
```

fricas [B] time = 0.54, size = 353, normalized size = 4.58

$$-\frac{2\,a^3+2\,ab^2-\left(b^2\cosh\left(dx+c\right)^2+2\,b^2\cosh\left(dx+c\right)\sinh\left(dx+c\right)+b^2\sinh\left(dx+c\right)^2+b^2\right)\sqrt{a^2+b^2}\,\log\left(\frac{b^2\cos\cdots}{\cdots}\right.}{\left(a^4+2\,a^2b^2+b^4\right)d\cosh\left(dx+c\right)^2+2\left(a^4+2\,a^2b\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*a^3 + 2*a*b^2 - (b^2*cosh(d*x + c)^2 + 2*b^2*cosh(d*x + c)*sinh(d*x + c
) + b^2*sinh(d*x + c)^2 + b^2)*sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 + b
^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x +
c) + a*b)*sinh(d*x + c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x +
 c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b
*cosh(d*x + c) + a)*sinh(d*x + c) - b)) - 2*(a^2*b + b^3)*cosh(d*x + c) - 2
*(a^2*b + b^3)*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^2 +
2*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2
+ b^4)*d*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d)
```

giac [A] time = 0.31, size = 108, normalized size = 1.40

$$\frac{\frac{b^2\log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\,\sqrt{a^2+b^2}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\,\sqrt{a^2+b^2}\right|}\right)}{\left(a^2+b^2\right)^{\frac{3}{2}}}+\frac{2\left(be^{(dx+c)}-a\right)}{\left(a^2+b^2\right)\left(e^{(2\,dx+2\,c)}+1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (b^2*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d*x + c)
 + 2*a + 2*sqrt(a^2 + b^2)))/(a^2 + b^2)^(3/2) + 2*(b*e^(d*x + c) - a)/((a^
2 + b^2)*(e^(2*d*x + 2*c) + 1)))/d
```

maple [A] time = 0.00, size = 90, normalized size = 1.17

$$\frac{\frac{2b^2 \operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{\frac{3}{2}}}-\frac{2\left(-a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-b\right)}{\left(a^2+b^2\right)\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/d*(2*b^2/(a^2+b^2)^(3/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b
^2)^(1/2))-2/(a^2+b^2)*(-a*tanh(1/2*d*x+1/2*c)-b)/(tanh(1/2*d*x+1/2*c)^2+1)
)
```

maxima [A] time = 0.42, size = 115, normalized size = 1.49

$$\frac{b^2 \log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{\frac{3}{2}}d}+\frac{2\left(be^{(-dx-c)}+a\right)}{\left(a^2+b^2+\left(a^2+b^2\right)e^{(-2\,dx-2\,c)}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] b^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a
^2 + b^2)))/((a^2 + b^2)^(3/2)*d) + 2*(b*e^(-d*x - c) + a)/((a^2 + b^2 + (a
^2 + b^2)*e^(-2*d*x - 2*c))*d)
```

mupad [B] time = 1.38, size = 413, normalized size = 5.36

$$-\frac{\frac{2\,a}{d\left(a^2+b^2\right)}-\frac{2\,b\,e^{c+d\,x}}{d\left(a^2+b^2\right)}}{e^{2\,c+2\,d\,x}+1}-\frac{2\,\mathrm{atan}\left(\left(\frac{b^3\,\sqrt{-a^6\,d^2-3\,a^4\,b^2\,d^2-3\,a^2\,b^4\,d^2-b^6\,d^2}}{2}+\frac{a^2\,b\,\sqrt{-a^6\,d^2-3\,a^4\,b^2\,d^2-3\,a^2\,b^4\,d^2-b^6\,d^2}}{2}\right)\left(e^{d\,x}\,e^{c}\,\left(\frac{\ldots}{d\,\sqrt{b^4}\,(\ldots}\right.\right.\right.}{\sqrt{-a^6\ldots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] - ((2*a)/(d*(a^2 + b^2)) - (2*b*exp(c + d*x))/(d*(a^2 + b^2)))/(exp(2*c + 2
*d*x) + 1) - (2*atan(((b^3*(- a^6*d^2 - b^6*d^2 - 3*a^2*b^4*d^2 - 3*a^4*b^2
*d^2)^(1/2))/2 + (a^2*b*(- a^6*d^2 - b^6*d^2 - 3*a^2*b^4*d^2 - 3*a^4*b^2*d^
2)^(1/2))/2)*(exp(d*x)*exp(c)*(2/(d*(b^4)^(1/2)*(a^2 + b^2)^2) + (2*a*(a^3*
d*(b^4)^(1/2) + a*b^2*d*(b^4)^(1/2)))/(b^4*(-d^2*(a^2 + b^2)^3)^(1/2)*(a^2
+ b^2)*(- a^6*d^2 - b^6*d^2 - 3*a^2*b^4*d^2 - 3*a^4*b^2*d^2)^(1/2))) - (2*a
*(b^3*d*(b^4)^(1/2) + a^2*b*d*(b^4)^(1/2)))/(b^4*(-d^2*(a^2 + b^2)^3)^(1/2)
*(a^2 + b^2)*(- a^6*d^2 - b^6*d^2 - 3*a^2*b^4*d^2 - 3*a^4*b^2*d^2)^(1/2))))
*(b^4)^(1/2))/(- a^6*d^2 - b^6*d^2 - 3*a^2*b^4*d^2 - 3*a^4*b^2*d^2)^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}^2(c + dx)}{a + b \sinh(c + dx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(sech(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.313 $\int \frac{\text{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\text{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sech[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Sech[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\text{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\text{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 66.07, size = 0, normalized size = 0.00

$$\int \frac{\text{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sech[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Integrate[Sech[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{sech}\,(dx+c)^2}{afx+ae+\left(bfx+be\right)\sinh\,(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(sech(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.80, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)^2}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$4\,b^2 \int -\frac{e^{(dx+c)}}{2\left(a^2be+b^3e+\left(a^2bf+b^3f\right)x-\left(a^2bee^{(2\,c)}+b^3ee^{(2\,c)}+\left(a^2bfe^{(2\,c)}+b^3fe^{(2\,c)}\right)x\right)e^{(2\,dx)}-2\left(a^3ee^c+ab^2ee^c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 4*b^2*integrate(-1/2*e^(d*x + c)/(a^2*b*e + b^3*e + (a^2*b*f + b^3*f)*x - (
a^2*b*e*e^(2*c) + b^3*e*e^(2*c) + (a^2*b*f*e^(2*c) + b^3*f*e^(2*c))*x)*e^(2
*d*x) - 2*(a^3*e*e^c + a*b^2*e*e^c + (a^3*f*e^c + a*b^2*f*e^c)*x)*e^(d*x)),
 x) + 2*(b*e^(d*x + c) - a)/(a^2*d*e + b^2*d*e + (a^2*d*f + b^2*d*f)*x + (a
^2*d*e*e^(2*c) + b^2*d*e*e^(2*c) + (a^2*d*f*e^(2*c) + b^2*d*f*e^(2*c))*x)*e
^(2*d*x)) + 4*integrate(1/2*(b*f*e^(d*x + c) - a*f)/(a^2*d*e^2 + b^2*d*e^2
+ (a^2*d*f^2 + b^2*d*f^2)*x^2 + 2*(a^2*d*e*f + b^2*d*e*f)*x + (a^2*d*e^2*e^
(2*c) + b^2*d*e^2*e^(2*c) + (a^2*d*f^2*e^(2*c) + b^2*d*f^2*e^(2*c))*x^2 + 2
*(a^2*d*e*f*e^(2*c) + b^2*d*e*f*e^(2*c))*x)*e^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+d\,x)^2\,\left(e+f\,x\right)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy **[A]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}^2(c+dx)}{(a+b\sinh(c+dx))(e+fx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(sech(c + d*x)**2/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.314 $\int \frac{(e+fx)^2 \mathbf{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=928

$$\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{\left(a^2+b^2\right)^2 d}+\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{\left(a^2+b^2\right)^2 d}-\frac{(e+fx)^2\log\left(1+e^{2(c+dx)}\right)b^3}{\left(a^2+b^2\right)^2 d}+\frac{2f(e+fx)\mathrm{Li}_2\left(\right.}{\left(a^2+b\right.}$$

```
[Out] 2*b^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^
2+2*b^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^2/
d^2+2*I*a*b^2*f^2*polylog(3,-I*exp(d*x+c))/(a^2+b^2)^2/d^3-2*I*a*b^2*f*(f*x
+e)*polylog(2,-I*exp(d*x+c))/(a^2+b^2)^2/d^2-2*I*a*b^2*f^2*polylog(3,I*exp(
d*x+c))/(a^2+b^2)^2/d^3+I*a*f*(f*x+e)*polylog(2,I*exp(d*x+c))/(a^2+b^2)/d^2
-I*a*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/(a^2+b^2)/d^2-a*f^2*arctan(sinh(d*x
+c))/(a^2+b^2)/d^3+1/2*b^3*f^2*polylog(3,-exp(2*d*x+2*c))/(a^2+b^2)^2/d^3+1
/2*b*(f*x+e)^2*sech(d*x+c)^2/(a^2+b^2)/d+a*(f*x+e)^2*arctan(exp(d*x+c))/(a^
2+b^2)/d-b*f*(f*x+e)*tanh(d*x+c)/(a^2+b^2)/d^2+1/2*a*(f*x+e)^2*sech(d*x+c)*
tanh(d*x+c)/(a^2+b^2)/d-I*a*f^2*polylog(3,I*exp(d*x+c))/(a^2+b^2)/d^3+2*a*b
^2*(f*x+e)^2*arctan(exp(d*x+c))/(a^2+b^2)^2/d-b^3*f*(f*x+e)*polylog(2,-exp(
2*d*x+2*c))/(a^2+b^2)^2/d^2+I*a*f^2*polylog(3,-I*exp(d*x+c))/(a^2+b^2)/d^3+
a*f*(f*x+e)*sech(d*x+c)/(a^2+b^2)/d^2+2*I*a*b^2*f*(f*x+e)*polylog(2,I*exp(d
*x+c))/(a^2+b^2)^2/d^2-b^3*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/(a^2+b^2)^2/d+b*f
^2*ln(cosh(d*x+c))/(a^2+b^2)/d^3+b^3*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^
2)^(1/2)))/(a^2+b^2)^2/d+b^3*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)
))/(a^2+b^2)^2/d-2*b^3*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^
2+b^2)^2/d^3-2*b^3*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^
2)^2/d^3
```

Rubi [A] time = 1.77, antiderivative size = 928, normalized size of antiderivative = 1.00, number of steps used = 39, number of rules used = 14, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5573, 5561, 2190, 2531, 2282, 6589, 6742, 4180, 3718, 4186, 3770, 5451, 4184, 3475}

$$\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{\left(a^2+b^2\right)^2 d}+\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{\left(a^2+b^2\right)^2 d}-\frac{(e+fx)^2\log\left(1+e^{2(c+dx)}\right)b^3}{\left(a^2+b^2\right)^2 d}+\frac{2f(e+fx)\mathrm{Poly}}{\left(a^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a*b^2*(e + f*x)^2*ArcTan[E^(c + d*x)])/((a^2 + b^2)^2*d) + (a*(e + f*x)^
2*ArcTan[E^(c + d*x)])/((a^2 + b^2)*d) - (a*f^2*ArcTan[Sinh[c + d*x]])/((a^
```

```
2 + b^2)*d^3) + (b^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^
2])])/((a^2 + b^2)^2*d) + (b^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqr
t[a^2 + b^2])])/((a^2 + b^2)^2*d) - (b^3*(e + f*x)^2*Log[1 + E^(2*(c + d*x)
)])/((a^2 + b^2)^2*d) + (b*f^2*Log[Cosh[c + d*x]])/((a^2 + b^2)*d^3) - ((2*
I)*a*b^2*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)^2*d^2) - (I
*a*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^2) + ((2*I)*a*b
^2*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^2)^2*d^2) + (I*a*f*(e +
 f*x)*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^2)*d^2) + (2*b^3*f*(e + f*x)*Pol
yLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^2) + (2
*b^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^
2 + b^2)^2*d^2) - (b^3*f*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/((a^2 + b^
2)^2*d^2) + ((2*I)*a*b^2*f^2*PolyLog[3, (-I)*E^(c + d*x)])/((a^2 + b^2)^2*d
^3) + (I*a*f^2*PolyLog[3, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^3) - ((2*I)*a*b
^2*f^2*PolyLog[3, I*E^(c + d*x)])/((a^2 + b^2)^2*d^3) - (I*a*f^2*PolyLog[3,
 I*E^(c + d*x)])/((a^2 + b^2)*d^3) - (2*b^3*f^2*PolyLog[3, -((b*E^(c + d*x)
)/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^3) - (2*b^3*f^2*PolyLog[3, -((b
*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^3) + (b^3*f^2*PolyL
og[3, -E^(2*(c + d*x))])/(2*(a^2 + b^2)^2*d^3) + (a*f*(e + f*x)*Sech[c + d*
x])/((a^2 + b^2)*d^2) + (b*(e + f*x)^2*Sech[c + d*x]^2)/(2*(a^2 + b^2)*d) -
 (b*f*(e + f*x)*Tanh[c + d*x])/((a^2 + b^2)*d^2) + (a*(e + f*x)^2*Sech[c +
d*x]*Tanh[c + d*x])/(2*(a^2 + b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
```

```
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{sech}^3(c+dx)(a-b\sinh(c+dx))\,dx}{a^2+b^2} + \frac{b^2\int \frac{(e+fx)^2\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= \frac{b^2\int (e+fx)^2\text{sech}(c+dx)(a-b\sinh(c+dx))\,dx}{\left(a^2+b^2\right)^2} + \frac{b^4\int \frac{(e+fx)^2\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{\left(a^2+b^2\right)^2} + \int$$

$$= -\frac{b^3(e+fx)^3}{3\left(a^2+b^2\right)^2 f} + \frac{b^2\int \left(a(e+fx)^2\text{sech}(c+dx) - b(e+fx)^2\tanh(c+dx)\right)\,dx}{\left(a^2+b^2\right)^2} +$$

$$= -\frac{b^3(e+fx)^3}{3\left(a^2+b^2\right)^2 f} + \frac{b^3(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^2 d} + \frac{b^3(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^2 d}$$

$$= \frac{2ab^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} - \frac{af^2\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right) d^3}$$

$$= \frac{2ab^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} - \frac{af^2\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right) d^3}$$

$$= \frac{2ab^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} - \frac{af^2\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right) d^3}$$

$$= \frac{2ab^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} - \frac{af^2\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right) d^3}$$

$$= \frac{2ab^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} - \frac{af^2\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right) d^3}$$

Mathematica [B] time = 28.32, size = 3368, normalized size = 3.63

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

[Out] -1/6*(-12*b^3*d^3*e^2*E^(2*c)*x + 12*a^2*b*d*E^(2*c)*f^2*x + 12*b^3*d*E^(2*c)*f^2*x - 12*b^3*d^3*e*E^(2*c)*f*x^2 - 4*b^3*d^3*E^(2*c)*f^2*x^3 - 6*a^3*d^2*e^2*ArcTan[E^(c + d*x)] - 18*a*b^2*d^2*e^2*ArcTan[E^(c + d*x)] - 6*a^3*d^2*e^2*E^(2*c)*ArcTan[E^(c + d*x)] - 18*a*b^2*d^2*e^2*E^(2*c)*ArcTan[E^(c + d*x)] + 12*a^3*f^2*ArcTan[E^(c + d*x)] + 12*a*b^2*f^2*ArcTan[E^(c + d*x)] + 12*a^3*E^(2*c)*f^2*ArcTan[E^(c + d*x)] + 12*a*b^2*E^(2*c)*f^2*ArcTan[E^(c + d*x)] - (6*I)*a^3*d^2*e*f*x*Log[1 - I*E^(c + d*x)] - (18*I)*a*b^2*d^2*e*f*x*Log[1 - I*E^(c + d*x)] - (6*I)*a^3*d^2*e*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] - (18*I)*a*b^2*d^2*e*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] - (3*I)*a^3*d^2*f^2*x^2*Log[1 - I*E^(c + d*x)] - (9*I)*a*b^2*d^2*f^2*x^2*Log[1 - I*E^(c + d*x)] - (3*I)*a^3*d^2*E^(2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] - (9*I)*a*b^2*d^2*E^(2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] + (6*I)*a^3*d^2*e*f*x*Log[1 + I*E^(c + d*x)] + (18*I)*a*b^2*d^2*e*f*x*Log[1 + I*E^(c + d*x)] + (6*I)*a^3*d^2*e*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] + (18*I)*a*b^2*d^2*e*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] + (3*I)*a^3*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] + (9*I)*a*b^2*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] + (3*I)*a^3*d^2*E^(2*c)*f^2*x^2*Log[1 + I*E^(c + d*x)] + (9*I)*a*b^2*d^2*E^(2*c)*f^2*x^2*Log[1 + I*E^(c + d*x)] + 6*b^3*d^2*e^2*Log[1 + E^(2*(c + d*x))] + 6*b^3*d^2*e^2*E^(2*c)*Log[1 + E^(2*(c + d*x))] - 6*a^2*b*f^2*Log[1 + E^(2*(c + d*x))] - 6*b^3*f^2*Log[1 + E^(2*(c + d*x))] - 6*a^2*b*E^(2*c)*f^2*Log[1 + E^(2*(c + d*x))] - 6*b^3*E^(2*c)*f^2*Log[1 + E^(2*(c + d*x))] + 12*b^3*d^2*e*f*x*Log[1 + E^(2*(c + d*x))] + 12*b^3*d^2*e*E^(2*c)*f*x*Log[1 + E^(2*(c + d*x))] + 6*b^3*d^2*f^2*x^2*Log[1 + E^(2*(c + d*x))] + 6*b^3*d^2*E^(2*c)*f^2*x^2*Log[1 + E^(2*(c + d*x))] + (6*I)*a*(a^2 + 3*b^2)*d*(1 + E^(2*c))*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)] - (6*I)*a*(a^2 + 3*b^2)*d*(1 + E^(2*c))*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)] + 6*b^3*d*e*f*PolyLog[2, -E^(2*(c + d*x))] + 6*b^3*d*e*E^(2*c)*f*PolyLog[2, -E^(2*(c + d*x))] + 6*b^3*d*f^2*x*PolyLog[2, -E^(2*(c + d*x))] + 6*b^3*d*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(c + d*x))] - (6*I)*a^3*f^2*PolyLog[3, (-I)*E^(c + d*x)] - (18*I)*a*b^2*f^2*PolyLog[3, (-I)*E^(c + d*x)] - (6*I)*a^3*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] - (18*I)*a*b^2*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (6*I)*a^3*f^2*PolyLog[3, I*E^(c + d*x)] + (18*I)*a*b^2*f^2*PolyLog[3, I*E^(c + d*x)] + (6*I)*a^3*E^(2*c)*f^2*PolyLog[3, I*E^(c + d*x)] + (18*I)*a*b^2*E^(2*c)*f^2*PolyLog[3, I*E^(c + d*x)] - 3*b^3*f^2*PolyLog[3, -E^(2*(c + d*x))] - 3*b^3*E^(2*c)*f^2*PolyLog[3, -E^(2*(c + d*x))])/((a^2 + b^2)^2*d^3*(1 + E^(2*c))) - (b^3*(6*e^2*E^(2*c)*x + 6*e*E^(2*c)*f*x^2 + 2*E^(2*c)*f^2*x^3 + (6*a*Sqrt[a^2 + b^2]*e^2*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/(Sqrt[-(a^2 + b^2)^2]*d) + (6*a*Sqrt[-(a^2 + b^2)^2]*e^2*E^(2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) - (6*a*Sqrt[-(a^2 + b^2)^2]*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (6*a*Sqrt[-(a^2 + b^2)^2]*e^2*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (3*e^2*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d - (3*e^2*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d + (6*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (3*f

```
^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d -
(3*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2
*c)])])/d + (6*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^
(2*c)])])/d - (6*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2
 + b^2)*E^(2*c)])])/d + (3*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[
(a^2 + b^2)*E^(2*c)])])/d - (3*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a
*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)*PolyL
og[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(
-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2
 + b^2)*E^(2*c)]))])/d^2 - (6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - S
qrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c +
d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (6*f^2*PolyLog[3, -((b*E
^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (6*E^(2*c)*f^2*P
olyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3))/
(3*(a^2 + b^2)^2*(-1 + E^(2*c))) + (Csch[c]*Sech[c]*Sech[c + d*x]^2*(-6*a^2
*b*e*f - 6*b^3*e*f + 12*b^3*d^2*e^2*x - 6*a^2*b*f^2*x - 6*b^3*f^2*x + 12*b^
3*d^2*e*f*x^2 + 4*b^3*d^2*f^2*x^3 + 6*a^2*b*e*f*Cosh[2*c] + 6*b^3*e*f*Cosh[
2*c] + 6*a^2*b*f^2*x*Cosh[2*c] + 6*b^3*f^2*x*Cosh[2*c] + 6*a^2*b*e*f*Cosh[2
*d*x] + 6*b^3*e*f*Cosh[2*d*x] + 6*a^2*b*f^2*x*Cosh[2*d*x] + 6*b^3*f^2*x*Cos
h[2*d*x] - 3*a^3*d*e^2*Cosh[c - d*x] - 3*a*b^2*d*e^2*Cosh[c - d*x] - 6*a^3*
d*e*f*x*Cosh[c - d*x] - 6*a*b^2*d*e*f*x*Cosh[c - d*x] - 3*a^3*d*f^2*x^2*Cos
h[c - d*x] - 3*a*b^2*d*f^2*x^2*Cosh[c - d*x] + 3*a^3*d*e^2*Cosh[3*c + d*x]
+ 3*a*b^2*d*e^2*Cosh[3*c + d*x] + 6*a^3*d*e*f*x*Cosh[3*c + d*x] + 6*a*b^2*d
*e*f*x*Cosh[3*c + d*x] + 3*a^3*d*f^2*x^2*Cosh[3*c + d*x] + 3*a*b^2*d*f^2*x^
2*Cosh[3*c + d*x] - 6*a^2*b*e*f*Cosh[2*c + 2*d*x] - 6*b^3*e*f*Cosh[2*c + 2*
d*x] + 12*b^3*d^2*e^2*x*Cosh[2*c + 2*d*x] - 6*a^2*b*f^2*x*Cosh[2*c + 2*d*x]
 - 6*b^3*f^2*x*Cosh[2*c + 2*d*x] + 12*b^3*d^2*e*f*x^2*Cosh[2*c + 2*d*x] + 4
*b^3*d^2*f^2*x^3*Cosh[2*c + 2*d*x] + 6*a^2*b*d*e^2*Sinh[2*c] + 6*b^3*d*e^2*
Sinh[2*c] + 12*a^2*b*d*e*f*x*Sinh[2*c] + 12*b^3*d*e*f*x*Sinh[2*c] + 6*a^2*b
*d*f^2*x^2*Sinh[2*c] + 6*b^3*d*f^2*x^2*Sinh[2*c] + 6*a^3*e*f*Sinh[c - d*x]
+ 6*a*b^2*e*f*Sinh[c - d*x] + 6*a^3*f^2*x*Sinh[c - d*x] + 6*a*b^2*f^2*x*Sin
h[c - d*x] + 6*a^3*e*f*Sinh[3*c + d*x] + 6*a*b^2*e*f*Sinh[3*c + d*x] + 6*a^
3*f^2*x*Sinh[3*c + d*x] + 6*a*b^2*f^2*x*Sinh[3*c + d*x]))/(24*(a^2 + b^2)^2
*d^2)
```

fricas [C] time = 1.02, size = 10600, normalized size = 11.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(4*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*c*f^2)*cosh(d*x + c)^4 + 4*(
(a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*c*f^2)*sinh(d*x + c)^4 - 4*(a^2*b + b
^3)*d*e*f + 4*(a^2*b + b^3)*c*f^2 - 2*((a^3 + a*b^2)*d^2*f^2*x^2 + (a^3 + a
```

```
*b^2)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^3 + a*b^2)*d^2*e*f + (a^3 + a
*b^2)*d*f^2)*x)*cosh(d*x + c)^3 - 2*((a^3 + a*b^2)*d^2*f^2*x^2 + (a^3 + a*b
^2)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^3 + a*b^2)*d^2*e*f + (a^3 + a*b
^2)*d*f^2)*x - 8*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*c*f^2)*cosh(d*x + c
))*sinh(d*x + c)^3 - 4*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 +
 (a^2*b + b^3)*d*e*f - 2*(a^2*b + b^3)*c*f^2 + (2*(a^2*b + b^3)*d^2*e*f - (
a^2*b + b^3)*d*f^2)*x)*cosh(d*x + c)^2 - 2*(2*(a^2*b + b^3)*d^2*f^2*x^2 + 2
*(a^2*b + b^3)*d^2*e^2 + 2*(a^2*b + b^3)*d*e*f - 4*(a^2*b + b^3)*c*f^2 - 12
*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*c*f^2)*cosh(d*x + c)^2 + 2*(2*(a^2*
b + b^3)*d^2*e*f - (a^2*b + b^3)*d*f^2)*x + 3*((a^3 + a*b^2)*d^2*f^2*x^2 +
(a^3 + a*b^2)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^3 + a*b^2)*d^2*e*f +
(a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 2*((a^3 + a*b^2)*d
^2*f^2*x^2 + (a^3 + a*b^2)*d^2*e^2 - 2*(a^3 + a*b^2)*d*e*f + 2*((a^3 + a*b^
2)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c) - 4*(b^3*d*f^2*x + b^3*d
*e*f + (b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)^4 + 4*(b^3*d*f^2*x + b^3*d*e
*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^3*d*f^2*x + b^3*d*e*f)*sinh(d*x + c)
^4 + 2*(b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)^2 + 2*(b^3*d*f^2*x + b^3*d*e
*f + 3*(b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^3
*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)^3 + (b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x
+ c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x
 + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 4*(b^3*d*f^2*x
 + b^3*d*e*f + (b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)^4 + 4*(b^3*d*f^2*x +
 b^3*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^3*d*f^2*x + b^3*d*e*f)*sinh(
d*x + c)^4 + 2*(b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)^2 + 2*(b^3*d*f^2*x +
 b^3*d*e*f + 3*(b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 +
 4*((b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)^3 + (b^3*d*f^2*x + b^3*d*e*f)*c
osh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (4*b^3
*d*f^2*x + 4*b^3*d*e*f - 2*I*(a^3 + 3*a*b^2)*d*f^2*x + (4*b^3*d*f^2*x + 4*b
^3*d*e*f - 2*I*(a^3 + 3*a*b^2)*d*f^2*x - 2*I*(a^3 + 3*a*b^2)*d*e*f)*cosh(d*
x + c)^4 + (16*b^3*d*f^2*x + 16*b^3*d*e*f - 8*I*(a^3 + 3*a*b^2)*d*f^2*x - 8
*I*(a^3 + 3*a*b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*b^3*d*f^2*x +
4*b^3*d*e*f - 2*I*(a^3 + 3*a*b^2)*d*f^2*x - 2*I*(a^3 + 3*a*b^2)*d*e*f)*sinh
(d*x + c)^4 - 2*I*(a^3 + 3*a*b^2)*d*e*f + (8*b^3*d*f^2*x + 8*b^3*d*e*f - 4*
I*(a^3 + 3*a*b^2)*d*f^2*x - 4*I*(a^3 + 3*a*b^2)*d*e*f)*cosh(d*x + c)^2 + (8
*b^3*d*f^2*x + 8*b^3*d*e*f - 4*I*(a^3 + 3*a*b^2)*d*f^2*x - 4*I*(a^3 + 3*a*b
^2)*d*e*f + (24*b^3*d*f^2*x + 24*b^3*d*e*f - 12*I*(a^3 + 3*a*b^2)*d*f^2*x -
 12*I*(a^3 + 3*a*b^2)*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((16*b^3*d*
f^2*x + 16*b^3*d*e*f - 8*I*(a^3 + 3*a*b^2)*d*f^2*x - 8*I*(a^3 + 3*a*b^2)*d*
e*f)*cosh(d*x + c)^3 + (16*b^3*d*f^2*x + 16*b^3*d*e*f - 8*I*(a^3 + 3*a*b^2)
*d*f^2*x - 8*I*(a^3 + 3*a*b^2)*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(I
*cosh(d*x + c) + I*sinh(d*x + c)) + (4*b^3*d*f^2*x + 4*b^3*d*e*f + 2*I*(a^3
 + 3*a*b^2)*d*f^2*x + (4*b^3*d*f^2*x + 4*b^3*d*e*f + 2*I*(a^3 + 3*a*b^2)*d*
f^2*x + 2*I*(a^3 + 3*a*b^2)*d*e*f)*cosh(d*x + c)^4 + (16*b^3*d*f^2*x + 16*b
^3*d*e*f + 8*I*(a^3 + 3*a*b^2)*d*f^2*x + 8*I*(a^3 + 3*a*b^2)*d*e*f)*cosh(d*
```

x + c)*sinh(d*x + c)^3 + (4*b^3*d*f^2*x + 4*b^3*d*e*f + 2*I*(a^3 + 3*a*b^2)
*d*f^2*x + 2*I*(a^3 + 3*a*b^2)*d*e*f)*sinh(d*x + c)^4 + 2*I*(a^3 + 3*a*b^2)
*d*e*f + (8*b^3*d*f^2*x + 8*b^3*d*e*f + 4*I*(a^3 + 3*a*b^2)*d*f^2*x + 4*I*(
a^3 + 3*a*b^2)*d*e*f)*cosh(d*x + c)^2 + (8*b^3*d*f^2*x + 8*b^3*d*e*f + 4*I*
(a^3 + 3*a*b^2)*d*f^2*x + 4*I*(a^3 + 3*a*b^2)*d*e*f + (24*b^3*d*f^2*x + 24*
b^3*d*e*f + 12*I*(a^3 + 3*a*b^2)*d*f^2*x + 12*I*(a^3 + 3*a*b^2)*d*e*f)*cosh
(d*x + c)^2)*sinh(d*x + c)^2 + ((16*b^3*d*f^2*x + 16*b^3*d*e*f + 8*I*(a^3 +
 3*a*b^2)*d*f^2*x + 8*I*(a^3 + 3*a*b^2)*d*e*f)*cosh(d*x + c)^3 + (16*b^3*d*
f^2*x + 16*b^3*d*e*f + 8*I*(a^3 + 3*a*b^2)*d*f^2*x + 8*I*(a^3 + 3*a*b^2)*d*
e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)
) - 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2 + (b^3*d^2*e^2 - 2*b^3*c*d
*e*f + b^3*c^2*f^2)*cosh(d*x + c)^4 + 4*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*
c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3
*c^2*f^2)*sinh(d*x + c)^4 + 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*c
osh(d*x + c)^2 + 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2 + 3*(b^3*d^2*
e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b
^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)^3 + (b^3*d^2*e^2 -
2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x
 + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(b^3*d^2*e
^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2 + (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f
^2)*cosh(d*x + c)^4 + 4*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*
x + c)*sinh(d*x + c)^3 + (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*sinh(d
x + c)^4 + 2(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)^2 +
 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2 + 3*(b^3*d^2*e^2 - 2*b^3*c*d*
e*f + b^3*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^3*d^2*e^2 - 2*b
^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)^3 + (b^3*d^2*e^2 - 2*b^3*c*d*e*f +
b^3*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh
(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(b^3*d^2*f^2*x^2 + 2*b^3*d
^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2 + (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x
 + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)^4 + 4*(b^3*d^2*f^2*x^2 + 2*b^
3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 +
(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sinh(d*x
+ c)^4 + 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2
)*cosh(d*x + c)^2 + 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f -
b^3*c^2*f^2 + 3*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^
2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^3*d^2*f^2*x^2 + 2*b^3*d^2*e
*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)^3 + (b^3*d^2*f^2*x^2 + 2*
b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*
log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2
*b^3*c*d*e*f - b^3*c^2*f^2 + (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d
*e*f - b^3*c^2*f^2)*cosh(d*x + c)^4 + 4*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x
+ 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^3*d^2*f^2
*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sinh(d*x + c)^4 + 2*(
b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x +

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c)^2 + 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2
+ 3*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(
d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3
*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)^3 + (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*
x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh
(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2) - b)/b) + (2*b^3*d^2*e^2 - 4*b^3*c*d*e*f - I*(a^3 + 3*a*b^2)*d
^2*e^2 + 2*I*(a^3 + 3*a*b^2)*c*d*e*f + (2*b^3*d^2*e^2 - 4*b^3*c*d*e*f - I*(
a^3 + 3*a*b^2)*d^2*e^2 + 2*I*(a^3 + 3*a*b^2)*c*d*e*f + 2*(b^3*c^2 - a^2*b -
 b^3)*f^2 + I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2)*cosh(d*x + c)^4
+ (8*b^3*d^2*e^2 - 16*b^3*c*d*e*f - 4*I*(a^3 + 3*a*b^2)*d^2*e^2 + 8*I*(a^3
+ 3*a*b^2)*c*d*e*f + 8*(b^3*c^2 - a^2*b - b^3)*f^2 + 4*I*(2*a^3 + 2*a*b^2 -
 (a^3 + 3*a*b^2)*c^2)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*b^3*d^2*e^2 -
 4*b^3*c*d*e*f - I*(a^3 + 3*a*b^2)*d^2*e^2 + 2*I*(a^3 + 3*a*b^2)*c*d*e*f +
2*(b^3*c^2 - a^2*b - b^3)*f^2 + I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2)*f
^2)*sinh(d*x + c)^4 + 2*(b^3*c^2 - a^2*b - b^3)*f^2 + I*(2*a^3 + 2*a*b^2 -
(a^3 + 3*a*b^2)*c^2)*f^2 + (4*b^3*d^2*e^2 - 8*b^3*c*d*e*f - 2*I*(a^3 + 3*a*
b^2)*d^2*e^2 + 4*I*(a^3 + 3*a*b^2)*c*d*e*f + 4*(b^3*c^2 - a^2*b - b^3)*f^2
+ 2*I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2)*cosh(d*x + c)^2 + (4*b^3
*d^2*e^2 - 8*b^3*c*d*e*f - 2*I*(a^3 + 3*a*b^2)*d^2*e^2 + 4*I*(a^3 + 3*a*b^2
)*c*d*e*f + 4*(b^3*c^2 - a^2*b - b^3)*f^2 + 2*I*(2*a^3 + 2*a*b^2 - (a^3 + 3
*a*b^2)*c^2)*f^2 + (12*b^3*d^2*e^2 - 24*b^3*c*d*e*f - 6*I*(a^3 + 3*a*b^2)*d
^2*e^2 + 12*I*(a^3 + 3*a*b^2)*c*d*e*f + 12*(b^3*c^2 - a^2*b - b^3)*f^2 + 6*
I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2)*cosh(d*x + c)^2)*sinh(d*x +
c)^2 + ((8*b^3*d^2*e^2 - 16*b^3*c*d*e*f - 4*I*(a^3 + 3*a*b^2)*d^2*e^2 + 8*I
*(a^3 + 3*a*b^2)*c*d*e*f + 8*(b^3*c^2 - a^2*b - b^3)*f^2 + 4*I*(2*a^3 + 2*a
*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2)*cosh(d*x + c)^3 + (8*b^3*d^2*e^2 - 16*b^3*
c*d*e*f - 4*I*(a^3 + 3*a*b^2)*d^2*e^2 + 8*I*(a^3 + 3*a*b^2)*c*d*e*f + 8*(b^
3*c^2 - a^2*b - b^3)*f^2 + 4*I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2)
*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + I) + (2*
b^3*d^2*e^2 - 4*b^3*c*d*e*f + I*(a^3 + 3*a*b^2)*d^2*e^2 - 2*I*(a^3 + 3*a*b^
2)*c*d*e*f + (2*b^3*d^2*e^2 - 4*b^3*c*d*e*f + I*(a^3 + 3*a*b^2)*d^2*e^2 - 2
*I*(a^3 + 3*a*b^2)*c*d*e*f + 2*(b^3*c^2 - a^2*b - b^3)*f^2 - I*(2*a^3 + 2*a
*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2)*cosh(d*x + c)^4 + (8*b^3*d^2*e^2 - 16*b^3*
c*d*e*f + 4*I*(a^3 + 3*a*b^2)*d^2*e^2 - 8*I*(a^3 + 3*a*b^2)*c*d*e*f + 8*(b^
3*c^2 - a^2*b - b^3)*f^2 - 4*I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2)
*cosh(d*x + c)*sinh(d*x + c)^3 + (2*b^3*d^2*e^2 - 4*b^3*c*d*e*f + I*(a^3 +
3*a*b^2)*d^2*e^2 - 2*I*(a^3 + 3*a*b^2)*c*d*e*f + 2*(b^3*c^2 - a^2*b - b^3)*
f^2 - I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2)*sinh(d*x + c)^4 + 2*(b
^3*c^2 - a^2*b - b^3)*f^2 - I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2 +
 (4*b^3*d^2*e^2 - 8*b^3*c*d*e*f + 2*I*(a^3 + 3*a*b^2)*d^2*e^2 - 4*I*(a^3 +
3*a*b^2)*c*d*e*f + 4*(b^3*c^2 - a^2*b - b^3)*f^2 - 2*I*(2*a^3 + 2*a*b^2 - (
a^3 + 3*a*b^2)*c^2)*f^2)*cosh(d*x + c)^2 + (4*b^3*d^2*e^2 - 8*b^3*c*d*e*f +
 2*I*(a^3 + 3*a*b^2)*d^2*e^2 - 4*I*(a^3 + 3*a*b^2)*c*d*e*f + 4*(b^3*c^2 - a
^2*b - b^3)*f^2 - 2*I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2 + (12*b^3
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*d^2*e^2 - 24*b^3*c*d*e*f + 6*I*(a^3 + 3*a*b^2)*d^2*e^2 - 12*I*(a^3 + 3*a*b
^2)*c*d*e*f + 12*(b^3*c^2 - a^2*b - b^3)*f^2 - 6*I*(2*a^3 + 2*a*b^2 - (a^3
+ 3*a*b^2)*c^2)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*b^3*d^2*e^2 - 1
6*b^3*c*d*e*f + 4*I*(a^3 + 3*a*b^2)*d^2*e^2 - 8*I*(a^3 + 3*a*b^2)*c*d*e*f +
 8*(b^3*c^2 - a^2*b - b^3)*f^2 - 4*I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2
)*f^2)*cosh(d*x + c)^3 + (8*b^3*d^2*e^2 - 16*b^3*c*d*e*f + 4*I*(a^3 + 3*a*b
^2)*d^2*e^2 - 8*I*(a^3 + 3*a*b^2)*c*d*e*f + 8*(b^3*c^2 - a^2*b - b^3)*f^2 -
 4*I*(2*a^3 + 2*a*b^2 - (a^3 + 3*a*b^2)*c^2)*f^2)*cosh(d*x + c))*sinh(d*x +
 c))*log(cosh(d*x + c) + sinh(d*x + c) - I) + (2*b^3*d^2*f^2*x^2 + 4*b^3*d^
2*e*f*x + 4*b^3*c*d*e*f - 2*b^3*c^2*f^2 + I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 + 2
*I*(a^3 + 3*a*b^2)*d^2*e*f*x + 2*I*(a^3 + 3*a*b^2)*c*d*e*f - I*(a^3 + 3*a*b
^2)*c^2*f^2 + (2*b^3*d^2*f^2*x^2 + 4*b^3*d^2*e*f*x + 4*b^3*c*d*e*f - 2*b^3*
c^2*f^2 + I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 + 2*I*(a^3 + 3*a*b^2)*d^2*e*f*x + 2
*I*(a^3 + 3*a*b^2)*c*d*e*f - I*(a^3 + 3*a*b^2)*c^2*f^2)*cosh(d*x + c)^4 + (
8*b^3*d^2*f^2*x^2 + 16*b^3*d^2*e*f*x + 16*b^3*c*d*e*f - 8*b^3*c^2*f^2 + 4*I
*(a^3 + 3*a*b^2)*d^2*f^2*x^2 + 8*I*(a^3 + 3*a*b^2)*d^2*e*f*x + 8*I*(a^3 + 3
*a*b^2)*c*d*e*f - 4*I*(a^3 + 3*a*b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^
3 + (2*b^3*d^2*f^2*x^2 + 4*b^3*d^2*e*f*x + 4*b^3*c*d*e*f - 2*b^3*c^2*f^2 +
I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 + 2*I*(a^3 + 3*a*b^2)*d^2*e*f*x + 2*I*(a^3 +
3*a*b^2)*c*d*e*f - I*(a^3 + 3*a*b^2)*c^2*f^2)*sinh(d*x + c)^4 + (4*b^3*d^2*
f^2*x^2 + 8*b^3*d^2*e*f*x + 8*b^3*c*d*e*f - 4*b^3*c^2*f^2 + 2*I*(a^3 + 3*a*
b^2)*d^2*f^2*x^2 + 4*I*(a^3 + 3*a*b^2)*d^2*e*f*x + 4*I*(a^3 + 3*a*b^2)*c*d*
e*f - 2*I*(a^3 + 3*a*b^2)*c^2*f^2)*cosh(d*x + c)^2 + (4*b^3*d^2*f^2*x^2 + 8
*b^3*d^2*e*f*x + 8*b^3*c*d*e*f - 4*b^3*c^2*f^2 + 2*I*(a^3 + 3*a*b^2)*d^2*f^
2*x^2 + 4*I*(a^3 + 3*a*b^2)*d^2*e*f*x + 4*I*(a^3 + 3*a*b^2)*c*d*e*f - 2*I*(
a^3 + 3*a*b^2)*c^2*f^2 + (12*b^3*d^2*f^2*x^2 + 24*b^3*d^2*e*f*x + 24*b^3*c*
d*e*f - 12*b^3*c^2*f^2 + 6*I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 + 12*I*(a^3 + 3*a*
b^2)*d^2*e*f*x + 12*I*(a^3 + 3*a*b^2)*c*d*e*f - 6*I*(a^3 + 3*a*b^2)*c^2*f^2
)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*b^3*d^2*f^2*x^2 + 16*b^3*d^2*e*f*x
 + 16*b^3*c*d*e*f - 8*b^3*c^2*f^2 + 4*I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 + 8*I*(
a^3 + 3*a*b^2)*d^2*e*f*x + 8*I*(a^3 + 3*a*b^2)*c*d*e*f - 4*I*(a^3 + 3*a*b^2
)*c^2*f^2)*cosh(d*x + c)^3 + (8*b^3*d^2*f^2*x^2 + 16*b^3*d^2*e*f*x + 16*b^3
*c*d*e*f - 8*b^3*c^2*f^2 + 4*I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 + 8*I*(a^3 + 3*a
*b^2)*d^2*e*f*x + 8*I*(a^3 + 3*a*b^2)*c*d*e*f - 4*I*(a^3 + 3*a*b^2)*c^2*f^2
)*cosh(d*x + c))*sinh(d*x + c))*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1)
+ (2*b^3*d^2*f^2*x^2 + 4*b^3*d^2*e*f*x + 4*b^3*c*d*e*f - 2*b^3*c^2*f^2 - I*
(a^3 + 3*a*b^2)*d^2*f^2*x^2 - 2*I*(a^3 + 3*a*b^2)*d^2*e*f*x - 2*I*(a^3 + 3*
a*b^2)*c*d*e*f + I*(a^3 + 3*a*b^2)*c^2*f^2 + (2*b^3*d^2*f^2*x^2 + 4*b^3*d^2
*e*f*x + 4*b^3*c*d*e*f - 2*b^3*c^2*f^2 - I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 - 2*
I*(a^3 + 3*a*b^2)*d^2*e*f*x - 2*I*(a^3 + 3*a*b^2)*c*d*e*f + I*(a^3 + 3*a*b^
2)*c^2*f^2)*cosh(d*x + c)^4 + (8*b^3*d^2*f^2*x^2 + 16*b^3*d^2*e*f*x + 16*b^
3*c*d*e*f - 8*b^3*c^2*f^2 - 4*I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 - 8*I*(a^3 + 3*
a*b^2)*d^2*e*f*x - 8*I*(a^3 + 3*a*b^2)*c*d*e*f + 4*I*(a^3 + 3*a*b^2)*c^2*f^
2)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*b^3*d^2*f^2*x^2 + 4*b^3*d^2*e*f*x + 4
*b^3*c*d*e*f - 2*b^3*c^2*f^2 - I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 - 2*I*(a^3 + 3
```

```
*a*b^2)*d^2*e*f*x - 2*I*(a^3 + 3*a*b^2)*c*d*e*f + I*(a^3 + 3*a*b^2)*c^2*f^2
)*sinh(d*x + c)^4 + (4*b^3*d^2*f^2*x^2 + 8*b^3*d^2*e*f*x + 8*b^3*c*d*e*f -
4*b^3*c^2*f^2 - 2*I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 - 4*I*(a^3 + 3*a*b^2)*d^2*e
*f*x - 4*I*(a^3 + 3*a*b^2)*c*d*e*f + 2*I*(a^3 + 3*a*b^2)*c^2*f^2)*cosh(d*x
+ c)^2 + (4*b^3*d^2*f^2*x^2 + 8*b^3*d^2*e*f*x + 8*b^3*c*d*e*f - 4*b^3*c^2*f
^2 - 2*I*(a^3 + 3*a*b^2)*d^2*f^2*x^2 - 4*I*(a^3 + 3*a*b^2)*d^2*e*f*x - 4*I*
(a^3 + 3*a*b^2)*c*d*e*f + 2*I*(a^3 + 3*a*b^2)*c^2*f^2 + (12*b^3*d^2*f^2*x^2
 + 24*b^3*d^2*e*f*x + 24*b^3*c*d*e*f - 12*b^3*c^2*f^2 - 6*I*(a^3 + 3*a*b^2)
*d^2*f^2*x^2 - 12*I*(a^3 + 3*a*b^2)*d^2*e*f*x - 12*I*(a^3 + 3*a*b^2)*c*d*e*
f + 6*I*(a^3 + 3*a*b^2)*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*b^3
*d^2*f^2*x^2 + 16*b^3*d^2*e*f*x + 16*b^3*c*d*e*f - 8*b^3*c^2*f^2 - 4*I*(a^3
 + 3*a*b^2)*d^2*f^2*x^2 - 8*I*(a^3 + 3*a*b^2)*d^2*e*f*x - 8*I*(a^3 + 3*a*b^
2)*c*d*e*f + 4*I*(a^3 + 3*a*b^2)*c^2*f^2)*cosh(d*x + c)^3 + (8*b^3*d^2*f^2*
x^2 + 16*b^3*d^2*e*f*x + 16*b^3*c*d*e*f - 8*b^3*c^2*f^2 - 4*I*(a^3 + 3*a*b^
2)*d^2*f^2*x^2 - 8*I*(a^3 + 3*a*b^2)*d^2*e*f*x - 8*I*(a^3 + 3*a*b^2)*c*d*e*
f + 4*I*(a^3 + 3*a*b^2)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(-I*cosh(
d*x + c) - I*sinh(d*x + c) + 1) + 4*(b^3*f^2*cosh(d*x + c)^4 + 4*b^3*f^2*co
sh(d*x + c)*sinh(d*x + c)^3 + b^3*f^2*sinh(d*x + c)^4 + 2*b^3*f^2*cosh(d*x
+ c)^2 + b^3*f^2 + 2*(3*b^3*f^2*cosh(d*x + c)^2 + b^3*f^2)*sinh(d*x + c)^2
+ 4*(b^3*f^2*cosh(d*x + c)^3 + b^3*f^2*cosh(d*x + c))*sinh(d*x + c))*polylo
g(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2))/b) + 4*(b^3*f^2*cosh(d*x + c)^4 + 4*b^3*f^2*cosh(
d*x + c)*sinh(d*x + c)^3 + b^3*f^2*sinh(d*x + c)^4 + 2*b^3*f^2*cosh(d*x + c
)^2 + b^3*f^2 + 2*(3*b^3*f^2*cosh(d*x + c)^2 + b^3*f^2)*sinh(d*x + c)^2 + 4
*(b^3*f^2*cosh(d*x + c)^3 + b^3*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3
, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*
sqrt((a^2 + b^2)/b^2))/b) - (4*b^3*f^2 + (4*b^3*f^2 - 2*I*(a^3 + 3*a*b^2)*f
^2)*cosh(d*x + c)^4 + (16*b^3*f^2 - 8*I*(a^3 + 3*a*b^2)*f^2)*cosh(d*x + c)*
sinh(d*x + c)^3 + (4*b^3*f^2 - 2*I*(a^3 + 3*a*b^2)*f^2)*sinh(d*x + c)^4 - 2
*I*(a^3 + 3*a*b^2)*f^2 + (8*b^3*f^2 - 4*I*(a^3 + 3*a*b^2)*f^2)*cosh(d*x + c
)^2 + (8*b^3*f^2 - 4*I*(a^3 + 3*a*b^2)*f^2 + (24*b^3*f^2 - 12*I*(a^3 + 3*a*
b^2)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((16*b^3*f^2 - 8*I*(a^3 + 3*a*
b^2)*f^2)*cosh(d*x + c)^3 + (16*b^3*f^2 - 8*I*(a^3 + 3*a*b^2)*f^2)*cosh(d*x
 + c))*sinh(d*x + c))*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) - (4*b^
3*f^2 + (4*b^3*f^2 + 2*I*(a^3 + 3*a*b^2)*f^2)*cosh(d*x + c)^4 + (16*b^3*f^2
 + 8*I*(a^3 + 3*a*b^2)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*b^3*f^2 + 2*
I*(a^3 + 3*a*b^2)*f^2)*sinh(d*x + c)^4 + 2*I*(a^3 + 3*a*b^2)*f^2 + (8*b^3*f
^2 + 4*I*(a^3 + 3*a*b^2)*f^2)*cosh(d*x + c)^2 + (8*b^3*f^2 + 4*I*(a^3 + 3*a
*b^2)*f^2 + (24*b^3*f^2 + 12*I*(a^3 + 3*a*b^2)*f^2)*cosh(d*x + c)^2)*sinh(d
*x + c)^2 + ((16*b^3*f^2 + 8*I*(a^3 + 3*a*b^2)*f^2)*cosh(d*x + c)^3 + (16*b
^3*f^2 + 8*I*(a^3 + 3*a*b^2)*f^2)*cosh(d*x + c))*sinh(d*x + c))*polylog(3,
-I*cosh(d*x + c) - I*sinh(d*x + c)) + 2*((a^3 + a*b^2)*d^2*f^2*x^2 + (a^3 +
 a*b^2)*d^2*e^2 - 2*(a^3 + a*b^2)*d*e*f + 8*((a^2*b + b^3)*d*f^2*x + (a^2*b
 + b^3)*c*f^2)*cosh(d*x + c)^3 - 3*((a^3 + a*b^2)*d^2*f^2*x^2 + (a^3 + a*b^
2)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^3 + a*b^2)*d^2*e*f + (a^3 + a*b^
```

```
2)*d*f^2)*x)*cosh(d*x + c)^2 + 2*((a^3 + a*b^2)*d^2*e*f - (a^3 + a*b^2)*d*f
^2)*x - 4*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 + (a^2*b + b^3
)*d*e*f - 2*(a^2*b + b^3)*c*f^2 + (2*(a^2*b + b^3)*d^2*e*f - (a^2*b + b^3)*
d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d
*x + c)^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)*sinh(d*x + c)^3 + (
a^4 + 2*a^2*b^2 + b^4)*d^3*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^3*
cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^3 + 2*(3*(a^4 + 2*a^2*b^2 + b^4
)*d^3*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^3)*sinh(d*x + c)^2 + 4*((
a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d^3*co
sh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.30, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{sech}\left(dx+c\right)^{3}}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] a^3*d^2*f^2*integrate(x^2*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*
d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b
^4*d^2), x) + 3*a*b^2*d^2*f^2*integrate(x^2*e^(d*x + c)/(a^4*d^2*e^(2*d*x +
 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 +
 2*a^2*b^2*d^2 + b^4*d^2), x) + 2*b^3*d^2*f^2*integrate(x^2/(a^4*d^2*e^(2*d
*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d
^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + 2*a^3*d^2*e*f*integrate(x*e^(d*x + c)/(
```

```
a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x
+ 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + 6*a*b^2*d^2*e*f*integrate
(x*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b
^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + 4*b^3*d^2
*e*f*integrate(x/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) +
 b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) - a^2*b*f
^2*(2*(d*x + c)/((a^4 + 2*a^2*b^2 + b^4)*d^3) - log(e^(2*d*x + 2*c) + 1)/((
a^4 + 2*a^2*b^2 + b^4)*d^3)) - b^3*f^2*(2*(d*x + c)/((a^4 + 2*a^2*b^2 + b^4
)*d^3) - log(e^(2*d*x + 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d^3)) + (b^3*log
(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 + b^4)*d) -
b^3*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) - (a^3 + 3*a*b^2)
*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) + (a*e^(-d*x - c) + 2*b*e
^(-2*d*x - 2*c) - a*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)*e^(-2*d*x
 - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d))*e^2 - 2*a^3*f^2*arctan(e^(d*x +
 c))/((a^4 + 2*a^2*b^2 + b^4)*d^3) - 2*a*b^2*f^2*arctan(e^(d*x + c))/((a^4
+ 2*a^2*b^2 + b^4)*d^3) + (2*b*f^2*x + 2*b*e*f + (a*d*f^2*x^2*e^(3*c) + 2*a
*e*f*e^(3*c) + 2*(d*e*f + f^2)*a*x*e^(3*c))*e^(3*d*x) + 2*(b*d*f^2*x^2*e^(2
*c) + b*e*f*e^(2*c) + (2*d*e*f + f^2)*b*x*e^(2*c))*e^(2*d*x) - (a*d*f^2*x^2
*e^c - 2*a*e*f*e^c + 2*(d*e*f - f^2)*a*x*e^c)*e^(d*x))/(a^2*d^2 + b^2*d^2 +
 (a^2*d^2*e^(4*c) + b^2*d^2*e^(4*c))*e^(4*d*x) + 2*(a^2*d^2*e^(2*c) + b^2*d
^2*e^(2*c))*e^(2*d*x)) - integrate(2*(b^4*f^2*x^2 + 2*b^4*e*f*x - (a*b^3*f^
2*x^2*e^c + 2*a*b^3*e*f*x*e^c)*e^(d*x))/(a^4*b + 2*a^2*b^3 + b^5 - (a^4*b*e
^(2*c) + 2*a^2*b^3*e^(2*c) + b^5*e^(2*c))*e^(2*d*x) - 2*(a^5*e^c + 2*a^3*b^
2*e^c + a*b^4*e^c)*e^(d*x)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^2}{\cosh\left(c+d\,x\right)^3\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cosh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^2/(cosh(c + d*x)^3*(a + b*sinh(c + d*x))), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2 \operatorname{sech}^3\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sech(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**2*sech(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.315 $\int \frac{(e+fx)\mathbf{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=560

$$-\frac{iab^2f\text{Li}_2\left(-ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)^2}+\frac{iab^2f\text{Li}_2\left(ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)^2}-\frac{iaf\text{Li}_2\left(-ie^{c+dx}\right)}{2d^2\left(a^2+b^2\right)}+\frac{iaf\text{Li}_2\left(ie^{c+dx}\right)}{2d^2\left(a^2+b^2\right)}-\frac{bf\tanh(c+dx)}{2d^2\left(a^2+b^2\right)}+\frac{af\text{sech}(c+dx)}{2d^2\left(a^2+b^2\right)}+\frac{2a}{}$$

```
[Out] 2*a*b^2*(f*x+e)*arctan(exp(d*x+c))/(a^2+b^2)^2/d+a*(f*x+e)*arctan(exp(d*x+c
))/(a^2+b^2)/d-b^3*(f*x+e)*ln(1+exp(2*d*x+2*c))/(a^2+b^2)^2/d+b^3*(f*x+e)*l
n(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d+b^3*(f*x+e)*ln(1+b*exp(
d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d+1/2*I*a*f*polylog(2,I*exp(d*x+c))
/(a^2+b^2)/d^2-1/2*I*a*f*polylog(2,-I*exp(d*x+c))/(a^2+b^2)/d^2+I*a*b^2*f*p
olylog(2,I*exp(d*x+c))/(a^2+b^2)^2/d^2-I*a*b^2*f*polylog(2,-I*exp(d*x+c))/(
a^2+b^2)^2/d^2-1/2*b^3*f*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2)^2/d^2+b^3*f*p
olylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^2+b^3*f*polylog(2
,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^2+1/2*a*f*sech(d*x+c)/(a^
2+b^2)/d^2+1/2*b*(f*x+e)*sech(d*x+c)^2/(a^2+b^2)/d-1/2*b*f*tanh(d*x+c)/(a^2
+b^2)/d^2+1/2*a*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/(a^2+b^2)/d
```

Rubi [A] time = 0.94, antiderivative size = 560, normalized size of antiderivative = 1.00, number of steps used = 31, number of rules used = 12, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.462$, Rules used = {5573, 5561, 2190, 2279, 2391, 6742, 4180, 3718, 4185, 5451, 3767, 8}

$$\frac{b^3f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^2}+\frac{b^3f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{d^2\left(a^2+b^2\right)^2}-\frac{b^3f\text{PolyLog}\left(2,-e^{2(c+dx)}\right)}{2d^2\left(a^2+b^2\right)^2}-\frac{iab^2f\text{PolyLog}\left(2,-ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a*b^2*(e + f*x)*ArcTan[E^(c + d*x)])/((a^2 + b^2)^2*d) + (a*(e + f*x)*Ar
cTan[E^(c + d*x)])/((a^2 + b^2)*d) + (b^3*(e + f*x)*Log[1 + (b*E^(c + d*x))
/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)^2*d) + (b^3*(e + f*x)*Log[1 + (b*E^(c
 + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^2*d) - (b^3*(e + f*x)*Log[1 +
 E^(2*(c + d*x))])/((a^2 + b^2)^2*d) - (I*a*b^2*f*PolyLog[2, (-I)*E^(c + d*
x)])/((a^2 + b^2)^2*d^2) - ((I/2)*a*f*PolyLog[2, (-I)*E^(c + d*x)])/((a^2 +
 b^2)*d^2) + (I*a*b^2*f*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^2)^2*d^2) + ((
I/2)*a*f*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^2)*d^2) + (b^3*f*PolyLog[2, -
((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^2) + (b^3*f*Poly
Log[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^2) - (b^
```

```
3*f*PolyLog[2, -E^(2*(c + d*x))])/(2*(a^2 + b^2)^2*d^2) + (a*f*Sech[c + d*x
])/(2*(a^2 + b^2)*d^2) + (b*(e + f*x)*Sech[c + d*x]^2)/(2*(a^2 + b^2)*d) -
(b*f*Tanh[c + d*x])/(2*(a^2 + b^2)*d^2) + (a*(e + f*x)*Sech[c + d*x]*Tanh[c
 + d*x])/(2*(a^2 + b^2)*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
```

```
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\text{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{sech}^3(c+dx)(a-b\sinh(c+dx))\,dx}{a^2+b^2} + \frac{b^2\int \frac{(e+fx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= \frac{b^2\int (e+fx)\text{sech}(c+dx)(a-b\sinh(c+dx))\,dx}{\left(a^2+b^2\right)^2} + \frac{b^4\int \frac{(e+fx)\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{\left(a^2+b^2\right)^2} + \frac{\int (\ldots}{}$$

$$= -\frac{b^3(e+fx)^2}{2\left(a^2+b^2\right)^2 f} + \frac{b^2\int (a(e+fx)\text{sech}(c+dx) - b(e+fx)\tanh(c+dx))\,dx}{\left(a^2+b^2\right)^2} + \frac{b^4 \ldots}{}$$

$$= -\frac{b^3(e+fx)^2}{2\left(a^2+b^2\right)^2 f} + \frac{b^3(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^2 d} + \frac{b^3(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}} \ldots\right.}{\left(a^2+b^2\right)^2 d}$$

$$= \frac{2ab^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} + \frac{b^3(e+fx)\log\left(1+\frac{be^{c+\ldots}}{a-\sqrt{a^2 \ldots}}\right.}{\left(a^2+b^2\right)^2 d}$$

$$= \frac{2ab^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} + \frac{b^3(e+fx)\log\left(1+\frac{be^{c+\ldots}}{a-\sqrt{a^2 \ldots}}\right.}{\left(a^2+b^2\right)^2 d}$$

$$= \frac{2ab^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} + \frac{b^3(e+fx)\log\left(1+\frac{be^{c+\ldots}}{a-\sqrt{a^2 \ldots}}\right.}{\left(a^2+b^2\right)^2 d}$$

$$= \frac{2ab^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} + \frac{b^3(e+fx)\log\left(1+\frac{be^{c+\ldots}}{a-\sqrt{a^2 \ldots}}\right.}{\left(a^2+b^2\right)^2 d}$$

Mathematica [A] time = 6.87, size = 588, normalized size = 1.05

$$\frac{2a^3de\tan^{-1}\left(e^{c+dx}\right) + ia^3f(c+dx)\log\left(1-ie^{c+dx}\right) - ia^3f(c+dx)\log\left(1+ie^{c+dx}\right) - 2a^3cf\tan^{-1}\left(e^{c+dx}\right) + d\left(a^2 + \ldots\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*b^3*d*e*(c + d*x) - 2*b^3*c*f*(c + d*x) + 2*a^3*d*e*ArcTan[E^(c + d*x)]
+ 6*a*b^2*d*e*ArcTan[E^(c + d*x)] - 2*a^3*c*f*ArcTan[E^(c + d*x)] - 6*a*b^2
```

```
*c*f*ArcTan[E^(c + d*x)] + I*a^3*f*(c + d*x)*Log[1 - I*E^(c + d*x)] + (3*I)
*a*b^2*f*(c + d*x)*Log[1 - I*E^(c + d*x)] - I*a^3*f*(c + d*x)*Log[1 + I*E^(
c + d*x)] - (3*I)*a*b^2*f*(c + d*x)*Log[1 + I*E^(c + d*x)] + 2*b^3*f*(c + d
*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*b^3*f*(c + d*x)*Log[
1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 2*b^3*d*e*Log[1 + E^(2*(c + d*
x))] + 2*b^3*c*f*Log[1 + E^(2*(c + d*x))] - 2*b^3*f*(c + d*x)*Log[1 + E^(2*
(c + d*x))] + 2*b^3*d*e*Log[a + b*Sinh[c + d*x]] - 2*b^3*c*f*Log[a + b*Sinh
[c + d*x]] - I*a*(a^2 + 3*b^2)*f*PolyLog[2, (-I)*E^(c + d*x)] + I*a*(a^2 +
3*b^2)*f*PolyLog[2, I*E^(c + d*x)] + 2*b^3*f*PolyLog[2, (b*E^(c + d*x))/(-a
 + Sqrt[a^2 + b^2])] + 2*b^3*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))] - b^3*f*PolyLog[2, -E^(2*(c + d*x))] + (a^2 + b^2)*d*(e + f*x)*Sec
h[c + d*x]^2*(b + a*Sinh[c + d*x]) + (a^2 + b^2)*f*Sech[c + d*x]*(a - b*Sin
h[c + d*x]))/(2*(a^2 + b^2)^2*d^2)
```

<u>fricas</u> [B] time = 1.00, size = 4699, normalized size = 8.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e + (a^3 + a*b^2)*f)*cosh(d*x
 + c)^3 + 2*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e + (a^3 + a*b^2)*f)*sin
h(d*x + c)^3 + 2*(2*(a^2*b + b^3)*d*f*x + 2*(a^2*b + b^3)*d*e + (a^2*b + b^
3)*f)*cosh(d*x + c)^2 + 2*(2*(a^2*b + b^3)*d*f*x + 2*(a^2*b + b^3)*d*e + (a
^2*b + b^3)*f + 3*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e + (a^3 + a*b^2)*
f)*cosh(d*x + c))*sinh(d*x + c)^2 + 2*(a^2*b + b^3)*f - 2*((a^3 + a*b^2)*d*
f*x + (a^3 + a*b^2)*d*e - (a^3 + a*b^2)*f)*cosh(d*x + c) + 2*(b^3*f*cosh(d*
x + c)^4 + 4*b^3*f*cosh(d*x + c)*sinh(d*x + c)^3 + b^3*f*sinh(d*x + c)^4 +
2*b^3*f*cosh(d*x + c)^2 + b^3*f + 2*(3*b^3*f*cosh(d*x + c)^2 + b^3*f)*sinh(
d*x + c)^2 + 4*(b^3*f*cosh(d*x + c)^3 + b^3*f*cosh(d*x + c))*sinh(d*x + c))
*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x +
 c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(b^3*f*cosh(d*x + c)^4 + 4*b^3*f
*cosh(d*x + c)*sinh(d*x + c)^3 + b^3*f*sinh(d*x + c)^4 + 2*b^3*f*cosh(d*x +
 c)^2 + b^3*f + 2*(3*b^3*f*cosh(d*x + c)^2 + b^3*f)*sinh(d*x + c)^2 + 4*(b^
3*f*cosh(d*x + c)^3 + b^3*f*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x
 + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2) - b)/b + 1) - ((2*b^3*f - I*(a^3 + 3*a*b^2)*f)*cosh(d*x + c)^4 + (
8*b^3*f - 4*I*(a^3 + 3*a*b^2)*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*b^3*f -
 I*(a^3 + 3*a*b^2)*f)*sinh(d*x + c)^4 + 2*b^3*f + (4*b^3*f - 2*I*(a^3 + 3*a
*b^2)*f)*cosh(d*x + c)^2 + (4*b^3*f + (12*b^3*f - 6*I*(a^3 + 3*a*b^2)*f)*co
sh(d*x + c)^2 - 2*I*(a^3 + 3*a*b^2)*f)*sinh(d*x + c)^2 - I*(a^3 + 3*a*b^2)*
f + ((8*b^3*f - 4*I*(a^3 + 3*a*b^2)*f)*cosh(d*x + c)^3 + (8*b^3*f - 4*I*(a^
3 + 3*a*b^2)*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(I*cosh(d*x + c) + I*sin
h(d*x + c)) - ((2*b^3*f + I*(a^3 + 3*a*b^2)*f)*cosh(d*x + c)^4 + (8*b^3*f +
```

```
4*I*(a^3 + 3*a*b^2)*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*b^3*f + I*(a^3 +
 3*a*b^2)*f)*sinh(d*x + c)^4 + 2*b^3*f + (4*b^3*f + 2*I*(a^3 + 3*a*b^2)*f)*
cosh(d*x + c)^2 + (4*b^3*f + (12*b^3*f + 6*I*(a^3 + 3*a*b^2)*f)*cosh(d*x +
c)^2 + 2*I*(a^3 + 3*a*b^2)*f)*sinh(d*x + c)^2 + I*(a^3 + 3*a*b^2)*f + ((8*b
^3*f + 4*I*(a^3 + 3*a*b^2)*f)*cosh(d*x + c)^3 + (8*b^3*f + 4*I*(a^3 + 3*a*b
^2)*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(-I*cosh(d*x + c) - I*sinh(d*x +
c)) + 2*(b^3*d*e - b^3*c*f + (b^3*d*e - b^3*c*f)*cosh(d*x + c)^4 + 4*(b^3*d
*e - b^3*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^3*d*e - b^3*c*f)*sinh(d*x
+ c)^4 + 2*(b^3*d*e - b^3*c*f)*cosh(d*x + c)^2 + 2*(b^3*d*e - b^3*c*f + 3*(
b^3*d*e - b^3*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^3*d*e - b^3*c*f
)*cosh(d*x + c)^3 + (b^3*d*e - b^3*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(2
*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2
*(b^3*d*e - b^3*c*f + (b^3*d*e - b^3*c*f)*cosh(d*x + c)^4 + 4*(b^3*d*e - b^
3*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^3*d*e - b^3*c*f)*sinh(d*x + c)^4
+ 2*(b^3*d*e - b^3*c*f)*cosh(d*x + c)^2 + 2*(b^3*d*e - b^3*c*f + 3*(b^3*d*e
 - b^3*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^3*d*e - b^3*c*f)*cosh(
d*x + c)^3 + (b^3*d*e - b^3*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh
(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(b^3*d
*f*x + b^3*c*f + (b^3*d*f*x + b^3*c*f)*cosh(d*x + c)^4 + 4*(b^3*d*f*x + b^3
*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^3*d*f*x + b^3*c*f)*sinh(d*x + c)^4
 + 2*(b^3*d*f*x + b^3*c*f)*cosh(d*x + c)^2 + 2*(b^3*d*f*x + b^3*c*f + 3*(b^
3*d*f*x + b^3*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^3*d*f*x + b^3*c
*f)*cosh(d*x + c)^3 + (b^3*d*f*x + b^3*c*f)*cosh(d*x + c))*sinh(d*x + c))*l
og(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(b^3*d*f*x + b^3*c*f + (b^3*d*f*x + b^3
*c*f)*cosh(d*x + c)^4 + 4*(b^3*d*f*x + b^3*c*f)*cosh(d*x + c)*sinh(d*x + c)
^3 + (b^3*d*f*x + b^3*c*f)*sinh(d*x + c)^4 + 2*(b^3*d*f*x + b^3*c*f)*cosh(d
*x + c)^2 + 2*(b^3*d*f*x + b^3*c*f + 3*(b^3*d*f*x + b^3*c*f)*cosh(d*x + c)^
2)*sinh(d*x + c)^2 + 4*((b^3*d*f*x + b^3*c*f)*cosh(d*x + c)^3 + (b^3*d*f*x
+ b^3*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x
 + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) -
 (2*b^3*d*e - 2*b^3*c*f + (2*b^3*d*e - 2*b^3*c*f - I*(a^3 + 3*a*b^2)*d*e +
I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)^4 + (8*b^3*d*e - 8*b^3*c*f - 4*I*(a^3
+ 3*a*b^2)*d*e + 4*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (
2*b^3*d*e - 2*b^3*c*f - I*(a^3 + 3*a*b^2)*d*e + I*(a^3 + 3*a*b^2)*c*f)*sinh
(d*x + c)^4 - I*(a^3 + 3*a*b^2)*d*e + I*(a^3 + 3*a*b^2)*c*f + (4*b^3*d*e -
4*b^3*c*f - 2*I*(a^3 + 3*a*b^2)*d*e + 2*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c
)^2 + (4*b^3*d*e - 4*b^3*c*f - 2*I*(a^3 + 3*a*b^2)*d*e + 2*I*(a^3 + 3*a*b^2
)*c*f + (12*b^3*d*e - 12*b^3*c*f - 6*I*(a^3 + 3*a*b^2)*d*e + 6*I*(a^3 + 3*a
*b^2)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*b^3*d*e - 8*b^3*c*f - 4*I
*(a^3 + 3*a*b^2)*d*e + 4*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)^3 + (8*b^3*d*
e - 8*b^3*c*f - 4*I*(a^3 + 3*a*b^2)*d*e + 4*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x
 + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + I) - (2*b^3*d*e -
 2*b^3*c*f + (2*b^3*d*e - 2*b^3*c*f + I*(a^3 + 3*a*b^2)*d*e - I*(a^3 + 3*a*
b^2)*c*f)*cosh(d*x + c)^4 + (8*b^3*d*e - 8*b^3*c*f + 4*I*(a^3 + 3*a*b^2)*d*
```

```
e - 4*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*b^3*d*e - 2
*b^3*c*f + I*(a^3 + 3*a*b^2)*d*e - I*(a^3 + 3*a*b^2)*c*f)*sinh(d*x + c)^4 +
 I*(a^3 + 3*a*b^2)*d*e - I*(a^3 + 3*a*b^2)*c*f + (4*b^3*d*e - 4*b^3*c*f + 2
*I*(a^3 + 3*a*b^2)*d*e - 2*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)^2 + (4*b^3*
d*e - 4*b^3*c*f + 2*I*(a^3 + 3*a*b^2)*d*e - 2*I*(a^3 + 3*a*b^2)*c*f + (12*b
^3*d*e - 12*b^3*c*f + 6*I*(a^3 + 3*a*b^2)*d*e - 6*I*(a^3 + 3*a*b^2)*c*f)*co
sh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*b^3*d*e - 8*b^3*c*f + 4*I*(a^3 + 3*a*b
^2)*d*e - 4*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)^3 + (8*b^3*d*e - 8*b^3*c*f
 + 4*I*(a^3 + 3*a*b^2)*d*e - 4*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c))*sinh(d
*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - I) - (2*b^3*d*f*x + 2*b^3*c*f
+ (2*b^3*d*f*x + 2*b^3*c*f + I*(a^3 + 3*a*b^2)*d*f*x + I*(a^3 + 3*a*b^2)*c*
f)*cosh(d*x + c)^4 + (8*b^3*d*f*x + 8*b^3*c*f + 4*I*(a^3 + 3*a*b^2)*d*f*x +
 4*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*b^3*d*f*x + 2*
b^3*c*f + I*(a^3 + 3*a*b^2)*d*f*x + I*(a^3 + 3*a*b^2)*c*f)*sinh(d*x + c)^4
+ I*(a^3 + 3*a*b^2)*d*f*x + I*(a^3 + 3*a*b^2)*c*f + (4*b^3*d*f*x + 4*b^3*c*
f + 2*I*(a^3 + 3*a*b^2)*d*f*x + 2*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)^2 +
(4*b^3*d*f*x + 4*b^3*c*f + 2*I*(a^3 + 3*a*b^2)*d*f*x + 2*I*(a^3 + 3*a*b^2)*
c*f + (12*b^3*d*f*x + 12*b^3*c*f + 6*I*(a^3 + 3*a*b^2)*d*f*x + 6*I*(a^3 + 3
*a*b^2)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*b^3*d*f*x + 8*b^3*c*f +
 4*I*(a^3 + 3*a*b^2)*d*f*x + 4*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)^3 + (8*
b^3*d*f*x + 8*b^3*c*f + 4*I*(a^3 + 3*a*b^2)*d*f*x + 4*I*(a^3 + 3*a*b^2)*c*f
)*cosh(d*x + c))*sinh(d*x + c))*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1)
- (2*b^3*d*f*x + 2*b^3*c*f + (2*b^3*d*f*x + 2*b^3*c*f - I*(a^3 + 3*a*b^2)*d
*f*x - I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)^4 + (8*b^3*d*f*x + 8*b^3*c*f -
4*I*(a^3 + 3*a*b^2)*d*f*x - 4*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)*sinh(d*x
 + c)^3 + (2*b^3*d*f*x + 2*b^3*c*f - I*(a^3 + 3*a*b^2)*d*f*x - I*(a^3 + 3*a
*b^2)*c*f)*sinh(d*x + c)^4 - I*(a^3 + 3*a*b^2)*d*f*x - I*(a^3 + 3*a*b^2)*c*
f + (4*b^3*d*f*x + 4*b^3*c*f - 2*I*(a^3 + 3*a*b^2)*d*f*x - 2*I*(a^3 + 3*a*b
^2)*c*f)*cosh(d*x + c)^2 + (4*b^3*d*f*x + 4*b^3*c*f - 2*I*(a^3 + 3*a*b^2)*d
*f*x - 2*I*(a^3 + 3*a*b^2)*c*f + (12*b^3*d*f*x + 12*b^3*c*f - 6*I*(a^3 + 3*
a*b^2)*d*f*x - 6*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 +
((8*b^3*d*f*x + 8*b^3*c*f - 4*I*(a^3 + 3*a*b^2)*d*f*x - 4*I*(a^3 + 3*a*b^2)
*c*f)*cosh(d*x + c)^3 + (8*b^3*d*f*x + 8*b^3*c*f - 4*I*(a^3 + 3*a*b^2)*d*f*
x - 4*I*(a^3 + 3*a*b^2)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-I*cosh(d*x
+ c) - I*sinh(d*x + c) + 1) - 2*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e -
3*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e + (a^3 + a*b^2)*f)*cosh(d*x + c)
^2 - (a^3 + a*b^2)*f - 2*(2*(a^2*b + b^3)*d*f*x + 2*(a^2*b + b^3)*d*e + (a^
2*b + b^3)*f)*cosh(d*x + c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^2*co
sh(d*x + c)^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)*sinh(d*x + c)^3
 + (a^4 + 2*a^2*b^2 + b^4)*d^2*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*
d^2*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^2 + 2*(3*(a^4 + 2*a^2*b^2 +
 b^4)*d^2*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^2)*sinh(d*x + c)^2 +
4*((a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d^
2*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.27, size = 2051, normalized size = 3.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 2/d^2/(a^2+b^2)*b^3*f*c/(2*a^2+2*b^2)*ln(1+exp(2*d*x+2*c))-2/d^2/(a^2+b^2)*
b^3*f*c/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d/(a^2+b^2)*b
^3*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))
*x+2/d^2/(a^2+b^2)*b^3*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/
(a+(a^2+b^2)^(1/2)))*c-2/d/(a^2+b^2)*b^3*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))
*x-2/d^2/(a^2+b^2)*b^3*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c-2/d/(a^2+b^2)*b
^3*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*x-2/d^2/(a^2+b^2)*b^3*f/(2*a^2+2*b^2)
*ln(1-I*exp(d*x+c))*c+2/d/(a^2+b^2)*b^3*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(
a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+2/d^2/(a^2+b^2)*b^3*f/(2*a^2+2*b^
2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+6/d/(a^2+b^
2)*a*b^2*e/(2*a^2+2*b^2)*arctan(exp(d*x+c))-2/d^2/(a^2+b^2)*a^3*f*c/(2*a^2+
2*b^2)*arctan(exp(d*x+c))+I/d^2/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*dilog(1-I*exp
(d*x+c))-I/d^2/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))+2/d^2/(a
^2+b^2)*b^3*f/(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^
2+b^2)^(1/2)))+2/d^2/(a^2+b^2)*b^3*f/(2*a^2+2*b^2)*dilog((b*exp(d*x+c)+(a^2
+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-2/d^2/(a^2+b^2)*b^3*f/(2*a^2+2*b^2)*dil
og(1+I*exp(d*x+c))-2/d^2/(a^2+b^2)*b^3*f/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+c)
)+2/d/(a^2+b^2)*b^3*e/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2
/d/(a^2+b^2)*b^3*e/(2*a^2+2*b^2)*ln(1+exp(2*d*x+2*c))+2/d/(a^2+b^2)*a^3*e/(
2*a^2+2*b^2)*arctan(exp(d*x+c))-6/d^2/(a^2+b^2)*a*b^2*f*c/(2*a^2+2*b^2)*arc
tan(exp(d*x+c))+I/d/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*x+I/d^
2/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*c+1/d/(a^2+b^2)^(1/2)*a*
b*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d/(a^
2+b^2)^(3/2)*a*b^3*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^
2)^(1/2))-1/d/(a^2+b^2)^(3/2)*a^3*b*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*
x+c)+2*a)/(a^2+b^2)^(1/2))+3*I/d^2/(a^2+b^2)*a*b^2*f/(2*a^2+2*b^2)*dilog(1-
I*exp(d*x+c))-3*I/d^2/(a^2+b^2)*a*b^2*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))
-I/d/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*x-I/d^2/(a^2+b^2)*a^3
```

```
*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c-1/d^2/(a^2+b^2)^(1/2)*a*b*f*c/(2*a^2+
2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d^2/(a^2+b^2)^(3
/2)*a*b^3*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2
))+1/d^2/(a^2+b^2)^(3/2)*a^3*b*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c
)+2*a)/(a^2+b^2)^(1/2))+3*I/d/(a^2+b^2)*a*b^2*f/(2*a^2+2*b^2)*ln(1-I*exp(d*
x+c))*x+3*I/d^2/(a^2+b^2)*a*b^2*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*c-3*I/d/
(a^2+b^2)*a*b^2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*x-3*I/d^2/(a^2+b^2)*a*b^
2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c+(a*d*f*x*exp(3*d*x+3*c)+a*d*e*exp(3*
d*x+3*c)+2*b*d*f*x*exp(2*d*x+2*c)-a*d*f*x*exp(d*x+c)+a*f*exp(3*d*x+3*c)+2*b
*d*e*exp(2*d*x+2*c)-a*d*e*exp(d*x+c)+b*f*exp(2*d*x+2*c)+a*f*exp(d*x+c)+b*f)
/d^2/(a^2+b^2)/(1+exp(2*d*x+2*c))^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(\frac{b^3\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{b^3\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{\left(a^3+3\,ab^2\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{ae^{(-dx}}{\left(a^2+b^2+2\left(a\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] (b^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 + b^
4)*d) - b^3*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) - (a^3 +
3*a*b^2)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) + (a*e^(-d*x - c)
 + 2*b*e^(-2*d*x - 2*c) - a*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)*e
^(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d))*e + f*(((a*d*x*e^(3*c)
+ a*e^(3*c))*e^(3*d*x) + (2*b*d*x*e^(2*c) + b*e^(2*c))*e^(2*d*x) - (a*d*x*e
^c - a*e^c)*e^(d*x) + b)/(a^2*d^2 + b^2*d^2 + (a^2*d^2*e^(4*c) + b^2*d^2*e^
(4*c))*e^(4*d*x) + 2*(a^2*d^2*e^(2*c) + b^2*d^2*e^(2*c))*e^(2*d*x)) - 8*int
egrate(-1/4*(a*b^3*x*e^(d*x + c) - b^4*x)/(a^4*b + 2*a^2*b^3 + b^5 - (a^4*b
*e^(2*c) + 2*a^2*b^3*e^(2*c) + b^5*e^(2*c))*e^(2*d*x) - 2*(a^5*e^c + 2*a^3*
b^2*e^c + a*b^4*e^c)*e^(d*x)), x) + 8*integrate(1/8*(2*b^3*x + (a^3*e^c + 3
*a*b^2*e^c)*x*e^(d*x))/(a^4 + 2*a^2*b^2 + b^4 + (a^4*e^(2*c) + 2*a^2*b^2*e^
(2*c) + b^4*e^(2*c))*e^(2*d*x)), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{{\mathrm{cosh}\left(c+d\,x\right)}^3\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)^3*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)*sech(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.316 $\int \frac{\mathrm{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=119

$$\frac{a\left(a^2+3b^2\right)\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)^2}+\frac{\mathrm{sech}^2(c+dx)(a\sinh(c+dx)+b)}{2d\left(a^2+b^2\right)}+\frac{b^3\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{b^3\log(\cosh(c$$

```
[Out] 1/2*a*(a^2+3*b^2)*arctan(sinh(d*x+c))/(a^2+b^2)^2/d-b^3*ln(cosh(d*x+c))/(a^
2+b^2)^2/d+b^3*ln(a+b*sinh(d*x+c))/(a^2+b^2)^2/d+1/2*sech(d*x+c)^2*(b+a*sin
h(d*x+c))/(a^2+b^2)/d
```

Rubi [A] time = 0.14, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2668, 741, 801, 635, 203, 260}

$$\frac{b^3\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{a\left(a^2+3b^2\right)\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)^2}-\frac{b^3\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{\mathrm{sech}^2(c+dx)(a\sinh(c+dx$$

Antiderivative was successfully verified.

```
[In] Int[Sech[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(a^2 + 3*b^2)*ArcTan[Sinh[c + d*x]])/(2*(a^2 + b^2)^2*d) - (b^3*Log[Cosh
[c + d*x]])/((a^2 + b^2)^2*d) + (b^3*Log[a + b*Sinh[c + d*x]])/((a^2 + b^2)
^2*d) + (Sech[c + d*x]^2*(b + a*Sinh[c + d*x]))/(2*(a^2 + b^2)*d)
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 741

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(a*e + c*d*x)*(a + c*x^2)^(p + 1))/(2*a*(p + 1)*(c*d^2
+ a*e^2)), x] + Dist[1/(2*a*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*Simp[
c*d^2*(2*p + 3) + a*e^2*(m + 2*p + 3) + c*e*d*(m + 2*p + 4)*x, x]*(a + c*x^
2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, m}, x] && NeQ[c*d^2 + a*e^2, 0] &&
 LtQ[p, -1] && IntQuadraticQ[a, 0, c, d, e, m, p, x]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{b^3\operatorname{Subst}\left(\int \frac{1}{(a+x)\left(-b^2-x^2\right)^2}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= \frac{\operatorname{sech}^2(c+dx)(b+a\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{b\operatorname{Subst}\left(\int \frac{a^2+2b^2+ax}{(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{2\left(a^2+b^2\right)d}$$

$$= \frac{\operatorname{sech}^2(c+dx)(b+a\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{b\operatorname{Subst}\left(\int \left(-\frac{2b^2}{\left(a^2+b^2\right)(a+x)} + \frac{-a^3-3ab^2+2b^2x}{\left(a^2+b^2\right)\left(b^2+x^2\right)}\right)dx, x, b\right.}{2\left(a^2+b^2\right)d}$$

$$= \frac{b^3\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)^2 d} + \frac{\operatorname{sech}^2(c+dx)(b+a\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{b\operatorname{Subst}\left(\int \frac{-a^3-3ab^2}{b^2+x}\right.}{2\left(\right.}$$

$$= \frac{b^3\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)^2 d} + \frac{\operatorname{sech}^2(c+dx)(b+a\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{b^3\operatorname{Subst}\left(\int \frac{x}{b^2+x^2}\,d\right.}{\left(a^2+\right.}$$

$$= \frac{a\left(a^2+3b^2\right)\tan^{-1}(\sinh(c+dx))}{2\left(a^2+b^2\right)^2 d} - \frac{b^3\log(\cosh(c+dx))}{\left(a^2+b^2\right)^2 d} + \frac{b^3\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)^2 d}$$

Mathematica [A] time = 0.18, size = 104, normalized size = 0.87

$$\frac{b\left(a^2+b^2\right)\operatorname{sech}^2(c+dx) + 2a\left(a^2+3b^2\right)\tan^{-1}\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right) + a\left(a^2+b^2\right)\tanh(c+dx)\operatorname{sech}(c+dx) + 2b^3(}{2d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sech[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a*(a^2 + 3*b^2)*ArcTan[Tanh[(c + d*x)/2]] + 2*b^3*(-Log[Cosh[c + d*x]] +
 Log[a + b*Sinh[c + d*x]]) + b*(a^2 + b^2)*Sech[c + d*x]^2 + a*(a^2 + b^2)*
Sech[c + d*x]*Tanh[c + d*x])/(2*(a^2 + b^2)^2*d)
```

fricas [B] time = 0.50, size = 893, normalized size = 7.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((a^3 + a*b^2)*cosh(d*x + c)^3 + (a^3 + a*b^2)*sinh(d*x + c)^3 + 2*(a^2*b +
 b^3)*cosh(d*x + c)^2 + (2*a^2*b + 2*b^3 + 3*(a^3 + a*b^2)*cosh(d*x + c))*s
inh(d*x + c)^2 + ((a^3 + 3*a*b^2)*cosh(d*x + c)^4 + 4*(a^3 + 3*a*b^2)*cosh(
d*x + c)*sinh(d*x + c)^3 + (a^3 + 3*a*b^2)*sinh(d*x + c)^4 + a^3 + 3*a*b^2
+ 2*(a^3 + 3*a*b^2)*cosh(d*x + c)^2 + 2*(a^3 + 3*a*b^2 + 3*(a^3 + 3*a*b^2)*
cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^3 + 3*a*b^2)*cosh(d*x + c)^3 + (a^
3 + 3*a*b^2)*cosh(d*x + c))*sinh(d*x + c))*arctan(cosh(d*x + c) + sinh(d*x
+ c)) - (a^3 + a*b^2)*cosh(d*x + c) + (b^3*cosh(d*x + c)^4 + 4*b^3*cosh(d*x
 + c)*sinh(d*x + c)^3 + b^3*sinh(d*x + c)^4 + 2*b^3*cosh(d*x + c)^2 + b^3 +
 2*(3*b^3*cosh(d*x + c)^2 + b^3)*sinh(d*x + c)^2 + 4*(b^3*cosh(d*x + c)^3 +
 b^3*cosh(d*x + c))*sinh(d*x + c))*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x +
c) - sinh(d*x + c))) - (b^3*cosh(d*x + c)^4 + 4*b^3*cosh(d*x + c)*sinh(d*x
+ c)^3 + b^3*sinh(d*x + c)^4 + 2*b^3*cosh(d*x + c)^2 + b^3 + 2*(3*b^3*cosh(
d*x + c)^2 + b^3)*sinh(d*x + c)^2 + 4*(b^3*cosh(d*x + c)^3 + b^3*cosh(d*x +
 c))*sinh(d*x + c))*log(2*cosh(d*x + c)/(cosh(d*x + c) - sinh(d*x + c))) -
(a^3 + a*b^2 - 3*(a^3 + a*b^2)*cosh(d*x + c)^2 - 4*(a^2*b + b^3)*cosh(d*x +
 c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^4 + 4*(a^4 + 2
*a^2*b^2 + b^4)*d*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d
*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^2 + 2*(3*(a^4
+ 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d)*sinh(d*x
+ c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d + 4*((a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x
+ c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c))*sinh(d*x + c))
```

giac [B] time = 0.59, size = 282, normalized size = 2.37

$$\frac{\frac{4\,b^4 \log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{a^4 b+2\,a^2 b^3+b^5}-\frac{2\,b^3 \log\left(\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+4\right)}{a^4+2\,a^2 b^2+b^4}+\frac{\left(\pi+2\,\arctan\left(\frac{1}{2}\left(e^{(2\,dx+2\,c)}-1\right)e^{(-dx-c)}\right)\right)\left(a^3+3\,ab^2\right)}{a^4+2\,a^2 b^2+b^4}+\frac{2\left(b^3\left(e^{(dx+c)}-e^{(-dx-\cdots}\right.\right.}{\cdots}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/4*(4*b^4*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/(a^4*b + 2*a^2*b^
3 + b^5) - 2*b^3*log((e^(d*x + c) - e^(-d*x - c))^2 + 4)/(a^4 + 2*a^2*b^2 +
 b^4) + (pi + 2*arctan(1/2*(e^(2*d*x + 2*c) - 1)*e^(-d*x - c)))*(a^3 + 3*a*
b^2)/(a^4 + 2*a^2*b^2 + b^4) + 2*(b^3*(e^(d*x + c) - e^(-d*x - c))^2 + 2*a^
3*(e^(d*x + c) - e^(-d*x - c)) + 2*a*b^2*(e^(d*x + c) - e^(-d*x - c)) + 4*a
^2*b + 8*b^3)/((a^4 + 2*a^2*b^2 + b^4)*((e^(d*x + c) - e^(-d*x - c))^2 + 4)
))/d
```

maple [B] time = 0.00, size = 468, normalized size = 3.93

$$\frac{b^3\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\left(a^4+2a^2b^2+b^4\right)}-\frac{\left(\tanh^3\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a^3}{d\left(a^4+2a^2b^2+b^4\right)\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2}-\frac{\left(\tanh^3 \cdots\right.}{d\left(a^4+2a^2b^2+b \cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/d*b^3/(a^4+2*a^2*b^2+b^4)*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c
)*b-a)-1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2
*c)^3*a^3-1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+
1/2*c)^3*a*b^2-2/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2
*d*x+1/2*c)^2*a^2*b-2/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tan
h(1/2*d*x+1/2*c)^2*b^3+1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*
tanh(1/2*d*x+1/2*c)*a^3+1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2
*tanh(1/2*d*x+1/2*c)*a*b^2-1/d/(a^4+2*a^2*b^2+b^4)*b^3*ln(tanh(1/2*d*x+1/2*
c)^2+1)+1/d/(a^4+2*a^2*b^2+b^4)*arctan(tanh(1/2*d*x+1/2*c))*a^3+3/d/(a^4+2*
a^2*b^2+b^4)*arctan(tanh(1/2*d*x+1/2*c))*a*b^2
```

maxima [A] time = 0.54, size = 216, normalized size = 1.82

$$\frac{b^3\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{b^3\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{\left(a^3+3\,ab^2\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{ae^{(-dx-c)}+\cdots}{\left(a^2+b^2+2\left(a^2+\cdots\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] b^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 + b^4
)*d) - b^3*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) - (a^3 + 3
*a*b^2)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) + (a*e^(-d*x - c)
+ 2*b*e^(-2*d*x - 2*c) - a*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)*e^
(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d)
```

mupad [B] time = 2.20, size = 381, normalized size = 3.20

$$\frac{\frac{2\left(a^2\,b+b^3\right)}{d\left(a^2+b^2\right)^2}+\frac{\mathrm{e}^{c+d\,x}\left(a^3+a\,b^2\right)}{d\left(a^2+b^2\right)^2}}{\mathrm{e}^{2\,c+2\,d\,x}+1}-\frac{\frac{2\,b}{d\left(a^2+b^2\right)}+\frac{2\,a\,\mathrm{e}^{c+d\,x}}{d\left(a^2+b^2\right)}}{2\,\mathrm{e}^{2\,c+2\,d\,x}+\mathrm{e}^{4\,c+4\,d\,x}+1}-\frac{\ln\left(\mathrm{e}^{c+d\,x}+1\mathrm{i}\right)\,(2\,b+a\,1\mathrm{i})}{2\,\left(-d\,a^2+2\mathrm{i}\,d\,a\,b+d\,b^2\right)}-\frac{\ln\left(1+\mathrm{e}^{c+d\,x}\,1\mathrm{i}\right)\,(a+b\,2\mathrm{i})}{2\,\left(-1\mathrm{i}\,d\,a^2+2\,d\,a\,b+1\mathrm{i}\,d\,b^2\right)}+\frac{b\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
```

```
[Out] ((2*(a^2*b + b^3))/(d*(a^2 + b^2)^2) + (exp(c + d*x)*(a*b^2 + a^3))/(d*(a^2
 + b^2)^2))/(exp(2*c + 2*d*x) + 1) - ((2*b)/(d*(a^2 + b^2)) + (2*a*exp(c +
d*x))/(d*(a^2 + b^2)))/(2*exp(2*c + 2*d*x) + exp(4*c + 4*d*x) + 1) - (log(e
xp(c + d*x) + 1i)*(a*1i + 2*b))/(2*(b^2*d - a^2*d + a*b*d*2i)) - (log(exp(c
 + d*x)*1i + 1)*(a + b*2i))/(2*(b^2*d*1i - a^2*d*1i + 2*a*b*d)) + (b^3*log(
2*a^7*exp(d*x)*exp(c) - 16*b^7 - 9*a^2*b^5 - 6*a^4*b^3 - a^6*b + 16*b^7*exp
(2*c)*exp(2*d*x) + a^6*b*exp(2*c)*exp(2*d*x) + 18*a^3*b^4*exp(d*x)*exp(c) +
 12*a^5*b^2*exp(d*x)*exp(c) + 9*a^2*b^5*exp(2*c)*exp(2*d*x) + 6*a^4*b^3*exp
(2*c)*exp(2*d*x) + 32*a*b^6*exp(d*x)*exp(c)))/(a^4*d + b^4*d + 2*a^2*b^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(sech(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.317 $\int \frac{\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sech[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][Sech[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 130.14, size = 0, normalized size = 0.00

$$\int \frac{\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sech[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Integrate[Sech[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 12.85, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{sech}\left(dx+c\right)^3}{afx+ae+\left(bfx+be\right)\sinh\left(dx+c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(sech(d*x + c)^3/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 1.46, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)^{3}}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(b*f - (a*d*f*x*e^(3*c) + (d*e - f)*a*e^(3*c))*e^(3*d*x) - (2*b*d*f*x*e^(2
*c) + (2*d*e - f)*b*e^(2*c))*e^(2*d*x) + (a*d*f*x*e^c + (d*e + f)*a*e^c)*e^
(d*x))/(a^2*d^2*e^2 + b^2*d^2*e^2 + (a^2*d^2*f^2 + b^2*d^2*f^2)*x^2 + 2*(a^
2*d^2*e*f + b^2*d^2*e*f)*x + (a^2*d^2*e^2*e^(4*c) + b^2*d^2*e^2*e^(4*c) + (
a^2*d^2*f^2*e^(4*c) + b^2*d^2*f^2*e^(4*c))*x^2 + 2*(a^2*d^2*e*f*e^(4*c) + b
^2*d^2*e*f*e^(4*c))*x)*e^(4*d*x) + 2*(a^2*d^2*e^2*e^(2*c) + b^2*d^2*e^2*e^(
2*c) + (a^2*d^2*f^2*e^(2*c) + b^2*d^2*f^2*e^(2*c))*x^2 + 2*(a^2*d^2*e*f*e^(
2*c) + b^2*d^2*e*f*e^(2*c))*x)*e^(2*d*x)) + 8*integrate(1/8*(2*b^3*d^2*f^2*
x^2 + 4*b^3*d^2*e*f*x - 2*a^2*b*f^2 + 2*(d^2*e^2 - f^2)*b^3 + ((d^2*e^2 - 2
*f^2)*a^3*e^c + (3*d^2*e^2 - 2*f^2)*a*b^2*e^c + (a^3*d^2*f^2*e^c + 3*a*b^2*
d^2*f^2*e^c)*x^2 + 2*(a^3*d^2*e*f*e^c + 3*a*b^2*d^2*e*f*e^c)*x)*e^(d*x))/(a
^4*d^2*e^3 + 2*a^2*b^2*d^2*e^3 + b^4*d^2*e^3 + (a^4*d^2*f^3 + 2*a^2*b^2*d^2
*f^3 + b^4*d^2*f^3)*x^3 + 3*(a^4*d^2*e*f^2 + 2*a^2*b^2*d^2*e*f^2 + b^4*d^2*
e*f^2)*x^2 + 3*(a^4*d^2*e^2*f + 2*a^2*b^2*d^2*e^2*f + b^4*d^2*e^2*f)*x + (a
```

```
^4*d^2*e^3*e^(2*c) + 2*a^2*b^2*d^2*e^3*e^(2*c) + b^4*d^2*e^3*e^(2*c) + (a^4
*d^2*f^3*e^(2*c) + 2*a^2*b^2*d^2*f^3*e^(2*c) + b^4*d^2*f^3*e^(2*c))*x^3 + 3
*(a^4*d^2*e*f^2*e^(2*c) + 2*a^2*b^2*d^2*e*f^2*e^(2*c) + b^4*d^2*e*f^2*e^(2*
c))*x^2 + 3*(a^4*d^2*e^2*f*e^(2*c) + 2*a^2*b^2*d^2*e^2*f*e^(2*c) + b^4*d^2*
e^2*f*e^(2*c))*x)*e^(2*d*x)), x) - 8*integrate(-1/4*(a*b^3*e^(d*x + c) - b^
4)/(a^4*b*e + 2*a^2*b^3*e + b^5*e + (a^4*b*f + 2*a^2*b^3*f + b^5*f)*x - (a^
4*b*e*e^(2*c) + 2*a^2*b^3*e*e^(2*c) + b^5*e*e^(2*c) + (a^4*b*f*e^(2*c) + 2*
a^2*b^3*f*e^(2*c) + b^5*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^5*e*e^c + 2*a^3*b^2*
e*e^c + a*b^4*e*e^c + (a^5*f*e^c + 2*a^3*b^2*f*e^c + a*b^4*f*e^c)*x)*e^(d*x
)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh\left(c+d\,x\right)^3\,\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*(e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int(1/(cosh(c + d*x)^3*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}^{3}{\left(c + dx \right)}}{\left(a + b \sinh{\left(c + dx \right)}\right) \left(e + f x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(sech(c + d*x)**3/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.318 $\int \frac{x^m \cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=27

$$\mathrm{Int}\left(\frac{x^m \cosh^3(c+dx)}{a+b\sinh(c+dx)},x\right)$$

```
[Out] Unintegrable(x^m*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m \cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*Cosh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] Defer[Int][(x^m*Cosh[c + d*x]^3)/(a + b*Sinh[c + d*x]), x]
```

Rubi steps

$$\int \frac{x^m \cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx=\int \frac{x^m \cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Mathematica [A] time = 10.98, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*Cosh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] Integrate[(x^m*Cosh[c + d*x]^3)/(a + b*Sinh[c + d*x]), x]
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{x^m \cosh\left(dx+c\right)^3}{b\sinh\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(x^m*cosh(d*x + c)^3/(b*sinh(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh(dx+c)^3}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] integrate(x^m*cosh(d*x + c)^3/(b*sinh(d*x + c) + a), x)
```

maple [A] time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{x^m \left(\cosh^3(dx+c)\right)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
[Out] int(x^m*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh(dx+c)^3}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*cosh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] integrate(x^m*cosh(d*x + c)^3/(b*sinh(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x^m \cosh(c+d\,x)^3}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*cosh(c + d*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((x^m*cosh(c + d*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*cosh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(x**m*cosh(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.319 $\int \frac{x^m \cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{x^m \cosh^2(c+dx)}{a+b\sinh(c+dx)},x\right)$$

```
[Out] Unintegrable(x^m*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m \cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*Cosh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
[Out] Defer[Int][(x^m*Cosh[c + d*x]^2)/(a + b*Sinh[c + d*x]), x]
```

Rubi steps

$$\int \frac{x^m \cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \int \frac{x^m \cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Mathematica [A] time = 8.07, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*Cosh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
[Out] Integrate[(x^m*Cosh[c + d*x]^2)/(a + b*Sinh[c + d*x]), x]
```

fricas [A] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^m \cosh(dx+c)^2}{b\sinh(dx+c)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(x^m*cosh(d*x + c)^2/(b*sinh(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh(dx+c)^2}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] integrate(x^m*cosh(d*x + c)^2/(b*sinh(d*x + c) + a), x)
```

maple [A] time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{x^m \left(\cosh^2(dx+c)\right)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
[Out] int(x^m*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh(dx+c)^2}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*cosh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] integrate(x^m*cosh(d*x + c)^2/(b*sinh(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x^m \cosh(c+d\,x)^2}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*cosh(c + d*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((x^m*cosh(c + d*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*cosh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(x**m*cosh(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.320 $\int \frac{x^m \cosh(c+dx)}{a+b\sinh(c+dx)} dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{x^m \cosh(c+dx)}{a+b\sinh(c+dx)}, x\right)$$

```
[Out] Unintegrable(x^m*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m \cosh(c+dx)}{a+b\sinh(c+dx)} dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*Cosh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] Defer[Int][(x^m*Cosh[c + d*x])/(a + b*Sinh[c + d*x]), x]
```

Rubi steps

$$\int \frac{x^m \cosh(c+dx)}{a+b\sinh(c+dx)} dx = \int \frac{x^m \cosh(c+dx)}{a+b\sinh(c+dx)} dx$$

Mathematica [A] time = 5.25, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh(c+dx)}{a+b\sinh(c+dx)} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*Cosh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] Integrate[(x^m*Cosh[c + d*x])/(a + b*Sinh[c + d*x]), x]
```

fricas [A] time = 0.40, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^m \cosh(dx+c)}{b\sinh(dx+c)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(x^m*cosh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh(dx+c)}{b \sinh(dx+c)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(x^m*cosh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [A] time = 0.11, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh(dx+c)}{a+b \sinh(dx+c)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(x^m*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{xe^{\left(2\,dx+m\log(x)+2\,c\right)}}{b(m+1)e^{(2\,dx+2\,c)}+2\,a(m+1)e^{(dx+c)}-b(m+1)}-\frac{1}{2}\int \frac{2\left(2\,adxe^{(3\,dx+3\,c)}-2\,a(m+1)e^{(dx+c)}+b(m\right.}{b^2(m+1)e^{(4\,dx+4\,c)}+4\,ab(m+1)e^{(3\,dx+3\,c)}-4\,ab(m+1)e^{(d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*cosh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] x*e^(2*d*x + m*log(x) + 2*c)/(b*(m + 1)*e^(2*d*x + 2*c) + 2*a*(m + 1)*e^(d*
x + c) - b*(m + 1)) - 1/2*integrate(2*(2*a*d*x*e^(3*d*x + 3*c) - 2*a*(m + 1
)*e^(d*x + c) + b*(m + 1) - (2*b*d*x*e^(2*c) + b*(m + 1)*e^(2*c))*e^(2*d*x)
)*x^m/(b^2*(m + 1)*e^(4*d*x + 4*c) + 4*a*b*(m + 1)*e^(3*d*x + 3*c) - 4*a*b*
(m + 1)*e^(d*x + c) + b^2*(m + 1) + 2*(2*a^2*(m + 1)*e^(2*c) - b^2*(m + 1)*
e^(2*c))*e^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x^m \cosh\left(c+d\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*cosh(c + d*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((x^m*cosh(c + d*x))/(a + b*sinh(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \cosh(c + dx)}{a + b \sinh(c + dx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*cosh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(x**m*cosh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.321 $\int \frac{(e+fx)\cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx$

Optimal. Leaf size=74

$$-\frac{2f\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd^2\sqrt{a^2+b^2}}-\frac{e+fx}{bd(a+b\sinh(c+dx))}$$

```
[Out] (-f*x-e)/b/d/(a+b*sinh(d*x+c))-2*f*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b
^2)^(1/2))/b/d^2/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {5464, 2660, 618, 204}

$$-\frac{2f\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd^2\sqrt{a^2+b^2}}-\frac{e+fx}{bd(a+b\sinh(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] (-2*f*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(b*Sqrt[a^2 + b^2
]*d^2) - (e + f*x)/(b*d*(a + b*Sinh[c + d*x]))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
```

```
a^2 - b^2, 0]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)\cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx = -\frac{e+fx}{bd(a+b\sinh(c+dx))}+\frac{f\int \frac{1}{a+b\sinh(c+dx)}\,dx}{bd}$$

$$= -\frac{e+fx}{bd(a+b\sinh(c+dx))}-\frac{(2if)\,\mathrm{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(ic+idx)\right)\right)}{bd^2}$$

$$= -\frac{e+fx}{bd(a+b\sinh(c+dx))}+\frac{(4if)\,\mathrm{Subst}\left(\int \frac{1}{-4\left(a^2+b^2\right)-x^2}\,dx,x,-2ib+2a\tan\left(\frac{1}{2}(ic\right.\right.}{bd^2}$$

$$= -\frac{2f\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2}-\frac{e+fx}{bd(a+b\sinh(c+dx))}$$

Mathematica [A] time = 0.45, size = 78, normalized size = 1.05

$$\frac{\frac{2f\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{\sqrt{-a^2-b^2}}-\frac{d(e+fx)}{a+b\sinh(c+dx)}}{bd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] ((2*f*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2 - b^2]
- (d*(e + f*x))/(a + b*Sinh[c + d*x]))/(b*d^2)
```

fricas [B] time = 0.55, size = 411, normalized size = 5.55

$$\frac{\left(bf\cosh\left(dx+c\right)^{2}+bf\sinh\left(dx+c\right)^{2}+2\,af\cosh\left(dx+c\right)-bf+2\left(bf\cosh\left(dx+c\right)+af\right)\sinh\left(dx+c\right)\right)\sqrt{a^{2}+}}{\left(a^{2}b^{2}+b^{4}\right)d^{2}\cosh\left(dx+c\right)^{2}+\left(a^{2}b^{2}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] ((b*f*cosh(d*x + c)^2 + b*f*sinh(d*x + c)^2 + 2*a*f*cosh(d*x + c) - b*f + 2
*(b*f*cosh(d*x + c) + a*f)*sinh(d*x + c))*sqrt(a^2 + b^2)*log((b^2*cosh(d*x
 + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*
cosh(d*x + c) + a*b)*sinh(d*x + c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b
*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x
+ c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) - 2*((a^2 + b^2)*d*f*x +
 (a^2 + b^2)*d*e)*cosh(d*x + c) - 2*((a^2 + b^2)*d*f*x + (a^2 + b^2)*d*e)*s
inh(d*x + c))/((a^2*b^2 + b^4)*d^2*cosh(d*x + c)^2 + (a^2*b^2 + b^4)*d^2*si
nh(d*x + c)^2 + 2*(a^3*b + a*b^3)*d^2*cosh(d*x + c) - (a^2*b^2 + b^4)*d^2 +
 2*((a^2*b^2 + b^4)*d^2*cosh(d*x + c) + (a^3*b + a*b^3)*d^2)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\cosh\left(dx+c\right)}{\left(b\sinh\left(dx+c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)/(b*sinh(d*x + c) + a)^2, x)
```

maple [B] time = 0.37, size = 164, normalized size = 2.22

$$-\frac{2\left(fx+e\right)e^{dx+c}}{bd\left(b\,e^{2dx+2c}+2a\,e^{dx+c}-b\right)}+\frac{f\ln\left(e^{dx+c}+\frac{a\sqrt{a^{2}+b^{2}}-a^{2}-b^{2}}{\sqrt{a^{2}+b^{2}}\,b}\right)}{\sqrt{a^{2}+b^{2}}\,d^{2}b}-\frac{f\ln\left(e^{dx+c}+\frac{a\sqrt{a^{2}+b^{2}}+a^{2}+b^{2}}{\sqrt{a^{2}+b^{2}}\,b}\right)}{\sqrt{a^{2}+b^{2}}\,d^{2}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x)
```

```
[Out] -2*(f*x+e)/b/d*exp(d*x+c)/(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+1/(a^2+b^2)^(
1/2)*f/d^2/b*ln(exp(d*x+c)+(a*(a^2+b^2)^(1/2)-a^2-b^2)/(a^2+b^2)^(1/2)/b)-1
```

```
/(a^2+b^2)^(1/2)*f/d^2/b*ln(exp(d*x+c)+(a*(a^2+b^2)^(1/2)+a^2+b^2)/(a^2+b^2
)^(1/2)/b)
```

maxima [B] time = 0.52, size = 157, normalized size = 2.12

$$-f\left(\frac{2\,xe^{(dx+c)}}{b^2de^{(2\,dx+2\,c)}+2\,abde^{(dx+c)}-b^2d}-\frac{\log\left(\frac{be^{(dx+c)}+a-\sqrt{a^2+b^2}}{be^{(dx+c)}+a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,bd^2}\right)-\frac{2\,ee^{(-dx-c)}}{\left(2\,abe^{(-dx-c)}-b^2e^{(-2\,dx-2\,c)}+b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -f*(2*x*e^(d*x + c)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d*x + c) - b^2*d) -
 log((b*e^(d*x + c) + a - sqrt(a^2 + b^2))/(b*e^(d*x + c) + a + sqrt(a^2 +
b^2)))/(sqrt(a^2 + b^2)*b*d^2)) - 2*e*e^(-d*x - c)/((2*a*b*e^(-d*x - c) - b
^2*e^(-2*d*x - 2*c) + b^2)*d)
```

mupad [B] time = 0.56, size = 199, normalized size = 2.69

$$\frac{f\,\ln\left(\frac{2\,f\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{b^2\,d\,\sqrt{a^2+b^2}}-\frac{2\,f\,\mathrm{e}^{c+d\,x}}{b^2\,d}\right)}{b\,d^2\,\sqrt{a^2+b^2}}-\frac{f\,\ln\left(-\frac{2\,f\,\mathrm{e}^{c+d\,x}}{b^2\,d}-\frac{2\,f\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{b^2\,d\,\sqrt{a^2+b^2}}\right)}{b\,d^2\,\sqrt{a^2+b^2}}-\frac{2\,\mathrm{e}^{c+d\,x}\,\left(a^2\,e+b^2\,e+a^2\,f\,x+b^2\,f\,x\right)}{d\,\left(a^2\,b+b^3\right)\,\left(2\,a\,\mathrm{e}^{c+d\,x}-b+b\,\mathrm{e}^{2\,c+2\,d\,x}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x))^2,x)
```

```
[Out] (f*log((2*f*(b - a*exp(c + d*x)))/(b^2*d*(a^2 + b^2)^(1/2)) - (2*f*exp(c +
d*x))/(b^2*d)))/(b*d^2*(a^2 + b^2)^(1/2)) - (f*log(- (2*f*exp(c + d*x))/(b^
2*d) - (2*f*(b - a*exp(c + d*x)))/(b^2*d*(a^2 + b^2)^(1/2))))/(b*d^2*(a^2 +
 b^2)^(1/2)) - (2*exp(c + d*x)*(a^2*e + b^2*e + a^2*f*x + b^2*f*x))/(d*(a^2
*b + b^3)*(2*a*exp(c + d*x) - b + b*exp(2*c + 2*d*x)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.322 $\int \frac{(e+fx)^2\cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx$

Optimal. Leaf size=234

$$\frac{2f^2\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{2f^2\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}+\frac{2f(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd^2\sqrt{a^2+b^2}}-\frac{2f(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{bd^2\sqrt{a^2+b^2}}-\frac{}{bd(a}$$

```
[Out] -(f*x+e)^2/b/d/(a+b*sinh(d*x+c))+2*f*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))/b/d^2/(a^2+b^2)^(1/2)-2*f*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/b/d^2/(a^2+b^2)^(1/2)+2*f^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/
2)))/b/d^3/(a^2+b^2)^(1/2)-2*f^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)
))/b/d^3/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {5464, 3322, 2264, 2190, 2279, 2391}

$$\frac{2f^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{2f^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^3\sqrt{a^2+b^2}}+\frac{2f(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd^2\sqrt{a^2+b^2}}-\frac{2f(e+fx)\log\left(\frac{be^{c}}{\sqrt{a^2+}}\right.}{bd^2\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] (2*f*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*Sqrt[a^2
+ b^2]*d^2) - (2*f*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]
)/(b*Sqrt[a^2 + b^2]*d^2) + (2*f^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a
^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) - (2*f^2*PolyLog[2, -((b*E^(c + d*x))
/(a + Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) - (e + f*x)^2/(b*d*(a + b
*Sinh[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
```

```
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx = -\frac{(e+fx)^2}{bd(a+b\sinh(c+dx))}+\frac{(2f)\int \frac{e+fx}{a+b\sinh(c+dx)}\,dx}{bd}$$

$$= -\frac{(e+fx)^2}{bd(a+b\sinh(c+dx))}+\frac{(4f)\int \frac{e^{c+dx}(e+fx)}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{bd}$$

$$= -\frac{(e+fx)^2}{bd(a+b\sinh(c+dx))}+\frac{(4f)\int \frac{e^{c+dx}(e+fx)}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\sqrt{a^2+b^2}\,d}-\frac{(4f)\int \frac{e^{c+dx}(e+fx)}{2a+2\sqrt{a^2+b^2}+2be^{c+a}}}{\sqrt{a^2+b^2}\,d}$$

$$= \frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2}-\frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2}-\frac{(e+fx)}{bd(a+b\sinh(}$$

$$= \frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2}-\frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2}-\frac{(e+fx)}{bd(a+b\sinh(}$$

$$= \frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2}-\frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2}+\frac{2f^2\mathrm{Li}_2\left(-\frac{be^{c}}{a-\sqrt{a}}\right.}{b\sqrt{a^2+b^2}}$$

Mathematica [**A**] time = 1.30, size = 175, normalized size = 0.75

$$\frac{2f\left(d(e+fx)\left(\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)\right)+f\mathrm{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)-f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)\right)}{bd^3\sqrt{a^2+b^2}}-\frac{(e+fx)}{bd(a+b\sinh(}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] (2*f*(d*(e + f*x)*(Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - Log[1 +
 (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]) + f*PolyLog[2, (b*E^(c + d*x))/(-a
 + Sqrt[a^2 + b^2])] - f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])
)]))/(b*Sqrt[a^2 + b^2]*d^3) - (e + f*x)^2/(b*d*(a + b*Sinh[c + d*x]))
```

fricas [**B**] time = 0.55, size = 1378, normalized size = 5.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 2*((b^2*f^2*cosh(d*x + c)^2 + b^2*f^2*sinh(d*x + c)^2 + 2*a*b*f^2*cosh(d*x
+ c) - b^2*f^2 + 2*(b^2*f^2*cosh(d*x + c) + a*b*f^2)*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^2*f^2*cosh(d*x +
c)^2 + b^2*f^2*sinh(d*x + c)^2 + 2*a*b*f^2*cosh(d*x + c) - b^2*f^2 + 2*(b^2
*f^2*cosh(d*x + c) + a*b*f^2)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a
*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b + 1) + (b^2*d*e*f - b^2*c*f^2 - (b^2*d*e*f - b^2*c
*f^2)*cosh(d*x + c)^2 - (b^2*d*e*f - b^2*c*f^2)*sinh(d*x + c)^2 - 2*(a*b*d*
e*f - a*b*c*f^2)*cosh(d*x + c) - 2*(a*b*d*e*f - a*b*c*f^2 + (b^2*d*e*f - b^
2*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d
*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b^2*d*e*f
 - b^2*c*f^2 - (b^2*d*e*f - b^2*c*f^2)*cosh(d*x + c)^2 - (b^2*d*e*f - b^2*c
*f^2)*sinh(d*x + c)^2 - 2*(a*b*d*e*f - a*b*c*f^2)*cosh(d*x + c) - 2*(a*b*d*
e*f - a*b*c*f^2 + (b^2*d*e*f - b^2*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqr
t((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^
2 + b^2)/b^2) + 2*a) - (b^2*d*f^2*x + b^2*c*f^2 - (b^2*d*f^2*x + b^2*c*f^2)
*cosh(d*x + c)^2 - (b^2*d*f^2*x + b^2*c*f^2)*sinh(d*x + c)^2 - 2*(a*b*d*f^2
*x + a*b*c*f^2)*cosh(d*x + c) - 2*(a*b*d*f^2*x + a*b*c*f^2 + (b^2*d*f^2*x +
 b^2*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cos
h(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2) - b)/b) + (b^2*d*f^2*x + b^2*c*f^2 - (b^2*d*f^2*x + b^2*c*f^2
)*cosh(d*x + c)^2 - (b^2*d*f^2*x + b^2*c*f^2)*sinh(d*x + c)^2 - 2*(a*b*d*f^
2*x + a*b*c*f^2)*cosh(d*x + c) - 2*(a*b*d*f^2*x + a*b*c*f^2 + (b^2*d*f^2*x
+ b^2*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*co
sh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2) - b)/b) - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x
 + (a^2 + b^2)*d^2*e^2)*cosh(d*x + c) - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 +
 b^2)*d^2*e*f*x + (a^2 + b^2)*d^2*e^2)*sinh(d*x + c))/((a^2*b^2 + b^4)*d^3*
cosh(d*x + c)^2 + (a^2*b^2 + b^4)*d^3*sinh(d*x + c)^2 + 2*(a^3*b + a*b^3)*d
^3*cosh(d*x + c) - (a^2*b^2 + b^4)*d^3 + 2*((a^2*b^2 + b^4)*d^3*cosh(d*x +
c) + (a^3*b + a*b^3)*d^3)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \cosh(dx+c)}{(b\sinh(dx+c)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)/(b*sinh(d*x + c) + a)^2, x)
```

maple [B] time = 0.32, size = 491, normalized size = 2.10

$$-\frac{2\left(x^{2} f^{2}+2 e f x+e^{2}\right) \mathrm{e}^{d x+c}}{b d\left(b\,\mathrm{e}^{2 d x+2 c}+2 a\,\mathrm{e}^{d x+c}-b\right)}-\frac{4 f e \operatorname{arctanh}\left(\frac{2 b\,\mathrm{e}^{d x+c}+2 a}{2 \sqrt{a^{2}+b^{2}}}\right)}{d^{2} b \sqrt{a^{2}+b^{2}}}+\frac{2 f^{2} \ln \left(\frac{-b\,\mathrm{e}^{d x+c}+\sqrt{a^{2}+b^{2}}-a}{-a+\sqrt{a^{2}+b^{2}}}\right) x}{d^{2} b \sqrt{a^{2}+b^{2}}}+\frac{2 f^{2} \ln \left(\frac{-b\,\mathrm{e}^{d x+c}+\sqrt{a^{2}+b^{2}}-a}{-a+\sqrt{a^{2}+b^{2}}}\right.}{d^{3} b \sqrt{a^{2}+b^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x)
```

```
[Out] -2*(f^2*x^2+2*e*f*x+e^2)/b/d*exp(d*x+c)/(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)
-4/d^2/b*f*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/
2))+2/d^2/b*f^2/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a
^2+b^2)^(1/2)))*x+2/d^3/b*f^2/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(
1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-2/d^2/b*f^2/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c
)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-2/d^3/b*f^2/(a^2+b^2)^(1/2)*ln(
(b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/d^3/b*f^2/(a^2+b^
2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-2/d^
3/b*f^2/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)
^(1/2)))+4/d^3/b*f^2*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^
2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-2\left(\frac{x^{2} e^{(d x+c)}}{b^{2} d e^{(2 d x+2 c)}+2 a b d e^{(d x+c)}-b^{2} d}-2 \int \frac{x e^{(d x+c)}}{b^{2} d e^{(2 d x+2 c)}+2 a b d e^{(d x+c)}-b^{2} d}\, d x\right) f^{2}-2 e f\left(\frac{2 x e^{(d x+c)}}{b^{2} d e^{(2 d x+2 c)}+2 a b d e^{(d}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -2*(x^2*e^(d*x + c)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d*x + c) - b^2*d) -
 2*integrate(x*e^(d*x + c)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d*x + c) - b
^2*d), x))*f^2 - 2*e*f*(2*x*e^(d*x + c)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^
(d*x + c) - b^2*d) - log((b*e^(d*x + c) + a - sqrt(a^2 + b^2))/(b*e^(d*x +
c) + a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b*d^2)) - 2*e^2*e^(-d*x - c)/((
2*a*b*e^(-d*x - c) - b^2*e^(-2*d*x - 2*c) + b^2)*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh (c+d\,x)\,{\left(e+f\,x\right)}^2}{{\left(a+b\,\sinh (c+d\,x)\right)}^2}\,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x))^2,x)
[Out] int((cosh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)/(a+b*sinh(d*x+c))**2,x)
[Out] Timed out
```

3.323 $\int \frac{(e+fx)^3\cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx$

Optimal. Leaf size=348

$$-\frac{6f^3\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\sqrt{a^2+b^2}}+\frac{6f^3\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^4\sqrt{a^2+b^2}}+\frac{6f^2(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{6f^2(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}+\frac{3f(e+$$

```
[Out] -(f*x+e)^3/b/d/(a+b*sinh(d*x+c))+3*f*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^
2)^(1/2)))/b/d^2/(a^2+b^2)^(1/2)-3*f*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^
2)^(1/2)))/b/d^2/(a^2+b^2)^(1/2)+6*f^2*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(
a^2+b^2)^(1/2)))/b/d^3/(a^2+b^2)^(1/2)-6*f^2*(f*x+e)*polylog(2,-b*exp(d*x+c
)/(a+(a^2+b^2)^(1/2)))/b/d^3/(a^2+b^2)^(1/2)-6*f^3*polylog(3,-b*exp(d*x+c)/
(a-(a^2+b^2)^(1/2)))/b/d^4/(a^2+b^2)^(1/2)+6*f^3*polylog(3,-b*exp(d*x+c)/(a
+(a^2+b^2)^(1/2)))/b/d^4/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.74, antiderivative size = 348, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {5464, 3322, 2264, 2190, 2531, 2282, 6589}

$$\frac{6f^2(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{6f^2(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{6f^3\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\sqrt{a^2+b^2}}+\frac{6f^3\text{Po}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] (3*f*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*Sqrt[a^
2 + b^2]*d^2) - (3*f*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2])])/(b*Sqrt[a^2 + b^2]*d^2) + (6*f^2*(e + f*x)*PolyLog[2, -((b*E^(c + d*x
))/(a - Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) - (6*f^2*(e + f*x)*Poly
Log[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) -
 (6*f^3*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 +
 b^2]*d^4) + (6*f^3*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(
b*Sqrt[a^2 + b^2]*d^4) - (e + f*x)^3/(b*d*(a + b*Sinh[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx = -\frac{(e+fx)^3}{bd(a+b\sinh(c+dx))} + \frac{(3f)\int \frac{(e+fx)^2}{a+b\sinh(c+dx)}\,dx}{bd}$$

$$= -\frac{(e+fx)^3}{bd(a+b\sinh(c+dx))} + \frac{(6f)\int \frac{e^{c+dx}(e+fx)^2}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{bd}$$

$$= -\frac{(e+fx)^3}{bd(a+b\sinh(c+dx))} + \frac{(6f)\int \frac{e^{c+dx}(e+fx)^2}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\sqrt{a^2+b^2}\,d} - \frac{(6f)\int \frac{e^{c+dx}(e+fx)^2}{2a+2\sqrt{a^2+b^2}+2be^{c+a}}}{\sqrt{a^2+b^2}\,d}$$

$$= \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{(e+f}{bd(a+b\sinh}$$

$$= \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} + \frac{6f^2(e+fx)\mathrm{l}}{b\sqrt{a^2}}$$

$$= \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} + \frac{6f^2(e+fx)\mathrm{l}}{b\sqrt{a^2}}$$

$$= \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} + \frac{6f^2(e+fx)\mathrm{l}}{b\sqrt{a^2}}$$

Mathematica [A] time = 2.28, size = 368, normalized size = 1.06

$$\frac{3f\left(-2d^2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)+2d^2efx\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-2d^2efx\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)+d^2f^2x^2\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] (3*f*(-2*d^2*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 2*d^2*e*f*x
*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2])] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b
^2])] + 2*d*f*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
- 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*
f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*f^2*PolyLog[3, -
```

```
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(b*Sqrt[a^2 + b^2]*d^4) - (e + f
*x)^3/(b*d*(a + b*Sinh[c + d*x]))
```

fricas [C] time = 0.60, size = 2420, normalized size = 6.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] -(6*(b^2*d*f^3*x + b^2*d*e*f^2 - (b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^
2 - (b^2*d*f^3*x + b^2*d*e*f^2)*sinh(d*x + c)^2 - 2*(a*b*d*f^3*x + a*b*d*e*
f^2)*cosh(d*x + c) - 2*(a*b*d*f^3*x + a*b*d*e*f^2 + (b^2*d*f^3*x + b^2*d*e*
f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x
+ c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^
2)/b^2) - b)/b + 1) - 6*(b^2*d*f^3*x + b^2*d*e*f^2 - (b^2*d*f^3*x + b^2*d*e
*f^2)*cosh(d*x + c)^2 - (b^2*d*f^3*x + b^2*d*e*f^2)*sinh(d*x + c)^2 - 2*(a*
b*d*f^3*x + a*b*d*e*f^2)*cosh(d*x + c) - 2*(a*b*d*f^3*x + a*b*d*e*f^2 + (b^
2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2
)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 3*(b^2*d^2*e^2*f - 2*b^2*c*d*e*f^
2 + b^2*c^2*f^3 - (b^2*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3)*cosh(d*x
+ c)^2 - (b^2*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3)*sinh(d*x + c)^2 -
2*(a*b*d^2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f^3)*cosh(d*x + c) - 2*(a*b*d^
2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f^3 + (b^2*d^2*e^2*f - 2*b^2*c*d*e*f^2
+ b^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*
cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 3*(b
^2*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3 - (b^2*d^2*e^2*f - 2*b^2*c*d*e
*f^2 + b^2*c^2*f^3)*cosh(d*x + c)^2 - (b^2*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^
2*c^2*f^3)*sinh(d*x + c)^2 - 2*(a*b*d^2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f
^3)*cosh(d*x + c) - 2*(a*b*d^2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f^3 + (b^2
*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*s
qrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((
a^2 + b^2)/b^2) + 2*a) + 3*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d
*e*f^2 - b^2*c^2*f^3 - (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f
^2 - b^2*c^2*f^3)*cosh(d*x + c)^2 - (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x +
2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*sinh(d*x + c)^2 - 2*(a*b*d^2*f^3*x^2 + 2*a*b
*d^2*e*f^2*x + 2*a*b*c*d*e*f^2 - a*b*c^2*f^3)*cosh(d*x + c) - 2*(a*b*d^2*f^
3*x^2 + 2*a*b*d^2*e*f^2*x + 2*a*b*c*d*e*f^2 - a*b*c^2*f^3 + (b^2*d^2*f^3*x^
2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*cosh(d*x + c))*sinh(
d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (
b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 3*(b^2*d
^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3 - (b^2*d^2*f
^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*cosh(d*x + c)^2
 - (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*si
```

```
nh(d*x + c)^2 - 2*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*x + 2*a*b*c*d*e*f^2 -
a*b*c^2*f^3)*cosh(d*x + c) - 2*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*x + 2*a*b
*c*d*e*f^2 - a*b*c^2*f^3 + (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d
*e*f^2 - b^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*l
og(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2) - b)/b) + 6*(b^2*f^3*cosh(d*x + c)^2 + b^2*f^3*sinh
(d*x + c)^2 + 2*a*b*f^3*cosh(d*x + c) - b^2*f^3 + 2*(b^2*f^3*cosh(d*x + c)
+ a*b*f^3)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c)
 + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2))/b) - 6*(b^2*f^3*cosh(d*x + c)^2 + b^2*f^3*sinh(d*x + c)^2 + 2*a*b*f^3*
cosh(d*x + c) - b^2*f^3 + 2*(b^2*f^3*cosh(d*x + c) + a*b*f^3)*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 2*((a^2 + b^2)
*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + (a
^2 + b^2)*d^3*e^3)*cosh(d*x + c) + 2*((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^
2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + (a^2 + b^2)*d^3*e^3)*sinh(d*
x + c))/((a^2*b^2 + b^4)*d^4*cosh(d*x + c)^2 + (a^2*b^2 + b^4)*d^4*sinh(d*x
 + c)^2 + 2*(a^3*b + a*b^3)*d^4*cosh(d*x + c) - (a^2*b^2 + b^4)*d^4 + 2*((a
^2*b^2 + b^4)*d^4*cosh(d*x + c) + (a^3*b + a*b^3)*d^4)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)}{\left(b\sinh\left(dx+c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)/(b*sinh(d*x + c) + a)^2, x)
```

maple [F] time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)}{\left(a+b\sinh\left(dx+c\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-3\,e^2 f\left(\frac{2\,xe^{(dx+c)}}{b^2de^{(2\,dx+2\,c)}+2\,abde^{(dx+c)}-b^2d}-\frac{\log\left(\frac{be^{(dx+c)}+a-\sqrt{a^2+b^2}}{be^{(dx+c)}+a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,bd^2}\right)-\frac{2\,e^3e^{(-dx-c)}}{\left(2\,abe^{(-dx-c)}-b^2e^{(-2\,dx-2\,c)}+b^2\right)d}-\frac{2\left(f^3\right.}{b^2de^{(2\,dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -3*e^2*f*(2*x*e^(d*x + c)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d*x + c) - b^
2*d) - log((b*e^(d*x + c) + a - sqrt(a^2 + b^2))/(b*e^(d*x + c) + a + sqrt(
a^2 + b^2)))/(sqrt(a^2 + b^2)*b*d^2)) - 2*e^3*e^(-d*x - c)/((2*a*b*e^(-d*x
- c) - b^2*e^(-2*d*x - 2*c) + b^2)*d) - 2*(f^3*x^3*e^c + 3*e*f^2*x^2*e^c)*e
^(d*x)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d*x + c) - b^2*d) + integrate(6*
(f^3*x^2*e^c + 2*e*f^2*x*e^c)*e^(d*x)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d
*x + c) - b^2*d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{{\left(a+b\,\sinh\left(c+d\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x))^2,x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)/(a+b*sinh(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.324 $\int \frac{(e+fx)\cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx$

Optimal. Leaf size=74

$$-\frac{2f\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd^2\sqrt{a^2+b^2}}-\frac{e+fx}{bd(a+b\sinh(c+dx))}$$

```
[Out] (-f*x-e)/b/d/(a+b*sinh(d*x+c))-2*f*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b
^2)^(1/2))/b/d^2/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {5464, 2660, 618, 204}

$$-\frac{2f\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd^2\sqrt{a^2+b^2}}-\frac{e+fx}{bd(a+b\sinh(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] (-2*f*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(b*Sqrt[a^2 + b^2
]*d^2) - (e + f*x)/(b*d*(a + b*Sinh[c + d*x]))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
```

```
a^2 - b^2, 0]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)\cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx = -\frac{e+fx}{bd(a+b\sinh(c+dx))}+\frac{f\int\frac{1}{a+b\sinh(c+dx)}\,dx}{bd}$$

$$= -\frac{e+fx}{bd(a+b\sinh(c+dx))}-\frac{(2if)\,\text{Subst}\left(\int\frac{1}{a-2ibx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(ic+idx)\right)\right)}{bd^2}$$

$$= -\frac{e+fx}{bd(a+b\sinh(c+dx))}+\frac{(4if)\,\text{Subst}\left(\int\frac{1}{-4\left(a^2+b^2\right)-x^2}\,dx,x,-2ib+2a\tan\left(\frac{1}{2}(ic -$$

$$= -\frac{2f\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2}-\frac{e+fx}{bd(a+b\sinh(c+dx))}$$

Mathematica [A] time = 0.36, size = 78, normalized size = 1.05

$$\frac{\frac{2f\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{\sqrt{-a^2-b^2}}-\frac{d(e+fx)}{a+b\sinh(c+dx)}}{bd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] ((2*f*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2 - b^2]
- (d*(e + f*x))/(a + b*Sinh[c + d*x]))/(b*d^2)
```

fricas [B] time = 0.48, size = 411, normalized size = 5.55

$$\frac{\left(bf\cosh\left(dx+c\right)^{2}+bf\sinh\left(dx+c\right)^{2}+2\,af\cosh\left(dx+c\right)-bf+2\left(bf\cosh\left(dx+c\right)+af\right)\sinh\left(dx+c\right)\right)\sqrt{a^{2}+}}{\left(a^{2}b^{2}+b^{4}\right)d^{2}\cosh\left(dx+c\right)^{2}+\left(a^{2}b^{2}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] ((b*f*cosh(d*x + c)^2 + b*f*sinh(d*x + c)^2 + 2*a*f*cosh(d*x + c) - b*f + 2
*(b*f*cosh(d*x + c) + a*f)*sinh(d*x + c))*sqrt(a^2 + b^2)*log((b^2*cosh(d*x
 + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*
cosh(d*x + c) + a*b)*sinh(d*x + c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b
*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x
+ c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) - 2*((a^2 + b^2)*d*f*x +
 (a^2 + b^2)*d*e)*cosh(d*x + c) - 2*((a^2 + b^2)*d*f*x + (a^2 + b^2)*d*e)*s
inh(d*x + c))/((a^2*b^2 + b^4)*d^2*cosh(d*x + c)^2 + (a^2*b^2 + b^4)*d^2*si
nh(d*x + c)^2 + 2*(a^3*b + a*b^3)*d^2*cosh(d*x + c) - (a^2*b^2 + b^4)*d^2 +
 2*((a^2*b^2 + b^4)*d^2*cosh(d*x + c) + (a^3*b + a*b^3)*d^2)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\cosh\left(dx+c\right)}{\left(b\sinh\left(dx+c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)/(b*sinh(d*x + c) + a)^2, x)
```

maple [B] time = 0.00, size = 164, normalized size = 2.22

$$-\frac{2\left(fx+e\right)\mathrm{e}^{dx+c}}{bd\left(b\,\mathrm{e}^{2dx+2c}+2a\,\mathrm{e}^{dx+c}-b\right)}+\frac{f\ln\left(\mathrm{e}^{dx+c}+\frac{a\sqrt{a^{2}+b^{2}}-a^{2}-b^{2}}{\sqrt{a^{2}+b^{2}}\,b}\right)}{\sqrt{a^{2}+b^{2}}\,d^{2}b}-\frac{f\ln\left(\mathrm{e}^{dx+c}+\frac{a\sqrt{a^{2}+b^{2}}+a^{2}+b^{2}}{\sqrt{a^{2}+b^{2}}\,b}\right)}{\sqrt{a^{2}+b^{2}}\,d^{2}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x)
```

```
[Out] -2*(f*x+e)/b/d*exp(d*x+c)/(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+1/(a^2+b^2)^(
1/2)*f/d^2/b*ln(exp(d*x+c)+(a*(a^2+b^2)^(1/2)-a^2-b^2)/(a^2+b^2)^(1/2)/b)-1
```

```
/(a^2+b^2)^(1/2)*f/d^2/b*ln(exp(d*x+c)+(a*(a^2+b^2)^(1/2)+a^2+b^2)/(a^2+b^2
)^(1/2)/b)
```

maxima [B] time = 0.54, size = 157, normalized size = 2.12

$$-f\left(\frac{2\,xe^{(dx+c)}}{b^2de^{(2\,dx+2\,c)} + 2\,abde^{(dx+c)} - b^2d} - \frac{\log\left(\frac{be^{(dx+c)}+a-\sqrt{a^2+b^2}}{be^{(dx+c)}+a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,bd^2}\right) - \frac{2\,ee^{(-dx-c)}}{\left(2\,abe^{(-dx-c)} - b^2e^{(-2\,dx-2\,c)} + b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -f*(2*x*e^(d*x + c)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d*x + c) - b^2*d) -
 log((b*e^(d*x + c) + a - sqrt(a^2 + b^2))/(b*e^(d*x + c) + a + sqrt(a^2 +
b^2)))/(sqrt(a^2 + b^2)*b*d^2)) - 2*e*e^(-d*x - c)/((2*a*b*e^(-d*x - c) - b
^2*e^(-2*d*x - 2*c) + b^2)*d)
```

mupad [B] time = 0.00, size = 199, normalized size = 2.69

$$\frac{f\,\ln\left(\frac{2\,f\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{b^2\,d\,\sqrt{a^2+b^2}} - \frac{2\,f\,\mathrm{e}^{c+d\,x}}{b^2\,d}\right)}{b\,d^2\,\sqrt{a^2+b^2}} - \frac{f\,\ln\left(-\frac{2\,f\,\mathrm{e}^{c+d\,x}}{b^2\,d} - \frac{2\,f\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{b^2\,d\,\sqrt{a^2+b^2}}\right)}{b\,d^2\,\sqrt{a^2+b^2}} - \frac{2\,\mathrm{e}^{c+d\,x}\,\left(a^2\,e+b^2\,e+a^2\,f\,x+b^2\,f\,x\right)}{d\,\left(a^2\,b+b^3\right)\,\left(2\,a\,\mathrm{e}^{c+d\,x}-b+b\,\mathrm{e}^{2\,c+2\,d\,x}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x))^2,x)
```

```
[Out] (f*log((2*f*(b - a*exp(c + d*x)))/(b^2*d*(a^2 + b^2)^(1/2)) - (2*f*exp(c +
d*x))/(b^2*d)))/(b*d^2*(a^2 + b^2)^(1/2)) - (f*log(- (2*f*exp(c + d*x))/(b^
2*d) - (2*f*(b - a*exp(c + d*x)))/(b^2*d*(a^2 + b^2)^(1/2))))/(b*d^2*(a^2 +
 b^2)^(1/2)) - (2*exp(c + d*x)*(a^2*e + b^2*e + a^2*f*x + b^2*f*x))/(d*(a^2
*b + b^3)*(2*a*exp(c + d*x) - b + b*exp(2*c + 2*d*x)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.325 $\int \frac{(e+fx)^2 \cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx$

Optimal. Leaf size=234

$$\frac{2f^2\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{2f^2\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}+\frac{2f(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd^2\sqrt{a^2+b^2}}-\frac{2f(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{bd^2\sqrt{a^2+b^2}}-\frac{}{bd(a}$$

```
[Out] -(f*x+e)^2/b/d/(a+b*sinh(d*x+c))+2*f*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))/b/d^2/(a^2+b^2)^(1/2)-2*f*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/b/d^2/(a^2+b^2)^(1/2)+2*f^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/
2)))/b/d^3/(a^2+b^2)^(1/2)-2*f^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)
))/b/d^3/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {5464, 3322, 2264, 2190, 2279, 2391}

$$\frac{2f^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{2f^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^3\sqrt{a^2+b^2}}+\frac{2f(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd^2\sqrt{a^2+b^2}}-\frac{2f(e+fx)\log\left(\frac{be^{c}}{\sqrt{a^2+}}\right.}{bd^2\sqrt{a^2+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] (2*f*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*Sqrt[a^2
+ b^2]*d^2) - (2*f*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]
)/(b*Sqrt[a^2 + b^2]*d^2) + (2*f^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a
^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) - (2*f^2*PolyLog[2, -((b*E^(c + d*x))
/(a + Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) - (e + f*x)^2/(b*d*(a + b
*Sinh[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
```

```
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx = -\frac{(e+fx)^2}{bd(a+b\sinh(c+dx))} + \frac{(2f)\int \frac{e+fx}{a+b\sinh(c+dx)}\,dx}{bd}$$

$$= -\frac{(e+fx)^2}{bd(a+b\sinh(c+dx))} + \frac{(4f)\int \frac{e^{c+dx}(e+fx)}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{bd}$$

$$= -\frac{(e+fx)^2}{bd(a+b\sinh(c+dx))} + \frac{(4f)\int \frac{e^{c+dx}(e+fx)}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\sqrt{a^2+b^2}\,d} - \frac{(4f)\int \frac{e^{c+dx}(e+fx)}{2a+2\sqrt{a^2+b^2}+2be^{c+a}}}{\sqrt{a^2+b^2}\,d}$$

$$= \frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{(e+fx)}{bd(a+b\sinh(}$$

$$= \frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{(e+fx)}{bd(a+b\sinh(}$$

$$= \frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{2f(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} + \frac{2f^2\mathrm{Li}_2\left(-\frac{be^{c}}{a-\sqrt{a}}\right.}{b\sqrt{a^2+b^2}}$$

Mathematica [A] time = 0.54, size = 175, normalized size = 0.75

$$\frac{2f\left(d(e+fx)\left(\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)\right)+f\mathrm{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)-f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)\right)}{bd^3\sqrt{a^2+b^2}} - \frac{(e+fx)}{bd(a+b\sinh(}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] (2*f*(d*(e + f*x)*(Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - Log[1 +
 (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]) + f*PolyLog[2, (b*E^(c + d*x))/(-a
 + Sqrt[a^2 + b^2])] - f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])
)]))/(b*Sqrt[a^2 + b^2]*d^3) - (e + f*x)^2/(b*d*(a + b*Sinh[c + d*x]))
```

fricas [B] time = 0.51, size = 1378, normalized size = 5.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 2*((b^2*f^2*cosh(d*x + c)^2 + b^2*f^2*sinh(d*x + c)^2 + 2*a*b*f^2*cosh(d*x
+ c) - b^2*f^2 + 2*(b^2*f^2*cosh(d*x + c) + a*b*f^2)*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^2*f^2*cosh(d*x +
c)^2 + b^2*f^2*sinh(d*x + c)^2 + 2*a*b*f^2*cosh(d*x + c) - b^2*f^2 + 2*(b^2
*f^2*cosh(d*x + c) + a*b*f^2)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a
*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b + 1) + (b^2*d*e*f - b^2*c*f^2 - (b^2*d*e*f - b^2*c
*f^2)*cosh(d*x + c)^2 - (b^2*d*e*f - b^2*c*f^2)*sinh(d*x + c)^2 - 2*(a*b*d*
e*f - a*b*c*f^2)*cosh(d*x + c) - 2*(a*b*d*e*f - a*b*c*f^2 + (b^2*d*e*f - b^
2*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d
*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b^2*d*e*f
 - b^2*c*f^2 - (b^2*d*e*f - b^2*c*f^2)*cosh(d*x + c)^2 - (b^2*d*e*f - b^2*c
*f^2)*sinh(d*x + c)^2 - 2*(a*b*d*e*f - a*b*c*f^2)*cosh(d*x + c) - 2*(a*b*d*
e*f - a*b*c*f^2 + (b^2*d*e*f - b^2*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqr
t((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^
2 + b^2)/b^2) + 2*a) - (b^2*d*f^2*x + b^2*c*f^2 - (b^2*d*f^2*x + b^2*c*f^2)
*cosh(d*x + c)^2 - (b^2*d*f^2*x + b^2*c*f^2)*sinh(d*x + c)^2 - 2*(a*b*d*f^2
*x + a*b*c*f^2)*cosh(d*x + c) - 2*(a*b*d*f^2*x + a*b*c*f^2 + (b^2*d*f^2*x +
 b^2*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cos
h(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2) - b)/b) + (b^2*d*f^2*x + b^2*c*f^2 - (b^2*d*f^2*x + b^2*c*f^2
)*cosh(d*x + c)^2 - (b^2*d*f^2*x + b^2*c*f^2)*sinh(d*x + c)^2 - 2*(a*b*d*f^
2*x + a*b*c*f^2)*cosh(d*x + c) - 2*(a*b*d*f^2*x + a*b*c*f^2 + (b^2*d*f^2*x
+ b^2*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*co
sh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2) - b)/b) - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x
 + (a^2 + b^2)*d^2*e^2)*cosh(d*x + c) - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 +
 b^2)*d^2*e*f*x + (a^2 + b^2)*d^2*e^2)*sinh(d*x + c))/((a^2*b^2 + b^4)*d^3*
cosh(d*x + c)^2 + (a^2*b^2 + b^4)*d^3*sinh(d*x + c)^2 + 2*(a^3*b + a*b^3)*d
^3*cosh(d*x + c) - (a^2*b^2 + b^4)*d^3 + 2*((a^2*b^2 + b^4)*d^3*cosh(d*x +
c) + (a^3*b + a*b^3)*d^3)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \cosh(dx+c)}{(b\sinh(dx+c)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)/(b*sinh(d*x + c) + a)^2, x)
```

maple [B] time = 0.00, size = 491, normalized size = 2.10

$$-\frac{2\left(x^2 f^2+2efx+e^2\right) e^{dx+c}}{bd\left(b\,e^{2dx+2c}+2a\,e^{dx+c}-b\right)}-\frac{4fe\,\mathrm{arctanh}\left(\frac{2b\,e^{dx+c}+2a}{2\sqrt{a^2+b^2}}\right)}{d^2b\sqrt{a^2+b^2}}+\frac{2f^2\ln\left(\frac{-b\,e^{dx+c}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{d^2b\sqrt{a^2+b^2}}+\frac{2f^2\ln\left(\frac{-b\,e^{dx+c}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{d^3b\sqrt{a^2+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x)
```

```
[Out] -2*(f^2*x^2+2*e*f*x+e^2)/b/d*exp(d*x+c)/(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)
-4/d^2/b*f*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/
2))+2/d^2/b*f^2/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a
^2+b^2)^(1/2)))*x+2/d^3/b*f^2/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(
1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-2/d^2/b*f^2/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c
)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-2/d^3/b*f^2/(a^2+b^2)^(1/2)*ln(
(b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/d^3/b*f^2/(a^2+b^
2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-2/d^
3/b*f^2/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)
^(1/2)))+4/d^3/b*f^2*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^
2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-2\left(\frac{x^2e^{(dx+c)}}{b^2de^{(2\,dx+2\,c)}+2\,abde^{(dx+c)}-b^2d}-2\int\frac{xe^{(dx+c)}}{b^2de^{(2\,dx+2\,c)}+2\,abde^{(dx+c)}-b^2d}\,dx\right)f^2-2\,ef\left(\frac{2\,xe^{(dx+c)}}{b^2de^{(2\,dx+2\,c)}+2\,abde^{(dx+c)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -2*(x^2*e^(d*x + c)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d*x + c) - b^2*d) -
 2*integrate(x*e^(d*x + c)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d*x + c) - b
^2*d), x))*f^2 - 2*e*f*(2*x*e^(d*x + c)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^
(d*x + c) - b^2*d) - log((b*e^(d*x + c) + a - sqrt(a^2 + b^2))/(b*e^(d*x +
c) + a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b*d^2)) - 2*e^2*e^(-d*x - c)/((
2*a*b*e^(-d*x - c) - b^2*e^(-2*d*x - 2*c) + b^2)*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{{\left(a+b\,\sinh\left(c+d\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x))^2,x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)/(a+b*sinh(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.326 $\int \frac{(e+fx)^3 \cosh(c+dx)}{(a+b\sinh(c+dx))^2} dx$

Optimal. Leaf size=348

$$-\frac{6f^3\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\sqrt{a^2+b^2}}+\frac{6f^3\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^4\sqrt{a^2+b^2}}+\frac{6f^2(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{6f^2(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}+\frac{3f(e+$$

```
[Out] -(f*x+e)^3/b/d/(a+b*sinh(d*x+c))+3*f*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^
2)^(1/2)))/b/d^2/(a^2+b^2)^(1/2)-3*f*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^
2)^(1/2)))/b/d^2/(a^2+b^2)^(1/2)+6*f^2*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(
a^2+b^2)^(1/2)))/b/d^3/(a^2+b^2)^(1/2)-6*f^2*(f*x+e)*polylog(2,-b*exp(d*x+c
)/(a+(a^2+b^2)^(1/2)))/b/d^3/(a^2+b^2)^(1/2)-6*f^3*polylog(3,-b*exp(d*x+c)/
(a-(a^2+b^2)^(1/2)))/b/d^4/(a^2+b^2)^(1/2)+6*f^3*polylog(3,-b*exp(d*x+c)/(a
+(a^2+b^2)^(1/2)))/b/d^4/(a^2+b^2)^(1/2)
```

Rubi [A] time = 0.73, antiderivative size = 348, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {5464, 3322, 2264, 2190, 2531, 2282, 6589}

$$\frac{6f^2(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{6f^2(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^3\sqrt{a^2+b^2}}-\frac{6f^3\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\sqrt{a^2+b^2}}+\frac{6f^3\text{Po}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] (3*f*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*Sqrt[a^
2 + b^2]*d^2) - (3*f*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2])])/(b*Sqrt[a^2 + b^2]*d^2) + (6*f^2*(e + f*x)*PolyLog[2, -((b*E^(c + d*x
))/(a - Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) - (6*f^2*(e + f*x)*Poly
Log[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) -
 (6*f^3*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 +
 b^2]*d^4) + (6*f^3*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(
b*Sqrt[a^2 + b^2]*d^4) - (e + f*x)^3/(b*d*(a + b*Sinh[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)}{(a+b\sinh(c+dx))^2}\,dx = -\frac{(e+fx)^3}{bd(a+b\sinh(c+dx))} + \frac{(3f)\int \frac{(e+fx)^2}{a+b\sinh(c+dx)}\,dx}{bd}$$
$$= -\frac{(e+fx)^3}{bd(a+b\sinh(c+dx))} + \frac{(6f)\int \frac{e^{c+dx}(e+fx)^2}{-b+2ae^{c+dx}+be^{2(c+dx)}}\,dx}{bd}$$
$$= -\frac{(e+fx)^3}{bd(a+b\sinh(c+dx))} + \frac{(6f)\int \frac{e^{c+dx}(e+fx)^2}{2a-2\sqrt{a^2+b^2}+2be^{c+dx}}\,dx}{\sqrt{a^2+b^2}\,d} - \frac{(6f)\int \frac{e^{c+dx}(e+fx)^2}{2a+2\sqrt{a^2+b^2}+2be^{c+
$$= \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{(e+f
$$= \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} + \frac{6f^2(e+fx)
$$= \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} + \frac{6f^2(e+fx)
$$= \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} - \frac{3f(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\sqrt{a^2+b^2}\,d^2} + \frac{6f^2(e+fx)

Mathematica [A] time = 0.34, size = 368, normalized size = 1.06

$$3f\left(-2d^2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)+2d^2efx\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-2d^2efx\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)+d^2f^2x^2\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^2,x]
```

```
[Out] (3*f*(-2*d^2*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 2*d^2*e*f*x
*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2])] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b
^2])] + 2*d*f*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
- 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*
f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*f^2*PolyLog[3, -
```

```
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(b*Sqrt[a^2 + b^2]*d^4) - (e + f
*x)^3/(b*d*(a + b*Sinh[c + d*x]))
```

fricas [C] time = 0.63, size = 2420, normalized size = 6.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] -(6*(b^2*d*f^3*x + b^2*d*e*f^2 - (b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^
2 - (b^2*d*f^3*x + b^2*d*e*f^2)*sinh(d*x + c)^2 - 2*(a*b*d*f^3*x + a*b*d*e*
f^2)*cosh(d*x + c) - 2*(a*b*d*f^3*x + a*b*d*e*f^2 + (b^2*d*f^3*x + b^2*d*e*
f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x
+ c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^
2)/b^2) - b)/b + 1) - 6*(b^2*d*f^3*x + b^2*d*e*f^2 - (b^2*d*f^3*x + b^2*d*e
*f^2)*cosh(d*x + c)^2 - (b^2*d*f^3*x + b^2*d*e*f^2)*sinh(d*x + c)^2 - 2*(a*
b*d*f^3*x + a*b*d*e*f^2)*cosh(d*x + c) - 2*(a*b*d*f^3*x + a*b*d*e*f^2 + (b^
2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2
)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 3*(b^2*d^2*e^2*f - 2*b^2*c*d*e*f^
2 + b^2*c^2*f^3 - (b^2*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3)*cosh(d*x
+ c)^2 - (b^2*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3)*sinh(d*x + c)^2 -
2*(a*b*d^2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f^3)*cosh(d*x + c) - 2*(a*b*d^
2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f^3 + (b^2*d^2*e^2*f - 2*b^2*c*d*e*f^2
+ b^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*
cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 3*(b
^2*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3 - (b^2*d^2*e^2*f - 2*b^2*c*d*e
*f^2 + b^2*c^2*f^3)*cosh(d*x + c)^2 - (b^2*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^
2*c^2*f^3)*sinh(d*x + c)^2 - 2*(a*b*d^2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f
^3)*cosh(d*x + c) - 2*(a*b*d^2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f^3 + (b^2
*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*s
qrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((
a^2 + b^2)/b^2) + 2*a) + 3*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d
*e*f^2 - b^2*c^2*f^3 - (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f
^2 - b^2*c^2*f^3)*cosh(d*x + c)^2 - (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x +
2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*sinh(d*x + c)^2 - 2*(a*b*d^2*f^3*x^2 + 2*a*b
*d^2*e*f^2*x + 2*a*b*c*d*e*f^2 - a*b*c^2*f^3)*cosh(d*x + c) - 2*(a*b*d^2*f^
3*x^2 + 2*a*b*d^2*e*f^2*x + 2*a*b*c*d*e*f^2 - a*b*c^2*f^3 + (b^2*d^2*f^3*x^
2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*cosh(d*x + c))*sinh(
d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (
b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 3*(b^2*d
^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3 - (b^2*d^2*f
^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*cosh(d*x + c)^2
 - (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*si
```

```
nh(d*x + c)^2 - 2*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*x + 2*a*b*c*d*e*f^2 -
a*b*c^2*f^3)*cosh(d*x + c) - 2*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*x + 2*a*b
*c*d*e*f^2 - a*b*c^2*f^3 + (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d
*e*f^2 - b^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*l
og(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2) - b)/b) + 6*(b^2*f^3*cosh(d*x + c)^2 + b^2*f^3*sinh
(d*x + c)^2 + 2*a*b*f^3*cosh(d*x + c) - b^2*f^3 + 2*(b^2*f^3*cosh(d*x + c)
+ a*b*f^3)*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c)
 + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2))/b) - 6*(b^2*f^3*cosh(d*x + c)^2 + b^2*f^3*sinh(d*x + c)^2 + 2*a*b*f^3*
cosh(d*x + c) - b^2*f^3 + 2*(b^2*f^3*cosh(d*x + c) + a*b*f^3)*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 2*((a^2 + b^2)
*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + (a
^2 + b^2)*d^3*e^3)*cosh(d*x + c) + 2*((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^
2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + (a^2 + b^2)*d^3*e^3)*sinh(d*
x + c))/((a^2*b^2 + b^4)*d^4*cosh(d*x + c)^2 + (a^2*b^2 + b^4)*d^4*sinh(d*x
 + c)^2 + 2*(a^3*b + a*b^3)*d^4*cosh(d*x + c) - (a^2*b^2 + b^4)*d^4 + 2*((a
^2*b^2 + b^4)*d^4*cosh(d*x + c) + (a^3*b + a*b^3)*d^4)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)}{\left(b\sinh\left(dx+c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)/(b*sinh(d*x + c) + a)^2, x)
```

maple [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)}{\left(a+b\sinh\left(dx+c\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-3\,e^2 f\left(\frac{2\,xe^{(dx+c)}}{b^2de^{(2\,dx+2\,c)} + 2\,abde^{(dx+c)} - b^2d} - \frac{\log\left(\frac{be^{(dx+c)}+a-\sqrt{a^2+b^2}}{be^{(dx+c)}+a+\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}\,bd^2}\right) - \frac{2\,e^3e^{(-dx-c)}}{\left(2\,abe^{(-dx-c)} - b^2e^{(-2\,dx-2\,c)} + b^2\right)d} - \frac{2\left(f^3\right.}{b^2de^{(2\,dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -3*e^2*f*(2*x*e^(d*x + c)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d*x + c) - b^
2*d) - log((b*e^(d*x + c) + a - sqrt(a^2 + b^2))/(b*e^(d*x + c) + a + sqrt(
a^2 + b^2)))/(sqrt(a^2 + b^2)*b*d^2)) - 2*e^3*e^(-d*x - c)/((2*a*b*e^(-d*x
- c) - b^2*e^(-2*d*x - 2*c) + b^2)*d) - 2*(f^3*x^3*e^c + 3*e*f^2*x^2*e^c)*e
^(d*x)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d*x + c) - b^2*d) + integrate(6*
(f^3*x^2*e^c + 2*e*f^2*x*e^c)*e^(d*x)/(b^2*d*e^(2*d*x + 2*c) + 2*a*b*d*e^(d
*x + c) - b^2*d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{{\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x))^2,x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)/(a+b*sinh(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.327 $\int \frac{(e+fx)\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx$

Optimal. Leaf size=112

$$-\frac{af\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd^2\left(a^2+b^2\right)^{3/2}}-\frac{f\cosh(c+dx)}{2d^2\left(a^2+b^2\right)(a+b\sinh(c+dx))}-\frac{e+fx}{2bd(a+b\sinh(c+dx))^2}$$

```
[Out] -a*f*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))/b/(a^2+b^2)^(3/2)/d
^2+1/2*(-f*x-e)/b/d/(a+b*sinh(d*x+c))^2-1/2*f*cosh(d*x+c)/(a^2+b^2)/d^2/(a+
b*sinh(d*x+c))
```

Rubi [A] time = 0.10, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {5464, 2664, 12, 2660, 618, 204}

$$-\frac{af\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd^2\left(a^2+b^2\right)^{3/2}}-\frac{f\cosh(c+dx)}{2d^2\left(a^2+b^2\right)(a+b\sinh(c+dx))}-\frac{e+fx}{2bd(a+b\sinh(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] -((a*f*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(b*(a^2 + b^2)^(
3/2)*d^2)) - (e + f*x)/(2*b*d*(a + b*Sinh[c + d*x])^2) - (f*Cosh[c + d*x])/
(2*(a^2 + b^2)*d^2*(a + b*Sinh[c + d*x]))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
```

```
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2664

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[
c + d*x]*(a + b*Sin[c + d*x])^(n + 1))/(d*(n + 1)*(a^2 - b^2)), x] + Dist[1
/((n + 1)*(a^2 - b^2)), Int[(a + b*Sin[c + d*x])^(n + 1)*Simp[a*(n + 1) - b
*(n + 2)*Sin[c + d*x], x], x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^
2, 0] && LtQ[n, -1] && IntegerQ[2*n]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx = -\frac{e+fx}{2bd(a+b\sinh(c+dx))^2} + \frac{f\int \frac{1}{(a+b\sinh(c+dx))^2}\,dx}{2bd}$$

$$= -\frac{e+fx}{2bd(a+b\sinh(c+dx))^2} - \frac{f\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} + \frac{f\int \frac{a}{a+b\sinh(c+dx)}}{2b\left(a^2+b^2\right)d}$$

$$= -\frac{e+fx}{2bd(a+b\sinh(c+dx))^2} - \frac{f\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} + \frac{(af)\int \frac{1}{a+b\sinh(c+}}{2b\left(a^2+b^2\right)}$$

$$= -\frac{e+fx}{2bd(a+b\sinh(c+dx))^2} - \frac{f\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} - \frac{(iaf)\,\text{Subst}\left(\int \frac{}{a}\right.}{}$$

$$= -\frac{e+fx}{2bd(a+b\sinh(c+dx))^2} - \frac{f\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} + \frac{(2iaf)\,\text{Subst}\left(\int\right.}{}$$

$$= -\frac{af\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2} - \frac{e+fx}{2bd(a+b\sinh(c+dx))^2} - \frac{f\cosh(c+d}{2\left(a^2+b^2\right)d^2(a+b\sin}$$

Mathematica [A] time = 1.09, size = 112, normalized size = 1.00

$$-\frac{\frac{\frac{2af\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{\left(-a^2-b^2\right)^{3/2}}+\frac{d(e+fx)}{(a+b\sinh(c+dx))^2}}{b}+\frac{f\cosh(c+dx)}{\left(a^2+b^2\right)(a+b\sinh(c+dx))}}{2d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] -1/2*((f*Cosh[c + d*x])/((a^2 + b^2)*(a + b*Sinh[c + d*x])) + ((2*a*f*ArcTa
n[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/(-a^2 - b^2)^(3/2) + (d*(e +
 f*x))/(a + b*Sinh[c + d*x])^2)/b)/d^2
```

fricas [B] time = 0.47, size = 1230, normalized size = 10.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*(a^3*b + a*b^3)*f*cosh(d*x + c)^3 + 2*(a^3*b + a*b^3)*f*sinh(d*x + c
)^3 - 6*(a^3*b + a*b^3)*f*cosh(d*x + c) - 2*(2*(a^4 + 2*a^2*b^2 + b^4)*d*f*
x + 2*(a^4 + 2*a^2*b^2 + b^4)*d*e - (2*a^4 + a^2*b^2 - b^4)*f)*cosh(d*x + c
)^2 - 2*(2*(a^4 + 2*a^2*b^2 + b^4)*d*f*x + 2*(a^4 + 2*a^2*b^2 + b^4)*d*e -
3*(a^3*b + a*b^3)*f*cosh(d*x + c) - (2*a^4 + a^2*b^2 - b^4)*f)*sinh(d*x + c
)^2 + (a*b^2*f*cosh(d*x + c)^4 + a*b^2*f*sinh(d*x + c)^4 + 4*a^2*b*f*cosh(d
*x + c)^3 - 4*a^2*b*f*cosh(d*x + c) + a*b^2*f + 2*(2*a^3 - a*b^2)*f*cosh(d*
x + c)^2 + 4*(a*b^2*f*cosh(d*x + c) + a^2*b*f)*sinh(d*x + c)^3 + 2*(3*a*b^2
*f*cosh(d*x + c)^2 + 6*a^2*b*f*cosh(d*x + c) + (2*a^3 - a*b^2)*f)*sinh(d*x
+ c)^2 + 4*(a*b^2*f*cosh(d*x + c)^3 + 3*a^2*b*f*cosh(d*x + c)^2 - a^2*b*f +
 (2*a^3 - a*b^2)*f*cosh(d*x + c))*sinh(d*x + c))*sqrt(a^2 + b^2)*log((b^2*c
osh(d*x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 +
2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x + c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x +
 c) + b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*co
sh(d*x + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) + 2*(a^2*b^2 + b^
4)*f + 2*(3*(a^3*b + a*b^3)*f*cosh(d*x + c)^2 - 3*(a^3*b + a*b^3)*f - 2*(2*
(a^4 + 2*a^2*b^2 + b^4)*d*f*x + 2*(a^4 + 2*a^2*b^2 + b^4)*d*e - (2*a^4 + a^
2*b^2 - b^4)*f)*cosh(d*x + c))*sinh(d*x + c))/((a^4*b^3 + 2*a^2*b^5 + b^7)*
d^2*cosh(d*x + c)^4 + (a^4*b^3 + 2*a^2*b^5 + b^7)*d^2*sinh(d*x + c)^4 + 4*(
a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^2*cosh(d*x + c)^3 + 2*(2*a^6*b + 3*a^4*b^3 -
 b^7)*d^2*cosh(d*x + c)^2 - 4*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^2*cosh(d*x +
c) + 4*((a^4*b^3 + 2*a^2*b^5 + b^7)*d^2*cosh(d*x + c) + (a^5*b^2 + 2*a^3*b^
4 + a*b^6)*d^2)*sinh(d*x + c)^3 + (a^4*b^3 + 2*a^2*b^5 + b^7)*d^2 + 2*(3*(a
^4*b^3 + 2*a^2*b^5 + b^7)*d^2*cosh(d*x + c)^2 + 6*(a^5*b^2 + 2*a^3*b^4 + a*
b^6)*d^2*cosh(d*x + c) + (2*a^6*b + 3*a^4*b^3 - b^7)*d^2)*sinh(d*x + c)^2 +
 4*((a^4*b^3 + 2*a^2*b^5 + b^7)*d^2*cosh(d*x + c)^3 + 3*(a^5*b^2 + 2*a^3*b^
4 + a*b^6)*d^2*cosh(d*x + c)^2 + (2*a^6*b + 3*a^4*b^3 - b^7)*d^2*cosh(d*x +
 c) - (a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^2)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cosh(dx+c)}{(b\sinh(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)/(b*sinh(d*x + c) + a)^3, x)
```

maple [B] time = 0.51, size = 308, normalized size = 2.75

$$-\frac{2a^2dfx\,e^{2dx+2c}+2b^2dfx\,e^{2dx+2c}+2a^2de\,e^{2dx+2c}-abf\,e^{3dx+3c}+2b^2de\,e^{2dx+2c}-2a^2f\,e^{2dx+2c}+b^2f\,e^{2dx+2c}+3a}{b\,d^2\left(a^2+b^2\right)\left(b\,e^{2dx+2c}+2a\,e^{dx+c}-b\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x)
```

```
[Out] -1/b*(2*a^2*d*f*x*exp(2*d*x+2*c)+2*b^2*d*f*x*exp(2*d*x+2*c)+2*a^2*d*e*exp(2
*d*x+2*c)-a*b*f*exp(3*d*x+3*c)+2*b^2*d*e*exp(2*d*x+2*c)-2*a^2*f*exp(2*d*x+2
*c)+b^2*f*exp(2*d*x+2*c)+3*a*f*exp(d*x+c)*b-f*b^2)/d^2/(a^2+b^2)/(b*exp(2*d
*x+2*c)+2*a*exp(d*x+c)-b)^2+1/2/(a^2+b^2)^(3/2)*f*a/d^2/b*ln(exp(d*x+c)+(a*
(a^2+b^2)^(3/2)-a^4-2*a^2*b^2-b^4)/(a^2+b^2)^(3/2)/b)-1/2/(a^2+b^2)^(3/2)*f
*a/d^2/b*ln(exp(d*x+c)+(a*(a^2+b^2)^(3/2)+a^4+2*a^2*b^2+b^4)/(a^2+b^2)^(3/2
)/b)
```

maxima [B] time = 0.60, size = 413, normalized size = 3.69

$$\frac{1}{2}f\left(\frac{2\left(abe^{(3\,dx+3\,c)}-3\,abe^{(dx+c)}+b^2+\left(2\,a^2e^{(2\,c)}-b^2e^{(2\,c)}-2\left(a^2de^{(2\,c)}+b^2d\right.\right.\right.}{a^2b^3d^2+b^5d^2+\left(a^2b^3d^2e^{(4\,c)}+b^5d^2e^{(4\,c)}\right)e^{(4\,dx)}+4\left(a^3b^2d^2e^{(3\,c)}+ab^4d^2e^{(3\,c)}\right)e^{(3\,dx)}+2\left(2\,a^4bd^2e^{(2\,c)}+a^2b^3d^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/2*f*(2*(a*b*e^(3*d*x + 3*c) - 3*a*b*e^(d*x + c) + b^2 + (2*a^2*e^(2*c) -
b^2*e^(2*c) - 2*(a^2*d*e^(2*c) + b^2*d*e^(2*c))*x)*e^(2*d*x))/(a^2*b^3*d^2
+ b^5*d^2 + (a^2*b^3*d^2*e^(4*c) + b^5*d^2*e^(4*c))*e^(4*d*x) + 4*(a^3*b^2*
d^2*e^(3*c) + a*b^4*d^2*e^(3*c))*e^(3*d*x) + 2*(2*a^4*b*d^2*e^(2*c) + a^2*b
^3*d^2*e^(2*c) - b^5*d^2*e^(2*c))*e^(2*d*x) - 4*(a^3*b^2*d^2*e^c + a*b^4*d^
2*e^c)*e^(d*x)) + a*log((b*e^(d*x + 2*c) + a*e^c - sqrt(a^2 + b^2)*e^c)/(b*
e^(d*x + 2*c) + a*e^c + sqrt(a^2 + b^2)*e^c))/((a^2*b + b^3)*sqrt(a^2 + b^2
)*d^2)) - 2*e*e^(-2*d*x - 2*c)/((4*a*b^2*e^(-d*x - c) - 4*a*b^2*e^(-3*d*x -
 3*c) + b^3*e^(-4*d*x - 4*c) + b^3 + 2*(2*a^2*b - b^3)*e^(-2*d*x - 2*c))*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cosh\left(c+d\,x\right)\,\left(e+f\,x\right)}{{\left(a+b\,\sinh\left(c+d\,x\right)\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x))^3,x)
[Out] int((cosh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x))^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))**3,x)
[Out] Timed out
```

3.328 $\int \frac{(e+fx)^2\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx$

Optimal. Leaf size=306

$$\frac{af^2\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}-\frac{af^2\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}+\frac{f^2\log(a+b\sinh(c+dx))}{bd^3\left(a^2+b^2\right)}+\frac{af(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd^2\left(a^2+b^2\right)^{3/2}}-\frac{af(e+f}{b}$$

```
[Out] f^2*ln(a+b*sinh(d*x+c))/b/(a^2+b^2)/d^3+a*f*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a
^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^2-a*f*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2
+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^2+a*f^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b
^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^3-a*f^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2
)^(1/2)))/b/(a^2+b^2)^(3/2)/d^3-1/2*(f*x+e)^2/b/d/(a+b*sinh(d*x+c))^2-f*(f*
x+e)*cosh(d*x+c)/(a^2+b^2)/d^2/(a+b*sinh(d*x+c))
```

Rubi [A] time = 0.52, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {5464, 3324, 3322, 2264, 2190, 2279, 2391, 2668, 31}

$$\frac{af^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}-\frac{af^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}+\frac{af(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd^2\left(a^2+b^2\right)^{3/2}}-\frac{af(e+fx)\log\left(\frac{be^{c}}{\sqrt{a^2+}}\right.}{bd^2\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] (a*f*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*(a^2 + b^
2)^(3/2)*d^2) - (a*f*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
)])/(b*(a^2 + b^2)^(3/2)*d^2) + (f^2*Log[a + b*Sinh[c + d*x]])/(b*(a^2 + b^
2)*d^3) + (a*f^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*(
a^2 + b^2)^(3/2)*d^3) - (a*f^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))])/(b*(a^2 + b^2)^(3/2)*d^3) - (e + f*x)^2/(2*b*d*(a + b*Sinh[c + d*
x])^2) - (f*(e + f*x)*Cosh[c + d*x])/((a^2 + b^2)*d^2*(a + b*Sinh[c + d*x])
)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
```

```
2, 0] && IGtQ[m, 0]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx = -\frac{(e+fx)^2}{2bd(a+b\sinh(c+dx))^2}+\frac{f\int \frac{e+fx}{(a+b\sinh(c+dx))^2}\,dx}{bd}$$

$$= -\frac{(e+fx)^2}{2bd(a+b\sinh(c+dx))^2}-\frac{f(e+fx)\cosh(c+dx)}{\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))}+\frac{(af)\int \frac{e+fx}{a+b\sinh(c+}$$

$$= -\frac{(e+fx)^2}{2bd(a+b\sinh(c+dx))^2}-\frac{f(e+fx)\cosh(c+dx)}{\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))}+\frac{(2af)\int \frac{e^{c+dx}(}{-b+2ae^{c+dx}}}{b\left(a^2+b\right.}$$

$$= \frac{f^2\log(a+b\sinh(c+dx))}{b\left(a^2+b^2\right)d^3}-\frac{(e+fx)^2}{2bd(a+b\sinh(c+dx))^2}-\frac{f(e+fx)\cosh(c+}{\left(a^2+b^2\right)d^2(a+b\sinh(}$$

$$= \frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}-\frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}+\frac{f^2\log(a+b\,\mathrm{si}}{b\left(a^2+b\right.}$$

$$= \frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}-\frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}+\frac{f^2\log(a+b\,\mathrm{si}}{b\left(a^2+b\right.}$$

$$= \frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}-\frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}+\frac{f^2\log(a+b\,\mathrm{si}}{b\left(a^2+b\right.}$$

Mathematica [B] time = 16.16, size = 623, normalized size = 2.04

$$\frac{\operatorname{csch}\left(\frac{c}{2}\right)\operatorname{sech}\left(\frac{c}{2}\right)\left(aef\cosh(c)+af^2x\cosh(c)+bef\sinh(dx)+bf^2x\sinh(dx)\right)}{2bd^2\left(a^2+b^2\right)(a+b\sinh(c+dx))}+\frac{2e^cf\left(-\frac{ae^{-c}\left(e^{2c}-1\right)e\tanh^{-1}\left(\frac{a+be^{c+d}}{\sqrt{a^2+b^2}}\right.}{\sqrt{a^2+b^2}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] (f^2*x*Coth[c])/(b*(a^2 + b^2)*d^2) + (2*E^c*f*(-(E^c*f*x) + ((-1 + E^(2*c)
)*f*x)/E^c - (a*e*(-1 + E^(2*c))*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2
]])/(Sqrt[a^2 + b^2]*E^c) + (a*(-1 + E^(2*c))*f*ArcTanh[(a + b*E^(c + d*x))
/Sqrt[a^2 + b^2]])/(Sqrt[a^2 + b^2]*d*E^c) + ((-1 + E^(2*c))*f*(-2*x + (2*a
*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/(Sqrt[-a^2 - b^2]*d) + Log[2
*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))]/d))/(2*E^c) + (a*(-1 + E^(2*c))*
f*(d*x*(Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - Lo
g[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])]) + PolyLog[2,
-((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - PolyLog[2, -((b
*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))]))/(2*d*Sqrt[(a^2 + b^
2)*E^(2*c)])))/(b*(a^2 + b^2)*d^2*(-1 + E^(2*c))) - (f^2*x*Cosh[c]*Csch[c/2
]*Sech[c/2])/(2*b*(a^2 + b^2)*d^2) - (e + f*x)^2/(2*b*d*(a + b*Sinh[c + d*x
])^2) + (Csch[c/2]*Sech[c/2]*(a*e*f*Cosh[c] + a*f^2*x*Cosh[c] + b*e*f*Sinh[
d*x] + b*f^2*x*Sinh[d*x]))/(2*b*(a^2 + b^2)*d^2*(a + b*Sinh[c + d*x]))
```

fricas [B] time = 0.81, size = 5233, normalized size = 17.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] -(2*((a^2*b^2 + b^4)*d*f^2*x + (a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)^4 + 2*(
(a^2*b^2 + b^4)*d*f^2*x + (a^2*b^2 + b^4)*c*f^2)*sinh(d*x + c)^4 - 2*(a^2*b
^2 + b^4)*d*e*f + 2*(a^2*b^2 + b^4)*c*f^2 + 2*(3*(a^3*b + a*b^3)*d*f^2*x -
(a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^3)*c*f^2)*cosh(d*x + c)^3 + 2*(3*(a^
3*b + a*b^3)*d*f^2*x - (a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^3)*c*f^2 + 4*
((a^2*b^2 + b^4)*d*f^2*x + (a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c))*sinh(d*x +
 c)^3 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + (a^4 + 2*a^2*b^2 + b^4)*d^
2*e^2 - (2*a^4 + a^2*b^2 - b^4)*d*e*f + 2*(2*a^4 + a^2*b^2 - b^4)*c*f^2 + (
2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f + (2*a^4 + a^2*b^2 - b^4)*d*f^2)*x)*cosh(
d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + (a^4 + 2*a^2*b^2 + b^
```

```
4)*d^2*e^2 - (2*a^4 + a^2*b^2 - b^4)*d*e*f + 2*(2*a^4 + a^2*b^2 - b^4)*c*f^
2 + 6*((a^2*b^2 + b^4)*d*f^2*x + (a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)^2 + (
2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f + (2*a^4 + a^2*b^2 - b^4)*d*f^2)*x + 3*(3
*(a^3*b + a*b^3)*d*f^2*x - (a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^3)*c*f^2)
*cosh(d*x + c))*sinh(d*x + c)^2 - (a*b^3*f^2*cosh(d*x + c)^4 + a*b^3*f^2*si
nh(d*x + c)^4 + 4*a^2*b^2*f^2*cosh(d*x + c)^3 - 4*a^2*b^2*f^2*cosh(d*x + c)
 + a*b^3*f^2 + 2*(2*a^3*b - a*b^3)*f^2*cosh(d*x + c)^2 + 4*(a*b^3*f^2*cosh(
d*x + c) + a^2*b^2*f^2)*sinh(d*x + c)^3 + 2*(3*a*b^3*f^2*cosh(d*x + c)^2 +
6*a^2*b^2*f^2*cosh(d*x + c) + (2*a^3*b - a*b^3)*f^2)*sinh(d*x + c)^2 + 4*(a
*b^3*f^2*cosh(d*x + c)^3 + 3*a^2*b^2*f^2*cosh(d*x + c)^2 - a^2*b^2*f^2 + (2
*a^3*b - a*b^3)*f^2*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dil
og((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))
*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (a*b^3*f^2*cosh(d*x + c)^4 + a*b^3*f^2
*sinh(d*x + c)^4 + 4*a^2*b^2*f^2*cosh(d*x + c)^3 - 4*a^2*b^2*f^2*cosh(d*x +
 c) + a*b^3*f^2 + 2*(2*a^3*b - a*b^3)*f^2*cosh(d*x + c)^2 + 4*(a*b^3*f^2*co
sh(d*x + c) + a^2*b^2*f^2)*sinh(d*x + c)^3 + 2*(3*a*b^3*f^2*cosh(d*x + c)^2
 + 6*a^2*b^2*f^2*cosh(d*x + c) + (2*a^3*b - a*b^3)*f^2)*sinh(d*x + c)^2 + 4
*(a*b^3*f^2*cosh(d*x + c)^3 + 3*a^2*b^2*f^2*cosh(d*x + c)^2 - a^2*b^2*f^2 +
 (2*a^3*b - a*b^3)*f^2*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*
dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (a*b^3*d*f^2*x + a*b^3*c*f^2 + (a*b
^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x + c)^4 + (a*b^3*d*f^2*x + a*b^3*c*f^2)*s
inh(d*x + c)^4 + 4*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*cosh(d*x + c)^3 + 4*(a
^2*b^2*d*f^2*x + a^2*b^2*c*f^2 + (a*b^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x + c
))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d*f^2*x + (2*a^3*b - a*b^3)*c*f^2
)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d*f^2*x + (2*a^3*b - a*b^3)*c*f^2
+ 3*(a*b^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x + c)^2 + 6*(a^2*b^2*d*f^2*x + a^
2*b^2*c*f^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d*f^2*x + a^2*b^2*
c*f^2)*cosh(d*x + c) - 4*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2 - (a*b^3*d*f^2*x
+ a*b^3*c*f^2)*cosh(d*x + c)^3 - 3*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*cosh(d
*x + c)^2 - ((2*a^3*b - a*b^3)*d*f^2*x + (2*a^3*b - a*b^3)*c*f^2)*cosh(d*x
+ c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d
*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b)
 + (a*b^3*d*f^2*x + a*b^3*c*f^2 + (a*b^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x +
c)^4 + (a*b^3*d*f^2*x + a*b^3*c*f^2)*sinh(d*x + c)^4 + 4*(a^2*b^2*d*f^2*x +
 a^2*b^2*c*f^2)*cosh(d*x + c)^3 + 4*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2 + (a*b
^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*
b^3)*d*f^2*x + (2*a^3*b - a*b^3)*c*f^2)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b
^3)*d*f^2*x + (2*a^3*b - a*b^3)*c*f^2 + 3*(a*b^3*d*f^2*x + a*b^3*c*f^2)*cos
h(d*x + c)^2 + 6*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*cosh(d*x + c))*sinh(d*x
+ c)^2 - 4*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*cosh(d*x + c) - 4*(a^2*b^2*d*f
^2*x + a^2*b^2*c*f^2 - (a*b^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x + c)^3 - 3*(a
^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d*f^2*
x + (2*a^3*b - a*b^3)*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d
```

```
*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*((a^3*b + a*b^3)*d*f^2*x - 3*(a^
3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^3)*c*f^2)*cosh(d*x + c) - ((a^2*b^2 + b
^4)*f^2*cosh(d*x + c)^4 + (a^2*b^2 + b^4)*f^2*sinh(d*x + c)^4 + 4*(a^3*b +
a*b^3)*f^2*cosh(d*x + c)^3 + 2*(2*a^4 + a^2*b^2 - b^4)*f^2*cosh(d*x + c)^2
- 4*(a^3*b + a*b^3)*f^2*cosh(d*x + c) + 4*((a^2*b^2 + b^4)*f^2*cosh(d*x + c
) + (a^3*b + a*b^3)*f^2)*sinh(d*x + c)^3 + (a^2*b^2 + b^4)*f^2 + 2*(3*(a^2*
b^2 + b^4)*f^2*cosh(d*x + c)^2 + 6*(a^3*b + a*b^3)*f^2*cosh(d*x + c) + (2*a
^4 + a^2*b^2 - b^4)*f^2)*sinh(d*x + c)^2 + 4*((a^2*b^2 + b^4)*f^2*cosh(d*x
+ c)^3 + 3*(a^3*b + a*b^3)*f^2*cosh(d*x + c)^2 + (2*a^4 + a^2*b^2 - b^4)*f^
2*cosh(d*x + c) - (a^3*b + a*b^3)*f^2)*sinh(d*x + c) - (a*b^3*d*e*f - a*b^3
*c*f^2 + (a*b^3*d*e*f - a*b^3*c*f^2)*cosh(d*x + c)^4 + (a*b^3*d*e*f - a*b^3
*c*f^2)*sinh(d*x + c)^4 + 4*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c)^3
 + 4*(a^2*b^2*d*e*f - a^2*b^2*c*f^2 + (a*b^3*d*e*f - a*b^3*c*f^2)*cosh(d*x
+ c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d*e*f - (2*a^3*b - a*b^3)*c*f^
2)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d*e*f - (2*a^3*b - a*b^3)*c*f^2 +
 3*(a*b^3*d*e*f - a*b^3*c*f^2)*cosh(d*x + c)^2 + 6*(a^2*b^2*d*e*f - a^2*b^2
*c*f^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*
cosh(d*x + c) - 4*(a^2*b^2*d*e*f - a^2*b^2*c*f^2 - (a*b^3*d*e*f - a*b^3*c*f
^2)*cosh(d*x + c)^3 - 3*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c)^2 - (
(2*a^3*b - a*b^3)*d*e*f - (2*a^3*b - a*b^3)*c*f^2)*cosh(d*x + c))*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*
b*sqrt((a^2 + b^2)/b^2) + 2*a) - ((a^2*b^2 + b^4)*f^2*cosh(d*x + c)^4 + (a^
2*b^2 + b^4)*f^2*sinh(d*x + c)^4 + 4*(a^3*b + a*b^3)*f^2*cosh(d*x + c)^3 +
2*(2*a^4 + a^2*b^2 - b^4)*f^2*cosh(d*x + c)^2 - 4*(a^3*b + a*b^3)*f^2*cosh(
d*x + c) + 4*((a^2*b^2 + b^4)*f^2*cosh(d*x + c) + (a^3*b + a*b^3)*f^2)*sinh
(d*x + c)^3 + (a^2*b^2 + b^4)*f^2 + 2*(3*(a^2*b^2 + b^4)*f^2*cosh(d*x + c)^
2 + 6*(a^3*b + a*b^3)*f^2*cosh(d*x + c) + (2*a^4 + a^2*b^2 - b^4)*f^2)*sinh
(d*x + c)^2 + 4*((a^2*b^2 + b^4)*f^2*cosh(d*x + c)^3 + 3*(a^3*b + a*b^3)*f^
2*cosh(d*x + c)^2 + (2*a^4 + a^2*b^2 - b^4)*f^2*cosh(d*x + c) - (a^3*b + a*
b^3)*f^2)*sinh(d*x + c) + (a*b^3*d*e*f - a*b^3*c*f^2 + (a*b^3*d*e*f - a*b^3
*c*f^2)*cosh(d*x + c)^4 + (a*b^3*d*e*f - a*b^3*c*f^2)*sinh(d*x + c)^4 + 4*(
a^2*b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c)^3 + 4*(a^2*b^2*d*e*f - a^2*b^2
*c*f^2 + (a*b^3*d*e*f - a*b^3*c*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2
*a^3*b - a*b^3)*d*e*f - (2*a^3*b - a*b^3)*c*f^2)*cosh(d*x + c)^2 + 2*((2*a^
3*b - a*b^3)*d*e*f - (2*a^3*b - a*b^3)*c*f^2 + 3*(a*b^3*d*e*f - a*b^3*c*f^2
)*cosh(d*x + c)^2 + 6*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c))*sinh(d
*x + c)^2 - 4*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c) - 4*(a^2*b^2*d*
e*f - a^2*b^2*c*f^2 - (a*b^3*d*e*f - a*b^3*c*f^2)*cosh(d*x + c)^3 - 3*(a^2*
b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d*e*f - (2*
a^3*b - a*b^3)*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))*
log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a
) - 2*((a^3*b + a*b^3)*d*f^2*x - 3*(a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^3
)*c*f^2 - 4*((a^2*b^2 + b^4)*d*f^2*x + (a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)
^3 - 3*(3*(a^3*b + a*b^3)*d*f^2*x - (a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^
3)*c*f^2)*cosh(d*x + c)^2 - 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + (a^4 +
```

```
 2*a^2*b^2 + b^4)*d^2*e^2 - (2*a^4 + a^2*b^2 - b^4)*d*e*f + 2*(2*a^4 + a^2*
b^2 - b^4)*c*f^2 + (2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f + (2*a^4 + a^2*b^2 -
b^4)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/((a^4*b^3 + 2*a^2*b^5 + b^7)*d
^3*cosh(d*x + c)^4 + (a^4*b^3 + 2*a^2*b^5 + b^7)*d^3*sinh(d*x + c)^4 + 4*(a
^5*b^2 + 2*a^3*b^4 + a*b^6)*d^3*cosh(d*x + c)^3 + 2*(2*a^6*b + 3*a^4*b^3 -
b^7)*d^3*cosh(d*x + c)^2 - 4*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^3*cosh(d*x + c
) + (a^4*b^3 + 2*a^2*b^5 + b^7)*d^3 + 4*((a^4*b^3 + 2*a^2*b^5 + b^7)*d^3*co
sh(d*x + c) + (a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^3)*sinh(d*x + c)^3 + 2*(3*(a^
4*b^3 + 2*a^2*b^5 + b^7)*d^3*cosh(d*x + c)^2 + 6*(a^5*b^2 + 2*a^3*b^4 + a*b
^6)*d^3*cosh(d*x + c) + (2*a^6*b + 3*a^4*b^3 - b^7)*d^3)*sinh(d*x + c)^2 +
4*((a^4*b^3 + 2*a^2*b^5 + b^7)*d^3*cosh(d*x + c)^3 + 3*(a^5*b^2 + 2*a^3*b^4
 + a*b^6)*d^3*cosh(d*x + c)^2 + (2*a^6*b + 3*a^4*b^3 - b^7)*d^3*cosh(d*x +
c) - (a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^3)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\cosh\left(dx+c\right)}{\left(b\sinh\left(dx+c\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)/(b*sinh(d*x + c) + a)^3, x)
```

maple [B] time = 0.48, size = 805, normalized size = 2.63

$$-\frac{2\left(a^{2}d\,f^{2}x^{2}e^{2dx+2c}+b^{2}d\,f^{2}x^{2}e^{2dx+2c}+2a^{2}defx\,e^{2dx+2c}-ab\,f^{2}x\,e^{3dx+3c}+2b^{2}defx\,e^{2dx+2c}+a^{2}d\,e^{2}e^{2dx+2c}-2a^{2}\cdots\right.}{b\,d^{2}\left(a^{2}\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x)
```

```
[Out] -2/b*(a^2*d*f^2*x^2*exp(2*d*x+2*c)+b^2*d*f^2*x^2*exp(2*d*x+2*c)+2*a^2*d*e*f
*x*exp(2*d*x+2*c)-a*b*f^2*x*exp(3*d*x+3*c)+2*b^2*d*e*f*x*exp(2*d*x+2*c)+a^2
*d*e^2*exp(2*d*x+2*c)-2*a^2*f^2*x*exp(2*d*x+2*c)-a*b*e*f*exp(3*d*x+3*c)+b^2
*d*e^2*exp(2*d*x+2*c)+b^2*f^2*x*exp(2*d*x+2*c)-2*a^2*e*f*exp(2*d*x+2*c)+3*a
*b*f^2*x*exp(d*x+c)+b^2*e*f*exp(2*d*x+2*c)+3*a*b*e*f*exp(d*x+c)-b^2*f^2*x-b
^2*e*f)/d^2/(a^2+b^2)/(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)^2+1/(a^2+b^2)/d^3
*f^2/b*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/(a^2+b^2)/d^3*f^2/b*ln(exp(d
*x+c))-2/(a^2+b^2)^(3/2)/d^2*f/b*a*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+
b^2)^(1/2))+1/(a^2+b^2)^(3/2)/d^2*f^2/b*a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)
-a)/(-a+(a^2+b^2)^(1/2)))*x+1/(a^2+b^2)^(3/2)/d^3*f^2/b*a*ln((-b*exp(d*x+c)
```

```
+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/(a^2+b^2)^(3/2)/d^2*f^2/b*a*l
n((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/(a^2+b^2)^(3/2)
/d^3*f^2/b*a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/(
a^2+b^2)^(3/2)/d^3*f^2/b*a*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2
+b^2)^(1/2)))-1/(a^2+b^2)^(3/2)/d^3*f^2/b*a*dilog((b*exp(d*x+c)+(a^2+b^2)^(
1/2)+a)/(a+(a^2+b^2)^(1/2)))+2/(a^2+b^2)^(3/2)/d^3*f^2/b*a*c*arctanh(1/2*(2
*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] (2*a*d*integrate(x*e^(d*x + c)/(a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*
d*x + 2*c) + 2*a^3*b*d^2*e^(d*x + c) + 2*a*b^3*d^2*e^(d*x + c) - a^2*b^2*d^
2 - b^4*d^2), x) + b*(a*log((b*e^(d*x + c) + a - sqrt(a^2 + b^2))/(b*e^(d*x
 + c) + a + sqrt(a^2 + b^2)))/((a^2*b^2 + b^4)*sqrt(a^2 + b^2)*d^3) - 2*(d*
x + c)/((a^2*b^2 + b^4)*d^3) + log(b*e^(2*d*x + 2*c) + 2*a*e^(d*x + c) - b)
/((a^2*b^2 + b^4)*d^3)) + 2*(a*b*x*e^(3*d*x + 3*c) - 3*a*b*x*e^(d*x + c) +
b^2*x - ((a^2*d*e^(2*c) + b^2*d*e^(2*c))*x^2 - (2*a^2*e^(2*c) - b^2*e^(2*c)
)*x)*e^(2*d*x))/(a^2*b^3*d^2 + b^5*d^2 + (a^2*b^3*d^2*e^(4*c) + b^5*d^2*e^(
4*c))*e^(4*d*x) + 4*(a^3*b^2*d^2*e^(3*c) + a*b^4*d^2*e^(3*c))*e^(3*d*x) + 2
*(2*a^4*b*d^2*e^(2*c) + a^2*b^3*d^2*e^(2*c) - b^5*d^2*e^(2*c))*e^(2*d*x) -
4*(a^3*b^2*d^2*e^c + a*b^4*d^2*e^c)*e^(d*x)) - a*log((b*e^(d*x + c) + a - s
qrt(a^2 + b^2))/(b*e^(d*x + c) + a + sqrt(a^2 + b^2)))/((a^2*b + b^3)*sqrt(
a^2 + b^2)*d^3))*f^2 + e*f*(2*(a*b*e^(3*d*x + 3*c) - 3*a*b*e^(d*x + c) + b^
2 + (2*a^2*e^(2*c) - b^2*e^(2*c) - 2*(a^2*d*e^(2*c) + b^2*d*e^(2*c))*x)*e^(
2*d*x))/(a^2*b^3*d^2 + b^5*d^2 + (a^2*b^3*d^2*e^(4*c) + b^5*d^2*e^(4*c))*e^
(4*d*x) + 4*(a^3*b^2*d^2*e^(3*c) + a*b^4*d^2*e^(3*c))*e^(3*d*x) + 2*(2*a^4*
b*d^2*e^(2*c) + a^2*b^3*d^2*e^(2*c) - b^5*d^2*e^(2*c))*e^(2*d*x) - 4*(a^3*b
^2*d^2*e^c + a*b^4*d^2*e^c)*e^(d*x)) + a*log((b*e^(d*x + 2*c) + a*e^c - sqr
t(a^2 + b^2)*e^c)/(b*e^(d*x + 2*c) + a*e^c + sqrt(a^2 + b^2)*e^c))/((a^2*b
+ b^3)*sqrt(a^2 + b^2)*d^2)) - 2*e^2*e^(-2*d*x - 2*c)/((4*a*b^2*e^(-d*x - c
) - 4*a*b^2*e^(-3*d*x - 3*c) + b^3*e^(-4*d*x - 4*c) + b^3 + 2*(2*a^2*b - b^
3)*e^(-2*d*x - 2*c))*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)\,{\left(e+f\,x\right)}^2}{{\left(a+b\,\sinh(c+d\,x)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x))^3,x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x))^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)/(a+b*sinh(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.329 $\int \frac{(e+fx)^3\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx$

Optimal. Leaf size=631

$$\frac{3f^3\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\left(a^2+b^2\right)}+\frac{3f^3\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^4\left(a^2+b^2\right)}-\frac{3af^3\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\left(a^2+b^2\right)^{3/2}}+\frac{3af^3\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^4\left(a^2+b^2\right)^{3/2}}+\frac{3af^2(e+fx)\text{Li}_2\left(-\frac{}{a}\right.}{bd^3\left(a^2+b^2\right)^3}$$

```
[Out] -3/2*f*(f*x+e)^2/b/(a^2+b^2)/d^2+3*f^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^
2)^(1/2)))/b/(a^2+b^2)/d^3+3/2*a*f*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))/b/(a^2+b^2)^(3/2)/d^2+3*f^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)
^(1/2)))/b/(a^2+b^2)/d^3-3/2*a*f*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/b/(a^2+b^2)^(3/2)/d^2+3*f^3*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/
2)))/b/(a^2+b^2)/d^4+3*a*f^2*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(
1/2)))/b/(a^2+b^2)^(3/2)/d^3+3*f^3*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/
2)))/b/(a^2+b^2)/d^4-3*a*f^2*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/b/(a^2+b^2)^(3/2)/d^3-3*a*f^3*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(
1/2)))/b/(a^2+b^2)^(3/2)/d^4+3*a*f^3*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/b/(a^2+b^2)^(3/2)/d^4-1/2*(f*x+e)^3/b/d/(a+b*sinh(d*x+c))^2-3/2*f*(f
*x+e)^2*cosh(d*x+c)/(a^2+b^2)/d^2/(a+b*sinh(d*x+c))
```

Rubi [A] time = 1.09, antiderivative size = 631, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.423$, Rules used = {5464, 3324, 3322, 2264, 2190, 2531, 2282, 6589, 5561, 2279, 2391}

$$\frac{3af^2(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}-\frac{3af^2(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}+\frac{3f^3\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\left(a^2+b^2\right)}+\frac{3f}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] (-3*f*(e + f*x)^2)/(2*b*(a^2 + b^2)*d^2) + (3*f^2*(e + f*x)*Log[1 + (b*E^(c
 + d*x))/(a - Sqrt[a^2 + b^2])])/(b*(a^2 + b^2)*d^3) + (3*a*f*(e + f*x)^2*L
og[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(2*b*(a^2 + b^2)^(3/2)*d^2)
+ (3*f^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b*(a^2
+ b^2)*d^3) - (3*a*f*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2])])/(2*b*(a^2 + b^2)^(3/2)*d^2) + (3*f^3*PolyLog[2, -((b*E^(c + d*x))/(a
- Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^4) + (3*a*f^2*(e + f*x)*PolyLog[2, -
((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^3) + (3*f^
3*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^4)
```

```
 - (3*a*f^2*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])
/(b*(a^2 + b^2)^(3/2)*d^3) - (3*a*f^3*PolyLog[3, -((b*E^(c + d*x))/(a - Sqr
t[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^4) + (3*a*f^3*PolyLog[3, -((b*E^(c
+ d*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^4) - (e + f*x)^3/(2
*b*d*(a + b*Sinh[c + d*x])^2) - (3*f*(e + f*x)^2*Cosh[c + d*x])/(2*(a^2 + b
^2)*d^2*(a + b*Sinh[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx = -\frac{(e+fx)^3}{2bd(a+b\sinh(c+dx))^2} + \frac{(3f)\int \frac{(e+fx)^2}{(a+b\sinh(c+dx))^2}\,dx}{2bd}$$

$$= -\frac{(e+fx)^3}{2bd(a+b\sinh(c+dx))^2} - \frac{3f(e+fx)^2\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} + \frac{(3af)\int \frac{(e+f\cdots}{a+b\sinh\cdots}}{2b\left(a^2+b^{\cdots}\right.}$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} - \frac{(e+fx)^3}{2bd(a+b\sinh(c+dx))^2} - \frac{3f(e+fx)^2\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))}\cdots$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)d^3} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+d\cdots}}{a+\sqrt{a^2\cdots}}\right.}{b\left(a^2+b^2\right)d^3}\cdots$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)d^3} + \frac{3af(e+fx)^2\log\left(1+\frac{be^{c+\cdots}}{a-\sqrt{a^{\cdots}}}\right.}{2b\left(a^2+b^2\right)^{3/2}d^2}\cdots$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)d^3} + \frac{3af(e+fx)^2\log\left(1+\frac{be^{c+\cdots}}{a-\sqrt{a^{\cdots}}}\right.}{2b\left(a^2+b^2\right)^{3/2}d^2}\cdots$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)d^3} + \frac{3af(e+fx)^2\log\left(1+\frac{be^{c+\cdots}}{a-\sqrt{a^{\cdots}}}\right.}{2b\left(a^2+b^2\right)^{3/2}d^2}\cdots$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)d^3} + \frac{3af(e+fx)^2\log\left(1+\frac{be^{c+\cdots}}{a-\sqrt{a^{\cdots}}}\right.}{2b\left(a^2+b^2\right)^{3/2}d^2}\cdots$$

Mathematica [B] time = 24.16, size = 5753, normalized size = 9.12

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] Result too large to show
```

fricas [C] time = 0.79, size = 11757, normalized size = 18.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="fricas")

[Out] 1/2*(6*(a^2*b^2 + b^4)*d^2*e^2*f - 12*(a^2*b^2 + b^4)*c*d*e*f^2 + 6*(a^2*b^2 + b^4)*c^2*f^3 - 6*((a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 + b^4)*d^2*e*f^2*x + 2*(a^2*b^2 + b^4)*c*d*e*f^2 - (a^2*b^2 + b^4)*c^2*f^3)*cosh(d*x + c)^4 - 6*((a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 + b^4)*d^2*e*f^2*x + 2*(a^2*b^2 + b^4)*c*d*e*f^2 - (a^2*b^2 + b^4)*c^2*f^3)*sinh(d*x + c)^4 - 6*(3*(a^3*b + a*b^3)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*e*f^2*x - (a^3*b + a*b^3)*d^2*e^2*f + 8*(a^3*b + a*b^3)*c*d*e*f^2 - 4*(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c)^3 - 6*(3*(a^3*b + a*b^3)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*e*f^2*x - (a^3*b + a*b^3)*d^2*e^2*f + 8*(a^3*b + a*b^3)*c*d*e*f^2 - 4*(a^3*b + a*b^3)*c^2*f^3 + 4*((a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 + b^4)*d^2*e*f^2*x + 2*(a^2*b^2 + b^4)*c*d*e*f^2 - (a^2*b^2 + b^4)*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 - 2*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(2*a^4 + a^2*b^2 - b^4)*d^2*e^2*f + 12*(2*a^4 + a^2*b^2 - b^4)*c*d*e*f^2 - 6*(2*a^4 + a^2*b^2 - b^4)*c^2*f^3 + 3*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2 + (2*a^4 + a^2*b^2 - b^4)*d^2*f^3)*x^2 + 6*((a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*f + (2*a^4 + a^2*b^2 - b^4)*d^2*e*f^2)*x)*cosh(d*x + c)^2 - 2*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(2*a^4 + a^2*b^2 - b^4)*d^2*e^2*f + 12*(2*a^4 + a^2*b^2 - b^4)*c*d*e*f^2 - 6*(2*a^4 + a^2*b^2 - b^4)*c^2*f^3 + 3*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2 + (2*a^4 + a^2*b^2 - b^4)*d^2*f^3)*x^2 + 18*((a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 + b^4)*d^2*e*f^2*x + 2*(a^2*b^2 + b^4)*c*d*e*f^2 - (a^2*b^2 + b^4)*c^2*f^3)*cosh(d*x + c)^2 + 6*((a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*f + (2*a^4 + a^2*b^2 - b^4)*d^2*e*f^2)*x + 9*(3*(a^3*b + a*b^3)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*e*f^2*x - (a^3*b + a*b^3)*d^2*e^2*f + 8*(a^3*b + a*b^3)*c*d*e*f^2 - 4*(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)^2 - 6*(a*b^3*f^3*cosh(d*x + c)^4 + a*b^3*f^3*sinh(d*x + c)^4 + 4*a^2*b^2*f^3*cosh(d*x + c)^3 - 4*a^2*b^2*f^3*cosh(d*x + c) + a*b^3*f^3 + 2*(2*a^3*b - a*b^3)*f^3*cosh(d*x + c)^2 + 4*(a*b^3*f^3*cosh(d*x + c) + a^2*b^2*f^3)*sinh(d*x + c)^3 + 2*(3*a*b^3*f^3*cosh(d*x + c)^2 + 6*a^2*b^2*f^3*cosh(d*x + c) + (2*a^3*b - a*b^3)*f^3)*sinh(d*x + c)^2 + 4*(a*b^3*f^3*cosh(d*x + c)^3 + 3*a^2*b^2*f^3*cosh(d*x + c)^2 - a^2*b^2*f^3 + (2*a^3*b - a*b^3)*f^3*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(a*b^3*f^3*cosh(d*x + c)^4 + a*b^3*f^3*sinh(d*x + c)^4 + 4*a^2*b^2*f^3*cosh(d*x + c)^3 - 4*a^2*b^2*f^3*cosh(d*x + c) + a*b^3*f^3 + 2*(2*a^3*b - a*b^3)*f^3*cosh(d*x + c)^2 + 4*(a*b^3*f^3*cosh(d*x + c) + a^2*b^2*f^3)*sinh(d*x + c)^3 + 2*(3*a*b^3*f^3*cosh(d*x + c)^2 + 6*a^2*b^2*f^3*cosh(d*x + c) + (2*a^3*b - a*b^3)*f^3)*sinh(d*x + c)^2 + 4*(a*b^3*f^3*cosh(d*x + c)^3 + 3*a^2*b^2*f^3*cosh(d*x + c)^2 - a^2*b^2*f^3 + (2*a^3*b - a*b^3)*f^3*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +

b^2)/b^2))/b) + 6*((a^3*b + a*b^3)*d^2*f^3*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f^
2*x - 3*(a^3*b + a*b^3)*d^2*e^2*f + 8*(a^3*b + a*b^3)*c*d*e*f^2 - 4*(a^3*b
+ a*b^3)*c^2*f^3)*cosh(d*x + c) + 6*((a^2*b^2 + b^4)*f^3*cosh(d*x + c)^4 +
(a^2*b^2 + b^4)*f^3*sinh(d*x + c)^4 + 4*(a^3*b + a*b^3)*f^3*cosh(d*x + c)^3
+ 2*(2*a^4 + a^2*b^2 - b^4)*f^3*cosh(d*x + c)^2 - 4*(a^3*b + a*b^3)*f^3*co
sh(d*x + c) + (a^2*b^2 + b^4)*f^3 + 4*((a^2*b^2 + b^4)*f^3*cosh(d*x + c) +
(a^3*b + a*b^3)*f^3)*sinh(d*x + c)^3 + 2*(3*(a^2*b^2 + b^4)*f^3*cosh(d*x +
c)^2 + 6*(a^3*b + a*b^3)*f^3*cosh(d*x + c) + (2*a^4 + a^2*b^2 - b^4)*f^3)*s
inh(d*x + c)^2 + 4*((a^2*b^2 + b^4)*f^3*cosh(d*x + c)^3 + 3*(a^3*b + a*b^3)
*f^3*cosh(d*x + c)^2 + (2*a^4 + a^2*b^2 - b^4)*f^3*cosh(d*x + c) - (a^3*b +
a*b^3)*f^3)*sinh(d*x + c) + (a*b^3*d*f^3*x + a*b^3*d*e*f^2 + (a*b^3*d*f^3*
x + a*b^3*d*e*f^2)*cosh(d*x + c)^4 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*sinh(d
x + c)^4 + 4(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2)*cosh(d*x + c)^3 + 4*(a^2*
b^2*d*f^3*x + a^2*b^2*d*e*f^2 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x +
c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e*
f^2)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e
f^2 + 3(a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c)^2 + 6*(a^2*b^2*d*f^3
*x + a^2*b^2*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d*f^3*x +
a^2*b^2*d*e*f^2)*cosh(d*x + c) - 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2 - (a
*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c)^3 - 3*(a^2*b^2*d*f^3*x + a^2*b^
2*d*e*f^2)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)
*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))*dilog((a*cos
h(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2) - b)/b + 1) + 6*((a^2*b^2 + b^4)*f^3*cosh(d*x + c)^4 + (a^2*b
^2 + b^4)*f^3*sinh(d*x + c)^4 + 4*(a^3*b + a*b^3)*f^3*cosh(d*x + c)^3 + 2*(
2*a^4 + a^2*b^2 - b^4)*f^3*cosh(d*x + c)^2 - 4*(a^3*b + a*b^3)*f^3*cosh(d*x
+ c) + (a^2*b^2 + b^4)*f^3 + 4*((a^2*b^2 + b^4)*f^3*cosh(d*x + c) + (a^3*b
+ a*b^3)*f^3)*sinh(d*x + c)^3 + 2*(3*(a^2*b^2 + b^4)*f^3*cosh(d*x + c)^2 +
6*(a^3*b + a*b^3)*f^3*cosh(d*x + c) + (2*a^4 + a^2*b^2 - b^4)*f^3)*sinh(d*
x + c)^2 + 4*((a^2*b^2 + b^4)*f^3*cosh(d*x + c)^3 + 3*(a^3*b + a*b^3)*f^3*c
osh(d*x + c)^2 + (2*a^4 + a^2*b^2 - b^4)*f^3*cosh(d*x + c) - (a^3*b + a*b^3
)*f^3)*sinh(d*x + c) - (a*b^3*d*f^3*x + a*b^3*d*e*f^2 + (a*b^3*d*f^3*x + a*
b^3*d*e*f^2)*cosh(d*x + c)^4 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*sinh(d*x + c
)^4 + 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2)*cosh(d*x + c)^3 + 4*(a^2*b^2*d*
f^3*x + a^2*b^2*d*e*f^2 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c))*si
nh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e*f^2)*c
osh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e*f^2 +
3*(a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c)^2 + 6*(a^2*b^2*d*f^3*x + a
^2*b^2*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d*f^3*x + a^2*b
^2*d*e*f^2)*cosh(d*x + c) - 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2 - (a*b^3*d
*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c)^3 - 3*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*
f^2)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e*f
^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))*dilog((a*cosh(d*x
+ c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^
2)/b^2) - b)/b + 1) + 3*(2*(a^2*b^2 + b^4)*d*e*f^2 - 2*(a^2*b^2 + b^4)*c*f^

3 + 2*((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^4 + 2
*((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*sinh(d*x + c)^4 + 8*((a^
3*b + a*b^3)*d*e*f^2 - (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c)^3 + 8*((a^3*b +
 a*b^3)*d*e*f^2 - (a^3*b + a*b^3)*c*f^3 + ((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b
^2 + b^4)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*((2*a^4 + a^2*b^2 - b^4
)*d*e*f^2 - (2*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c)^2 + 4*((2*a^4 + a^
2*b^2 - b^4)*d*e*f^2 - (2*a^4 + a^2*b^2 - b^4)*c*f^3 + 3*((a^2*b^2 + b^4)*d
*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^2 + 6*((a^3*b + a*b^3)*d*e*f^
2 - (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^2 - 8*((a^3*b + a*b
^3)*d*e*f^2 - (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c) - 8*((a^3*b + a*b^3)*d*e
*f^2 - (a^3*b + a*b^3)*c*f^3 - ((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c
*f^3)*cosh(d*x + c)^3 - 3*((a^3*b + a*b^3)*d*e*f^2 - (a^3*b + a*b^3)*c*f^3)
*cosh(d*x + c)^2 - ((2*a^4 + a^2*b^2 - b^4)*d*e*f^2 - (2*a^4 + a^2*b^2 - b^
4)*c*f^3)*cosh(d*x + c))*sinh(d*x + c) - (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f
^2 + a*b^3*c^2*f^3 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*
cosh(d*x + c)^4 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*sin
h(d*x + c)^4 + 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3
)*cosh(d*x + c)^3 + 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^
2*f^3 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)
)*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*
d*e*f^2 + (2*a^3*b - a*b^3)*c^2*f^3)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)
*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*d*e*f^2 + (2*a^3*b - a*b^3)*c^2*f^3 + 3*
(a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)^2 + 6*(
a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x + c))*s
inh(d*x + c)^2 - 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f
^3)*cosh(d*x + c) - 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^
2*f^3 - (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)
^3 - 3*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x
 + c)^2 - ((2*a^3*b - a*b^3)*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*d*e*f^2 + (2
*a^3*b - a*b^3)*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2
))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) +
2*a) + 3*(2*(a^2*b^2 + b^4)*d*e*f^2 - 2*(a^2*b^2 + b^4)*c*f^3 + 2*((a^2*b^2
 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^4 + 2*((a^2*b^2 + b^
4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*sinh(d*x + c)^4 + 8*((a^3*b + a*b^3)*d*
e*f^2 - (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c)^3 + 8*((a^3*b + a*b^3)*d*e*f^2
 - (a^3*b + a*b^3)*c*f^3 + ((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3
)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*((2*a^4 + a^2*b^2 - b^4)*d*e*f^2 - (2*
a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c)^2 + 4*((2*a^4 + a^2*b^2 - b^4)*d*
e*f^2 - (2*a^4 + a^2*b^2 - b^4)*c*f^3 + 3*((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b
^2 + b^4)*c*f^3)*cosh(d*x + c)^2 + 6*((a^3*b + a*b^3)*d*e*f^2 - (a^3*b + a*
b^3)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^2 - 8*((a^3*b + a*b^3)*d*e*f^2 - (
a^3*b + a*b^3)*c*f^3)*cosh(d*x + c) - 8*((a^3*b + a*b^3)*d*e*f^2 - (a^3*b +
 a*b^3)*c*f^3 - ((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*cosh(d*x
+ c)^3 - 3*((a^3*b + a*b^3)*d*e*f^2 - (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c)^
2 - ((2*a^4 + a^2*b^2 - b^4)*d*e*f^2 - (2*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(

d*x + c))*sinh(d*x + c) + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)^4 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*sinh(d*x + c)^4 + 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x + c)^3 + 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*d*e*f^2 + (2*a^3*b - a*b^3)*c^2*f^3)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*d*e*f^2 + (2*a^3*b - a*b^3)*c^2*f^3 + 3*(a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)^2 + 6*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x + c) - 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3 - (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)^3 - 3*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*d*e*f^2 + (2*a^3*b - a*b^3)*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 3*(2*(a^2*b^2 + b^4)*d*f^3*x + 2*(a^2*b^2 + b^4)*c*f^3 + 2*((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^4 + 2*((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*sinh(d*x + c)^4 + 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c)^3 + 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3 + ((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*((2*a^4 + a^2*b^2 - b^4)*d*f^3*x + (2*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c)^2 + 4*((2*a^4 + a^2*b^2 - b^4)*d*f^3*x + (2*a^4 + a^2*b^2 - b^4)*c*f^3 + 3*((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^2 + 6*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^2 - 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c) - 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3 - ((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^3 - 3*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c)^2 - ((2*a^4 + a^2*b^2 - b^4)*d*f^3*x + (2*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c))*sinh(d*x + c) + (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3 + (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cosh(d*x + c)^4 + (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*sinh(d*x + c)^4 + 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*cosh(d*x + c)^3 + 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3 + (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(2*a^3*b - a*b^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*d*e*f^2 - (2*a^3*b - a*b^3)*c^2*f^3)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(2*a^3*b - a*b^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*d*e*f^2 - (2*a^3*b - a*b^3)*c^2*f^3 + 3*(a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cosh(d*x + c)^2 + 6*(a^2*b^2*d^2

```
*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*c
osh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^
2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*cosh(d*x + c) - 4*(a^2*b^2*d^2
*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3 -
(a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^
3)*cosh(d*x + c)^3 - 3*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2
*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d^2*
f^3*x^2 + 2*(2*a^3*b - a*b^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*d*e*f^2 -
 (2*a^3*b - a*b^3)*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 3*(2*(a^2*b^2 + b^4)*d*f^3*x + 2*(
a^2*b^2 + b^4)*c*f^3 + 2*((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*
cosh(d*x + c)^4 + 2*((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*sinh(
d*x + c)^4 + 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x +
 c)^3 + 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3 + ((a^2*b^2 + b^
4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*((2*
a^4 + a^2*b^2 - b^4)*d*f^3*x + (2*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c)
^2 + 4*((2*a^4 + a^2*b^2 - b^4)*d*f^3*x + (2*a^4 + a^2*b^2 - b^4)*c*f^3 + 3
*((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^2 + 6*((a^
3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^
2 - 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c) - 8*(
(a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3 - ((a^2*b^2 + b^4)*d*f^3*x
+ (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^3 - 3*((a^3*b + a*b^3)*d*f^3*x + (a^
3*b + a*b^3)*c*f^3)*cosh(d*x + c)^2 - ((2*a^4 + a^2*b^2 - b^4)*d*f^3*x + (2
*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c))*sinh(d*x + c) - (a*b^3*d^2*f^3*
x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3 + (a*b^3*d^2*
f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cosh(d*x
 + c)^4 + (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*
b^3*c^2*f^3)*sinh(d*x + c)^4 + 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2
*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*cosh(d*x + c)^3 + 4*(a^2*b^2*d^
2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3 +
 (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f
^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(
2*a^3*b - a*b^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*d*e*f^2 - (2*a^3*b - a
*b^3)*c^2*f^3)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(2*a^
3*b - a*b^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*d*e*f^2 - (2*a^3*b - a*b^3
)*c^2*f^3 + 3*(a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2
- a*b^3*c^2*f^3)*cosh(d*x + c)^2 + 6*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e
*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c
)^2 - 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2
- a^2*b^2*c^2*f^3)*cosh(d*x + c) - 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e
*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3 - (a*b^3*d^2*f^3*x^2 + 2*a*b
^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cosh(d*x + c)^3 - 3*(a^
2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c
^2*f^3)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(2*a^3*b - a*b
```

```
^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*d*e*f^2 - (2*a^3*b - a*b^3)*c^2*f^3
)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))*log(-(a*cosh(d*x + c
) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2) - b)/b) + 2*(3*(a^3*b + a*b^3)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*e*f
^2*x - 9*(a^3*b + a*b^3)*d^2*e^2*f + 24*(a^3*b + a*b^3)*c*d*e*f^2 - 12*(a^3
*b + a*b^3)*c^2*f^3 - 12*((a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 + b^4)*d
^2*e*f^2*x + 2*(a^2*b^2 + b^4)*c*d*e*f^2 - (a^2*b^2 + b^4)*c^2*f^3)*cosh(d*
x + c)^3 - 9*(3*(a^3*b + a*b^3)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*e*f^2*x
 - (a^3*b + a*b^3)*d^2*e^2*f + 8*(a^3*b + a*b^3)*c*d*e*f^2 - 4*(a^3*b + a*b
^3)*c^2*f^3)*cosh(d*x + c)^2 - 2*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 2
*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(2*a^4 + a^2*b^2 - b^4)*d^2*e^2*f + 12
*(2*a^4 + a^2*b^2 - b^4)*c*d*e*f^2 - 6*(2*a^4 + a^2*b^2 - b^4)*c^2*f^3 + 3*
(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2 + (2*a^4 + a^2*b^2 - b^4)*d^2*f^3)*x^2
 + 6*((a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*f + (2*a^4 + a^2*b^2 - b^4)*d^2*e*f^2
)*x)*cosh(d*x + c))*sinh(d*x + c))/((a^4*b^3 + 2*a^2*b^5 + b^7)*d^4*cosh(d*
x + c)^4 + (a^4*b^3 + 2*a^2*b^5 + b^7)*d^4*sinh(d*x + c)^4 + 4*(a^5*b^2 + 2
*a^3*b^4 + a*b^6)*d^4*cosh(d*x + c)^3 + 2*(2*a^6*b + 3*a^4*b^3 - b^7)*d^4*c
osh(d*x + c)^2 - 4*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^4*cosh(d*x + c) + (a^4*b
^3 + 2*a^2*b^5 + b^7)*d^4 + 4*((a^4*b^3 + 2*a^2*b^5 + b^7)*d^4*cosh(d*x + c
) + (a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^4)*sinh(d*x + c)^3 + 2*(3*(a^4*b^3 + 2*
a^2*b^5 + b^7)*d^4*cosh(d*x + c)^2 + 6*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^4*co
sh(d*x + c) + (2*a^6*b + 3*a^4*b^3 - b^7)*d^4)*sinh(d*x + c)^2 + 4*((a^4*b^
3 + 2*a^2*b^5 + b^7)*d^4*cosh(d*x + c)^3 + 3*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*
d^4*cosh(d*x + c)^2 + (2*a^6*b + 3*a^4*b^3 - b^7)*d^4*cosh(d*x + c) - (a^5*
b^2 + 2*a^3*b^4 + a*b^6)*d^4)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^3 \cosh\left(dx+c\right)}{\left(b\sinh\left(dx+c\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)/(b*sinh(d*x + c) + a)^3, x)
```

maple [F] time = 0.72, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^3 \cosh\left(dx+c\right)}{\left(a+b\sinh\left(dx+c\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 3*a*d*f^3*integrate(x^2*e^(d*x + c)/(a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*
e^(2*d*x + 2*c) + 2*a^3*b*d^2*e^(d*x + c) + 2*a*b^3*d^2*e^(d*x + c) - a^2*b
^2*d^2 - b^4*d^2), x) + 6*a*d*e*f^2*integrate(x*e^(d*x + c)/(a^2*b^2*d^2*e^
(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + 2*a^3*b*d^2*e^(d*x + c) + 2*a*b^3
*d^2*e^(d*x + c) - a^2*b^2*d^2 - b^4*d^2), x) + 3*b*e*f^2*(a*log((b*e^(d*x
+ c) + a - sqrt(a^2 + b^2))/(b*e^(d*x + c) + a + sqrt(a^2 + b^2)))/((a^2*b^
2 + b^4)*sqrt(a^2 + b^2)*d^3) - 2*(d*x + c)/((a^2*b^2 + b^4)*d^3) + log(b*e
^(2*d*x + 2*c) + 2*a*e^(d*x + c) - b)/((a^2*b^2 + b^4)*d^3)) - 6*a*f^3*inte
grate(x*e^(d*x + c)/(a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c)
+ 2*a^3*b*d^2*e^(d*x + c) + 2*a*b^3*d^2*e^(d*x + c) - a^2*b^2*d^2 - b^4*d^2
), x) + 6*b*f^3*integrate(x/(a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x
 + 2*c) + 2*a^3*b*d^2*e^(d*x + c) + 2*a*b^3*d^2*e^(d*x + c) - a^2*b^2*d^2 -
 b^4*d^2), x) + 3/2*e^2*f*(2*(a*b*e^(3*d*x + 3*c) - 3*a*b*e^(d*x + c) + b^2
 + (2*a^2*e^(2*c) - b^2*e^(2*c) - 2*(a^2*d*e^(2*c) + b^2*d*e^(2*c))*x)*e^(2
*d*x))/(a^2*b^3*d^2 + b^5*d^2 + (a^2*b^3*d^2*e^(4*c) + b^5*d^2*e^(4*c))*e^(
4*d*x) + 4*(a^3*b^2*d^2*e^(3*c) + a*b^4*d^2*e^(3*c))*e^(3*d*x) + 2*(2*a^4*b
*d^2*e^(2*c) + a^2*b^3*d^2*e^(2*c) - b^5*d^2*e^(2*c))*e^(2*d*x) - 4*(a^3*b^
2*d^2*e^c + a*b^4*d^2*e^c)*e^(d*x)) + a*log((b*e^(d*x + 2*c) + a*e^c - sqrt
(a^2 + b^2)*e^c)/(b*e^(d*x + 2*c) + a*e^c + sqrt(a^2 + b^2)*e^c))/((a^2*b +
 b^3)*sqrt(a^2 + b^2)*d^2)) - 2*e^3*e^(-2*d*x - 2*c)/((4*a*b^2*e^(-d*x - c)
 - 4*a*b^2*e^(-3*d*x - 3*c) + b^3*e^(-4*d*x - 4*c) + b^3 + 2*(2*a^2*b - b^3
)*e^(-2*d*x - 2*c))*d) - 3*a*e*f^2*log((b*e^(d*x + c) + a - sqrt(a^2 + b^2)
)/(b*e^(d*x + c) + a + sqrt(a^2 + b^2)))/((a^2*b + b^3)*sqrt(a^2 + b^2)*d^3
) + (3*b^2*f^3*x^2 + 6*b^2*e*f^2*x + 3*(a*b*f^3*x^2*e^(3*c) + 2*a*b*e*f^2*x
*e^(3*c))*e^(3*d*x) - (2*(a^2*d*f^3*e^(2*c) + b^2*d*f^3*e^(2*c))*x^3 + 3*(2
*(d*e*f^2 - f^3)*a^2*e^(2*c) + (2*d*e*f^2 + f^3)*b^2*e^(2*c))*x^2 - 6*(2*a^
2*e*f^2*e^(2*c) - b^2*e*f^2*e^(2*c))*x)*e^(2*d*x) - 9*(a*b*f^3*x^2*e^c + 2*
a*b*e*f^2*x*e^c)*e^(d*x))/(a^2*b^3*d^2 + b^5*d^2 + (a^2*b^3*d^2*e^(4*c) + b
^5*d^2*e^(4*c))*e^(4*d*x) + 4*(a^3*b^2*d^2*e^(3*c) + a*b^4*d^2*e^(3*c))*e^(
3*d*x) + 2*(2*a^4*b*d^2*e^(2*c) + a^2*b^3*d^2*e^(2*c) - b^5*d^2*e^(2*c))*e^
(2*d*x) - 4*(a^3*b^2*d^2*e^c + a*b^4*d^2*e^c)*e^(d*x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{{\left(a+b\,\sinh\left(c+d\,x\right)\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x))^3,x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x))^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)/(a+b*sinh(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.330 $\int \frac{(e+fx)\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx$

Optimal. Leaf size=112

$$-\frac{af\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd^2\left(a^2+b^2\right)^{3/2}}-\frac{f\cosh(c+dx)}{2d^2\left(a^2+b^2\right)(a+b\sinh(c+dx))}-\frac{e+fx}{2bd(a+b\sinh(c+dx))^2}$$

```
[Out] -a*f*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))/b/(a^2+b^2)^(3/2)/d
^2+1/2*(-f*x-e)/b/d/(a+b*sinh(d*x+c))^2-1/2*f*cosh(d*x+c)/(a^2+b^2)/d^2/(a+
b*sinh(d*x+c))
```

Rubi [A] time = 0.10, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {5464, 2664, 12, 2660, 618, 204}

$$-\frac{af\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd^2\left(a^2+b^2\right)^{3/2}}-\frac{f\cosh(c+dx)}{2d^2\left(a^2+b^2\right)(a+b\sinh(c+dx))}-\frac{e+fx}{2bd(a+b\sinh(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] -((a*f*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(b*(a^2 + b^2)^(
3/2)*d^2)) - (e + f*x)/(2*b*d*(a + b*Sinh[c + d*x])^2) - (f*Cosh[c + d*x])/
(2*(a^2 + b^2)*d^2*(a + b*Sinh[c + d*x]))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
```

```
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2664

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[
c + d*x]*(a + b*Sin[c + d*x])^(n + 1))/(d*(n + 1)*(a^2 - b^2)), x] + Dist[1
/((n + 1)*(a^2 - b^2)), Int[(a + b*Sin[c + d*x])^(n + 1)*Simp[a*(n + 1) - b
*(n + 2)*Sin[c + d*x], x], x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^
2, 0] && LtQ[n, -1] && IntegerQ[2*n]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx = -\frac{e+fx}{2bd(a+b\sinh(c+dx))^2} + \frac{f\int \frac{1}{(a+b\sinh(c+dx))^2}\,dx}{2bd}$$

$$= -\frac{e+fx}{2bd(a+b\sinh(c+dx))^2} - \frac{f\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} + \frac{f\int \frac{a}{a+b\sinh(c+d}}{2b\left(a^2+b^2\right)}$$

$$= -\frac{e+fx}{2bd(a+b\sinh(c+dx))^2} - \frac{f\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} + \frac{(af)\int \frac{1}{a+b\sinh(}}{2b\left(a^2+b^2\right.}$$

$$= -\frac{e+fx}{2bd(a+b\sinh(c+dx))^2} - \frac{f\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} - \frac{(iaf)\,\mathrm{Subst}\left(\int\right.}{}$$

$$= -\frac{e+fx}{2bd(a+b\sinh(c+dx))^2} - \frac{f\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} + \frac{(2iaf)\,\mathrm{Subst}\left(\right.}{}$$

$$= -\frac{af\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2} - \frac{e+fx}{2bd(a+b\sinh(c+dx))^2} - \frac{f\cosh(c+}{2\left(a^2+b^2\right)d^2(a+b\,\mathrm{s}}$$

Mathematica [A] time = 1.24, size = 112, normalized size = 1.00

$$-\frac{\frac{\frac{2af\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{\left(-a^2-b^2\right)^{3/2}}+\frac{d(e+fx)}{(a+b\sinh(c+dx))^2}}{b}+\frac{f\cosh(c+dx)}{\left(a^2+b^2\right)(a+b\sinh(c+dx))}}{2d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] -1/2*((f*Cosh[c + d*x])/((a^2 + b^2)*(a + b*Sinh[c + d*x])) + ((2*a*f*ArcTa
n[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/(-a^2 - b^2)^(3/2) + (d*(e +
 f*x))/(a + b*Sinh[c + d*x])^2)/b)/d^2
```

fricas [B] time = 0.61, size = 1230, normalized size = 10.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*(a^3*b + a*b^3)*f*cosh(d*x + c)^3 + 2*(a^3*b + a*b^3)*f*sinh(d*x + c
)^3 - 6*(a^3*b + a*b^3)*f*cosh(d*x + c) - 2*(2*(a^4 + 2*a^2*b^2 + b^4)*d*f*
x + 2*(a^4 + 2*a^2*b^2 + b^4)*d*e - (2*a^4 + a^2*b^2 - b^4)*f)*cosh(d*x + c
)^2 - 2*(2*(a^4 + 2*a^2*b^2 + b^4)*d*f*x + 2*(a^4 + 2*a^2*b^2 + b^4)*d*e -
3*(a^3*b + a*b^3)*f*cosh(d*x + c) - (2*a^4 + a^2*b^2 - b^4)*f)*sinh(d*x + c
)^2 + (a*b^2*f*cosh(d*x + c)^4 + a*b^2*f*sinh(d*x + c)^4 + 4*a^2*b*f*cosh(d
*x + c)^3 - 4*a^2*b*f*cosh(d*x + c) + a*b^2*f + 2*(2*a^3 - a*b^2)*f*cosh(d*
x + c)^2 + 4*(a*b^2*f*cosh(d*x + c) + a^2*b*f)*sinh(d*x + c)^3 + 2*(3*a*b^2
*f*cosh(d*x + c)^2 + 6*a^2*b*f*cosh(d*x + c) + (2*a^3 - a*b^2)*f)*sinh(d*x
+ c)^2 + 4*(a*b^2*f*cosh(d*x + c)^3 + 3*a^2*b*f*cosh(d*x + c)^2 - a^2*b*f +
 (2*a^3 - a*b^2)*f*cosh(d*x + c))*sinh(d*x + c))*sqrt(a^2 + b^2)*log((b^2*c
osh(d*x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 +
2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x + c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x +
 c) + b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*co
sh(d*x + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) + 2*(a^2*b^2 + b^
4)*f + 2*(3*(a^3*b + a*b^3)*f*cosh(d*x + c)^2 - 3*(a^3*b + a*b^3)*f - 2*(2*
(a^4 + 2*a^2*b^2 + b^4)*d*f*x + 2*(a^4 + 2*a^2*b^2 + b^4)*d*e - (2*a^4 + a^
2*b^2 - b^4)*f)*cosh(d*x + c))*sinh(d*x + c))/((a^4*b^3 + 2*a^2*b^5 + b^7)*
d^2*cosh(d*x + c)^4 + (a^4*b^3 + 2*a^2*b^5 + b^7)*d^2*sinh(d*x + c)^4 + 4*(
a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^2*cosh(d*x + c)^3 + 2*(2*a^6*b + 3*a^4*b^3 -
 b^7)*d^2*cosh(d*x + c)^2 - 4*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^2*cosh(d*x +
c) + 4*((a^4*b^3 + 2*a^2*b^5 + b^7)*d^2*cosh(d*x + c) + (a^5*b^2 + 2*a^3*b^
4 + a*b^6)*d^2)*sinh(d*x + c)^3 + (a^4*b^3 + 2*a^2*b^5 + b^7)*d^2 + 2*(3*(a
^4*b^3 + 2*a^2*b^5 + b^7)*d^2*cosh(d*x + c)^2 + 6*(a^5*b^2 + 2*a^3*b^4 + a*
b^6)*d^2*cosh(d*x + c) + (2*a^6*b + 3*a^4*b^3 - b^7)*d^2)*sinh(d*x + c)^2 +
 4*((a^4*b^3 + 2*a^2*b^5 + b^7)*d^2*cosh(d*x + c)^3 + 3*(a^5*b^2 + 2*a^3*b^
4 + a*b^6)*d^2*cosh(d*x + c)^2 + (2*a^6*b + 3*a^4*b^3 - b^7)*d^2*cosh(d*x +
 c) - (a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^2)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cosh(dx+c)}{(b\sinh(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)/(b*sinh(d*x + c) + a)^3, x)
```

maple [B] time = 0.00, size = 308, normalized size = 2.75

$$-\frac{2a^2dfx\,\mathrm{e}^{2dx+2c}+2b^2dfx\,\mathrm{e}^{2dx+2c}+2a^2de\,\mathrm{e}^{2dx+2c}-abf\,\mathrm{e}^{3dx+3c}+2b^2de\,\mathrm{e}^{2dx+2c}-2a^2f\,\mathrm{e}^{2dx+2c}+b^2f\,\mathrm{e}^{2dx+2c}+3}{b\,d^2\left(a^2+b^2\right)\left(b\,\mathrm{e}^{2dx+2c}+2a\,\mathrm{e}^{dx+c}-b\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x)
```

```
[Out] -1/b*(2*a^2*d*f*x*exp(2*d*x+2*c)+2*b^2*d*f*x*exp(2*d*x+2*c)+2*a^2*d*e*exp(2
*d*x+2*c)-a*b*f*exp(3*d*x+3*c)+2*b^2*d*e*exp(2*d*x+2*c)-2*a^2*f*exp(2*d*x+2
*c)+b^2*f*exp(2*d*x+2*c)+3*a*f*exp(d*x+c)*b-f*b^2)/d^2/(a^2+b^2)/(b*exp(2*d
*x+2*c)+2*a*exp(d*x+c)-b)^2+1/2/(a^2+b^2)^(3/2)*f*a/d^2/b*ln(exp(d*x+c)+(a*
(a^2+b^2)^(3/2)-a^4-2*a^2*b^2-b^4)/(a^2+b^2)^(3/2)/b)-1/2/(a^2+b^2)^(3/2)*f
*a/d^2/b*ln(exp(d*x+c)+(a*(a^2+b^2)^(3/2)+a^4+2*a^2*b^2+b^4)/(a^2+b^2)^(3/2
)/b)
```

maxima [B] time = 0.69, size = 413, normalized size = 3.69

$$\frac{1}{2}f\left(\frac{2\left(abe^{(3\,dx+3\,c)}-3\,abe^{(dx+c)}+b^2+\left(2\,a^2e^{(2\,c)}-b^2e^{(2\,c)}-2\left(a^2de^{(2\,c)}+b^2\right.\right.\right.}{a^2b^3d^2+b^5d^2+\left(a^2b^3d^2e^{(4\,c)}+b^5d^2e^{(4\,c)}\right)e^{(4\,dx)}+4\left(a^3b^2d^2e^{(3\,c)}+ab^4d^2e^{(3\,c)}\right)e^{(3\,dx)}+2\left(2\,a^4bd^2e^{(2\,c)}+a^2b^3d\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/2*f*(2*(a*b*e^(3*d*x + 3*c) - 3*a*b*e^(d*x + c) + b^2 + (2*a^2*e^(2*c) -
b^2*e^(2*c) - 2*(a^2*d*e^(2*c) + b^2*d*e^(2*c))*x)*e^(2*d*x))/(a^2*b^3*d^2
+ b^5*d^2 + (a^2*b^3*d^2*e^(4*c) + b^5*d^2*e^(4*c))*e^(4*d*x) + 4*(a^3*b^2*
d^2*e^(3*c) + a*b^4*d^2*e^(3*c))*e^(3*d*x) + 2*(2*a^4*b*d^2*e^(2*c) + a^2*b
^3*d^2*e^(2*c) - b^5*d^2*e^(2*c))*e^(2*d*x) - 4*(a^3*b^2*d^2*e^c + a*b^4*d^
2*e^c)*e^(d*x)) + a*log((b*e^(d*x + 2*c) + a*e^c - sqrt(a^2 + b^2)*e^c)/(b*
e^(d*x + 2*c) + a*e^c + sqrt(a^2 + b^2)*e^c))/((a^2*b + b^3)*sqrt(a^2 + b^2
)*d^2)) - 2*e*e^(-2*d*x - 2*c)/((4*a*b^2*e^(-d*x - c) - 4*a*b^2*e^(-3*d*x -
 3*c) + b^3*e^(-4*d*x - 4*c) + b^3 + 2*(2*a^2*b - b^3)*e^(-2*d*x - 2*c))*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cosh\left(c+d\,x\right)\,\left(e+f\,x\right)}{{\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x))^3,x)
[Out] int((cosh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x))^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)/(a+b*sinh(d*x+c))**3,x)
[Out] Timed out
```

3.331 $\int \frac{(e+fx)^2\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx$

Optimal. Leaf size=306

$$\frac{af^2\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}-\frac{af^2\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}+\frac{f^2\log(a+b\sinh(c+dx))}{bd^3\left(a^2+b^2\right)}+\frac{af(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd^2\left(a^2+b^2\right)^{3/2}}-\frac{af(e+\cdots}{}$$

```
[Out] f^2*ln(a+b*sinh(d*x+c))/b/(a^2+b^2)/d^3+a*f*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a
^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^2-a*f*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2
+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^2+a*f^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b
^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^3-a*f^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2
)^(1/2)))/b/(a^2+b^2)^(3/2)/d^3-1/2*(f*x+e)^2/b/d/(a+b*sinh(d*x+c))^2-f*(f*
x+e)*cosh(d*x+c)/(a^2+b^2)/d^2/(a+b*sinh(d*x+c))
```

Rubi [A] time = 0.52, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {5464, 3324, 3322, 2264, 2190, 2279, 2391, 2668, 31}

$$\frac{af^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}-\frac{af^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}+\frac{af(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd^2\left(a^2+b^2\right)^{3/2}}-\frac{af(e+fx)\log\left(\frac{b\cdots}{\sqrt{a^2\cdots}}\right)}{bd^2\left(a^2+b^2\cdots\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] (a*f*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*(a^2 + b^
2)^(3/2)*d^2) - (a*f*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
)])/(b*(a^2 + b^2)^(3/2)*d^2) + (f^2*Log[a + b*Sinh[c + d*x]])/(b*(a^2 + b^
2)*d^3) + (a*f^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*(
a^2 + b^2)^(3/2)*d^3) - (a*f^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))])/(b*(a^2 + b^2)^(3/2)*d^3) - (e + f*x)^2/(2*b*d*(a + b*Sinh[c + d*
x])^2) - (f*(e + f*x)*Cosh[c + d*x])/((a^2 + b^2)*d^2*(a + b*Sinh[c + d*x])
)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
```

```
2, 0] && IGtQ[m, 0]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx = -\frac{(e+fx)^2}{2bd(a+b\sinh(c+dx))^2}+\frac{f\int\frac{e+fx}{(a+b\sinh(c+dx))^2}\,dx}{bd}$$

$$= -\frac{(e+fx)^2}{2bd(a+b\sinh(c+dx))^2}-\frac{f(e+fx)\cosh(c+dx)}{\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))}+\frac{(af)\int\frac{e+fx}{a+b\sinh(c}}{b\left(a^2+b^2\right)}$$

$$= -\frac{(e+fx)^2}{2bd(a+b\sinh(c+dx))^2}-\frac{f(e+fx)\cosh(c+dx)}{\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))}+\frac{(2af)\int\frac{e^{c+d}}{-b+2ae^{c+}}}{b\left(a^2+\right.}$$

$$= \frac{f^2\log(a+b\sinh(c+dx))}{b\left(a^2+b^2\right)d^3}-\frac{(e+fx)^2}{2bd(a+b\sinh(c+dx))^2}-\frac{f(e+fx)\cosh(c-}{\left(a^2+b^2\right)d^2(a+b\sinh}$$

$$= \frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}-\frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}+\frac{f^2\log(a+b}{b\left(a^2+\right.}$$

$$= \frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}-\frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}+\frac{f^2\log(a+b}{b\left(a^2+\right.}$$

$$= \frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}-\frac{af(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d^2}+\frac{f^2\log(a+b}{b\left(a^2+\right.}$$

Mathematica [B] time = 7.13, size = 623, normalized size = 2.04

$$\frac{\operatorname{csch}\left(\frac{c}{2}\right)\operatorname{sech}\left(\frac{c}{2}\right)\left(aef\cosh(c)+af^2x\cosh(c)+bef\sinh(dx)+bf^2x\sinh(dx)\right)}{2bd^2\left(a^2+b^2\right)(a+b\sinh(c+dx))}+\frac{2e^cf\left(-\frac{ae^{-c}\left(e^{2c}-1\right)e\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)}{\sqrt{a^2+b^2}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] (f^2*x*Coth[c])/(b*(a^2 + b^2)*d^2) + (2*E^c*f*(-(E^c*f*x) + ((-1 + E^(2*c)
)*f*x)/E^c - (a*e*(-1 + E^(2*c))*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2
]])/(Sqrt[a^2 + b^2]*E^c) + (a*(-1 + E^(2*c))*f*ArcTanh[(a + b*E^(c + d*x))
/Sqrt[a^2 + b^2]])/(Sqrt[a^2 + b^2]*d*E^c) + ((-1 + E^(2*c))*f*(-2*x + (2*a
*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/(Sqrt[-a^2 - b^2]*d) + Log[2
*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))]/d))/(2*E^c) + (a*(-1 + E^(2*c))*
f*(d*x*(Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - Lo
g[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])]) + PolyLog[2,
-((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - PolyLog[2, -((b
*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))]))/(2*d*Sqrt[(a^2 + b^
2)*E^(2*c)])))/(b*(a^2 + b^2)*d^2*(-1 + E^(2*c))) - (f^2*x*Cosh[c]*Csch[c/2
]*Sech[c/2])/(2*b*(a^2 + b^2)*d^2) - (e + f*x)^2/(2*b*d*(a + b*Sinh[c + d*x
])^2) + (Csch[c/2]*Sech[c/2]*(a*e*f*Cosh[c] + a*f^2*x*Cosh[c] + b*e*f*Sinh[
d*x] + b*f^2*x*Sinh[d*x]))/(2*b*(a^2 + b^2)*d^2*(a + b*Sinh[c + d*x]))
```

fricas [B] time = 0.71, size = 5233, normalized size = 17.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] -(2*((a^2*b^2 + b^4)*d*f^2*x + (a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)^4 + 2*(
(a^2*b^2 + b^4)*d*f^2*x + (a^2*b^2 + b^4)*c*f^2)*sinh(d*x + c)^4 - 2*(a^2*b
^2 + b^4)*d*e*f + 2*(a^2*b^2 + b^4)*c*f^2 + 2*(3*(a^3*b + a*b^3)*d*f^2*x -
(a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^3)*c*f^2)*cosh(d*x + c)^3 + 2*(3*(a^
3*b + a*b^3)*d*f^2*x - (a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^3)*c*f^2 + 4*
((a^2*b^2 + b^4)*d*f^2*x + (a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c))*sinh(d*x +
 c)^3 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + (a^4 + 2*a^2*b^2 + b^4)*d^
2*e^2 - (2*a^4 + a^2*b^2 - b^4)*d*e*f + 2*(2*a^4 + a^2*b^2 - b^4)*c*f^2 + (
2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f + (2*a^4 + a^2*b^2 - b^4)*d*f^2)*x)*cosh(
d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + (a^4 + 2*a^2*b^2 + b^
```

```
4)*d^2*e^2 - (2*a^4 + a^2*b^2 - b^4)*d*e*f + 2*(2*a^4 + a^2*b^2 - b^4)*c*f^
2 + 6*((a^2*b^2 + b^4)*d*f^2*x + (a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)^2 + (
2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f + (2*a^4 + a^2*b^2 - b^4)*d*f^2)*x + 3*(3
*(a^3*b + a*b^3)*d*f^2*x - (a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^3)*c*f^2)
*cosh(d*x + c))*sinh(d*x + c)^2 - (a*b^3*f^2*cosh(d*x + c)^4 + a*b^3*f^2*si
nh(d*x + c)^4 + 4*a^2*b^2*f^2*cosh(d*x + c)^3 - 4*a^2*b^2*f^2*cosh(d*x + c)
 + a*b^3*f^2 + 2*(2*a^3*b - a*b^3)*f^2*cosh(d*x + c)^2 + 4*(a*b^3*f^2*cosh(
d*x + c) + a^2*b^2*f^2)*sinh(d*x + c)^3 + 2*(3*a*b^3*f^2*cosh(d*x + c)^2 +
6*a^2*b^2*f^2*cosh(d*x + c) + (2*a^3*b - a*b^3)*f^2)*sinh(d*x + c)^2 + 4*(a
*b^3*f^2*cosh(d*x + c)^3 + 3*a^2*b^2*f^2*cosh(d*x + c)^2 - a^2*b^2*f^2 + (2
*a^3*b - a*b^3)*f^2*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dil
og((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))
*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (a*b^3*f^2*cosh(d*x + c)^4 + a*b^3*f^2
*sinh(d*x + c)^4 + 4*a^2*b^2*f^2*cosh(d*x + c)^3 - 4*a^2*b^2*f^2*cosh(d*x +
 c) + a*b^3*f^2 + 2*(2*a^3*b - a*b^3)*f^2*cosh(d*x + c)^2 + 4*(a*b^3*f^2*co
sh(d*x + c) + a^2*b^2*f^2)*sinh(d*x + c)^3 + 2*(3*a*b^3*f^2*cosh(d*x + c)^2
 + 6*a^2*b^2*f^2*cosh(d*x + c) + (2*a^3*b - a*b^3)*f^2)*sinh(d*x + c)^2 + 4
*(a*b^3*f^2*cosh(d*x + c)^3 + 3*a^2*b^2*f^2*cosh(d*x + c)^2 - a^2*b^2*f^2 +
 (2*a^3*b - a*b^3)*f^2*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*
dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (a*b^3*d*f^2*x + a*b^3*c*f^2 + (a*b
^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x + c)^4 + (a*b^3*d*f^2*x + a*b^3*c*f^2)*s
inh(d*x + c)^4 + 4*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*cosh(d*x + c)^3 + 4*(a
^2*b^2*d*f^2*x + a^2*b^2*c*f^2 + (a*b^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x + c
))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d*f^2*x + (2*a^3*b - a*b^3)*c*f^2
)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d*f^2*x + (2*a^3*b - a*b^3)*c*f^2
+ 3*(a*b^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x + c)^2 + 6*(a^2*b^2*d*f^2*x + a^
2*b^2*c*f^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d*f^2*x + a^2*b^2*
c*f^2)*cosh(d*x + c) - 4*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2 - (a*b^3*d*f^2*x
+ a*b^3*c*f^2)*cosh(d*x + c)^3 - 3*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*cosh(d
*x + c)^2 - ((2*a^3*b - a*b^3)*d*f^2*x + (2*a^3*b - a*b^3)*c*f^2)*cosh(d*x
+ c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d
*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b)
 + (a*b^3*d*f^2*x + a*b^3*c*f^2 + (a*b^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x +
c)^4 + (a*b^3*d*f^2*x + a*b^3*c*f^2)*sinh(d*x + c)^4 + 4*(a^2*b^2*d*f^2*x +
 a^2*b^2*c*f^2)*cosh(d*x + c)^3 + 4*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2 + (a*b
^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*
b^3)*d*f^2*x + (2*a^3*b - a*b^3)*c*f^2)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b
^3)*d*f^2*x + (2*a^3*b - a*b^3)*c*f^2 + 3*(a*b^3*d*f^2*x + a*b^3*c*f^2)*cos
h(d*x + c)^2 + 6*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*cosh(d*x + c))*sinh(d*x
+ c)^2 - 4*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*cosh(d*x + c) - 4*(a^2*b^2*d*f
^2*x + a^2*b^2*c*f^2 - (a*b^3*d*f^2*x + a*b^3*c*f^2)*cosh(d*x + c)^3 - 3*(a
^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d*f^2*
x + (2*a^3*b - a*b^3)*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d
```

```
*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*((a^3*b + a*b^3)*d*f^2*x - 3*(a^
3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^3)*c*f^2)*cosh(d*x + c) - ((a^2*b^2 + b
^4)*f^2*cosh(d*x + c)^4 + (a^2*b^2 + b^4)*f^2*sinh(d*x + c)^4 + 4*(a^3*b +
a*b^3)*f^2*cosh(d*x + c)^3 + 2*(2*a^4 + a^2*b^2 - b^4)*f^2*cosh(d*x + c)^2
- 4*(a^3*b + a*b^3)*f^2*cosh(d*x + c) + 4*((a^2*b^2 + b^4)*f^2*cosh(d*x + c
) + (a^3*b + a*b^3)*f^2)*sinh(d*x + c)^3 + (a^2*b^2 + b^4)*f^2 + 2*(3*(a^2*
b^2 + b^4)*f^2*cosh(d*x + c)^2 + 6*(a^3*b + a*b^3)*f^2*cosh(d*x + c) + (2*a
^4 + a^2*b^2 - b^4)*f^2)*sinh(d*x + c)^2 + 4*((a^2*b^2 + b^4)*f^2*cosh(d*x
+ c)^3 + 3*(a^3*b + a*b^3)*f^2*cosh(d*x + c)^2 + (2*a^4 + a^2*b^2 - b^4)*f^
2*cosh(d*x + c) - (a^3*b + a*b^3)*f^2)*sinh(d*x + c) - (a*b^3*d*e*f - a*b^3
*c*f^2 + (a*b^3*d*e*f - a*b^3*c*f^2)*cosh(d*x + c)^4 + (a*b^3*d*e*f - a*b^3
*c*f^2)*sinh(d*x + c)^4 + 4*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c)^3
 + 4*(a^2*b^2*d*e*f - a^2*b^2*c*f^2 + (a*b^3*d*e*f - a*b^3*c*f^2)*cosh(d*x
+ c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d*e*f - (2*a^3*b - a*b^3)*c*f^
2)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d*e*f - (2*a^3*b - a*b^3)*c*f^2 +
 3*(a*b^3*d*e*f - a*b^3*c*f^2)*cosh(d*x + c)^2 + 6*(a^2*b^2*d*e*f - a^2*b^2
*c*f^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*
cosh(d*x + c) - 4*(a^2*b^2*d*e*f - a^2*b^2*c*f^2 - (a*b^3*d*e*f - a*b^3*c*f
^2)*cosh(d*x + c)^3 - 3*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c)^2 - (
(2*a^3*b - a*b^3)*d*e*f - (2*a^3*b - a*b^3)*c*f^2)*cosh(d*x + c))*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*
b*sqrt((a^2 + b^2)/b^2) + 2*a) - ((a^2*b^2 + b^4)*f^2*cosh(d*x + c)^4 + (a^
2*b^2 + b^4)*f^2*sinh(d*x + c)^4 + 4*(a^3*b + a*b^3)*f^2*cosh(d*x + c)^3 +
2*(2*a^4 + a^2*b^2 - b^4)*f^2*cosh(d*x + c)^2 - 4*(a^3*b + a*b^3)*f^2*cosh(
d*x + c) + 4*((a^2*b^2 + b^4)*f^2*cosh(d*x + c) + (a^3*b + a*b^3)*f^2)*sinh
(d*x + c)^3 + (a^2*b^2 + b^4)*f^2 + 2*(3*(a^2*b^2 + b^4)*f^2*cosh(d*x + c)^
2 + 6*(a^3*b + a*b^3)*f^2*cosh(d*x + c) + (2*a^4 + a^2*b^2 - b^4)*f^2)*sinh
(d*x + c)^2 + 4*((a^2*b^2 + b^4)*f^2*cosh(d*x + c)^3 + 3*(a^3*b + a*b^3)*f^
2*cosh(d*x + c)^2 + (2*a^4 + a^2*b^2 - b^4)*f^2*cosh(d*x + c) - (a^3*b + a*
b^3)*f^2)*sinh(d*x + c) + (a*b^3*d*e*f - a*b^3*c*f^2 + (a*b^3*d*e*f - a*b^3
*c*f^2)*cosh(d*x + c)^4 + (a*b^3*d*e*f - a*b^3*c*f^2)*sinh(d*x + c)^4 + 4*(
a^2*b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c)^3 + 4*(a^2*b^2*d*e*f - a^2*b^2
*c*f^2 + (a*b^3*d*e*f - a*b^3*c*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2
*a^3*b - a*b^3)*d*e*f - (2*a^3*b - a*b^3)*c*f^2)*cosh(d*x + c)^2 + 2*((2*a^
3*b - a*b^3)*d*e*f - (2*a^3*b - a*b^3)*c*f^2 + 3*(a*b^3*d*e*f - a*b^3*c*f^2
)*cosh(d*x + c)^2 + 6*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c))*sinh(d
*x + c)^2 - 4*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c) - 4*(a^2*b^2*d*
e*f - a^2*b^2*c*f^2 - (a*b^3*d*e*f - a*b^3*c*f^2)*cosh(d*x + c)^3 - 3*(a^2*
b^2*d*e*f - a^2*b^2*c*f^2)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d*e*f - (2*
a^3*b - a*b^3)*c*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))*
log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a
) - 2*((a^3*b + a*b^3)*d*f^2*x - 3*(a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^3
)*c*f^2 - 4*((a^2*b^2 + b^4)*d*f^2*x + (a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)
^3 - 3*(3*(a^3*b + a*b^3)*d*f^2*x - (a^3*b + a*b^3)*d*e*f + 4*(a^3*b + a*b^
3)*c*f^2)*cosh(d*x + c)^2 - 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + (a^4 +
```

```
 2*a^2*b^2 + b^4)*d^2*e^2 - (2*a^4 + a^2*b^2 - b^4)*d*e*f + 2*(2*a^4 + a^2*
b^2 - b^4)*c*f^2 + (2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f + (2*a^4 + a^2*b^2 -
b^4)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/((a^4*b^3 + 2*a^2*b^5 + b^7)*d
^3*cosh(d*x + c)^4 + (a^4*b^3 + 2*a^2*b^5 + b^7)*d^3*sinh(d*x + c)^4 + 4*(a
^5*b^2 + 2*a^3*b^4 + a*b^6)*d^3*cosh(d*x + c)^3 + 2*(2*a^6*b + 3*a^4*b^3 -
b^7)*d^3*cosh(d*x + c)^2 - 4*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^3*cosh(d*x + c
) + (a^4*b^3 + 2*a^2*b^5 + b^7)*d^3 + 4*((a^4*b^3 + 2*a^2*b^5 + b^7)*d^3*co
sh(d*x + c) + (a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^3)*sinh(d*x + c)^3 + 2*(3*(a^
4*b^3 + 2*a^2*b^5 + b^7)*d^3*cosh(d*x + c)^2 + 6*(a^5*b^2 + 2*a^3*b^4 + a*b
^6)*d^3*cosh(d*x + c) + (2*a^6*b + 3*a^4*b^3 - b^7)*d^3)*sinh(d*x + c)^2 +
4*((a^4*b^3 + 2*a^2*b^5 + b^7)*d^3*cosh(d*x + c)^3 + 3*(a^5*b^2 + 2*a^3*b^4
 + a*b^6)*d^3*cosh(d*x + c)^2 + (2*a^6*b + 3*a^4*b^3 - b^7)*d^3*cosh(d*x +
c) - (a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^3)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\cosh\left(dx+c\right)}{\left(b\sinh\left(dx+c\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)/(b*sinh(d*x + c) + a)^3, x)
```

maple [B] time = 0.00, size = 805, normalized size = 2.63

$$-\frac{2\left(a^2d\,f^2x^2\mathrm{e}^{2dx+2c}+b^2d\,f^2x^2\mathrm{e}^{2dx+2c}+2a^2def\,x\,\mathrm{e}^{2dx+2c}-ab\,f^2x\,\mathrm{e}^{3dx+3c}+2b^2def\,x\,\mathrm{e}^{2dx+2c}+a^2d\,e^2\mathrm{e}^{2dx+2c}-2a\right.}{b\,d^2\left(a^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x)
```

```
[Out] -2/b*(a^2*d*f^2*x^2*exp(2*d*x+2*c)+b^2*d*f^2*x^2*exp(2*d*x+2*c)+2*a^2*d*e*f
*x*exp(2*d*x+2*c)-a*b*f^2*x*exp(3*d*x+3*c)+2*b^2*d*e*f*x*exp(2*d*x+2*c)+a^2
*d*e^2*exp(2*d*x+2*c)-2*a^2*f^2*x*exp(2*d*x+2*c)-a*b*e*f*exp(3*d*x+3*c)+b^2
*d*e^2*exp(2*d*x+2*c)+b^2*f^2*x*exp(2*d*x+2*c)-2*a^2*e*f*exp(2*d*x+2*c)+3*a
*b*f^2*x*exp(d*x+c)+b^2*e*f*exp(2*d*x+2*c)+3*a*b*e*f*exp(d*x+c)-b^2*f^2*x-b
^2*e*f)/d^2/(a^2+b^2)/(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)^2+1/(a^2+b^2)/d^3
*f^2/b*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/(a^2+b^2)/d^3*f^2/b*ln(exp(d
*x+c))-2/(a^2+b^2)^(3/2)/d^2*f/b*a*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+
b^2)^(1/2))+1/(a^2+b^2)^(3/2)/d^2*f^2/b*a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)
-a)/(-a+(a^2+b^2)^(1/2)))*x+1/(a^2+b^2)^(3/2)/d^3*f^2/b*a*ln((-b*exp(d*x+c)
```

```
+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/(a^2+b^2)^(3/2)/d^2*f^2/b*a*l
n((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/(a^2+b^2)^(3/2)
/d^3*f^2/b*a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/(
a^2+b^2)^(3/2)/d^3*f^2/b*a*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2
+b^2)^(1/2)))-1/(a^2+b^2)^(3/2)/d^3*f^2/b*a*dilog((b*exp(d*x+c)+(a^2+b^2)^(
1/2)+a)/(a+(a^2+b^2)^(1/2)))+2/(a^2+b^2)^(3/2)/d^3*f^2/b*a*c*arctanh(1/2*(2
*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] (2*a*d*integrate(x*e^(d*x + c)/(a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*
d*x + 2*c) + 2*a^3*b*d^2*e^(d*x + c) + 2*a*b^3*d^2*e^(d*x + c) - a^2*b^2*d^
2 - b^4*d^2), x) + b*(a*log((b*e^(d*x + c) + a - sqrt(a^2 + b^2))/(b*e^(d*x
 + c) + a + sqrt(a^2 + b^2)))/((a^2*b^2 + b^4)*sqrt(a^2 + b^2)*d^3) - 2*(d*
x + c)/((a^2*b^2 + b^4)*d^3) + log(b*e^(2*d*x + 2*c) + 2*a*e^(d*x + c) - b)
/((a^2*b^2 + b^4)*d^3)) + 2*(a*b*x*e^(3*d*x + 3*c) - 3*a*b*x*e^(d*x + c) +
b^2*x - ((a^2*d*e^(2*c) + b^2*d*e^(2*c))*x^2 - (2*a^2*e^(2*c) - b^2*e^(2*c)
)*x)*e^(2*d*x))/(a^2*b^3*d^2 + b^5*d^2 + (a^2*b^3*d^2*e^(4*c) + b^5*d^2*e^(
4*c))*e^(4*d*x) + 4*(a^3*b^2*d^2*e^(3*c) + a*b^4*d^2*e^(3*c))*e^(3*d*x) + 2
*(2*a^4*b*d^2*e^(2*c) + a^2*b^3*d^2*e^(2*c) - b^5*d^2*e^(2*c))*e^(2*d*x) -
4*(a^3*b^2*d^2*e^c + a*b^4*d^2*e^c)*e^(d*x)) - a*log((b*e^(d*x + c) + a - s
qrt(a^2 + b^2))/(b*e^(d*x + c) + a + sqrt(a^2 + b^2)))/((a^2*b + b^3)*sqrt(
a^2 + b^2)*d^3))*f^2 + e*f*(2*(a*b*e^(3*d*x + 3*c) - 3*a*b*e^(d*x + c) + b^
2 + (2*a^2*e^(2*c) - b^2*e^(2*c) - 2*(a^2*d*e^(2*c) + b^2*d*e^(2*c))*x)*e^(
2*d*x))/(a^2*b^3*d^2 + b^5*d^2 + (a^2*b^3*d^2*e^(4*c) + b^5*d^2*e^(4*c))*e^
(4*d*x) + 4*(a^3*b^2*d^2*e^(3*c) + a*b^4*d^2*e^(3*c))*e^(3*d*x) + 2*(2*a^4*
b*d^2*e^(2*c) + a^2*b^3*d^2*e^(2*c) - b^5*d^2*e^(2*c))*e^(2*d*x) - 4*(a^3*b
^2*d^2*e^c + a*b^4*d^2*e^c)*e^(d*x)) + a*log((b*e^(d*x + 2*c) + a*e^c - sqr
t(a^2 + b^2)*e^c)/(b*e^(d*x + 2*c) + a*e^c + sqrt(a^2 + b^2)*e^c))/((a^2*b
+ b^3)*sqrt(a^2 + b^2)*d^2)) - 2*e^2*e^(-2*d*x - 2*c)/((4*a*b^2*e^(-d*x - c
) - 4*a*b^2*e^(-3*d*x - 3*c) + b^3*e^(-4*d*x - 4*c) + b^3 + 2*(2*a^2*b - b^
3)*e^(-2*d*x - 2*c))*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh (c+d\,x)\,{\left(e+f\,x\right)}^2}{{\left(a+b\,\sinh (c+d\,x)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x))^3,x)
[Out] int((cosh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x))^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)/(a+b*sinh(d*x+c))**3,x)
[Out] Timed out
```

3.332 $\int \frac{(e+fx)^3 \cosh(c+dx)}{(a+b\sinh(c+dx))^3} \, dx$

Optimal. Leaf size=631

$$\frac{3f^3\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\left(a^2+b^2\right)}+\frac{3f^3\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^4\left(a^2+b^2\right)}-\frac{3af^3\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\left(a^2+b^2\right)^{3/2}}+\frac{3af^3\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^4\left(a^2+b^2\right)^{3/2}}+\frac{3af^2(e+fx)\text{Li}_2\left(-\frac{b}{a-}\right.}{bd^3\left(a^2+b^2\right)^{3/2}}$$

```
[Out] -3/2*f*(f*x+e)^2/b/(a^2+b^2)/d^2+3*f^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^
2)^(1/2)))/b/(a^2+b^2)/d^3+3/2*a*f*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))/b/(a^2+b^2)^(3/2)/d^2+3*f^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)
^(1/2)))/b/(a^2+b^2)/d^3-3/2*a*f*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/b/(a^2+b^2)^(3/2)/d^2+3*f^3*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/
2)))/b/(a^2+b^2)/d^4+3*a*f^2*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(
1/2)))/b/(a^2+b^2)^(3/2)/d^3+3*f^3*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/
2)))/b/(a^2+b^2)/d^4-3*a*f^2*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/b/(a^2+b^2)^(3/2)/d^3-3*a*f^3*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(
1/2)))/b/(a^2+b^2)^(3/2)/d^4+3*a*f^3*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/b/(a^2+b^2)^(3/2)/d^4-1/2*(f*x+e)^3/b/d/(a+b*sinh(d*x+c))^2-3/2*f*(f
*x+e)^2*cosh(d*x+c)/(a^2+b^2)/d^2/(a+b*sinh(d*x+c))
```

Rubi [A] time = 1.09, antiderivative size = 631, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423, Rules used = {5464, 3324, 3322, 2264, 2190, 2531, 2282, 6589, 5561, 2279, 2391}

$$\frac{3af^2(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}-\frac{3af^2(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^3\left(a^2+b^2\right)^{3/2}}+\frac{3f^3\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^4\left(a^2+b^2\right)}+\frac{3f^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] (-3*f*(e + f*x)^2)/(2*b*(a^2 + b^2)*d^2) + (3*f^2*(e + f*x)*Log[1 + (b*E^(c
 + d*x))/(a - Sqrt[a^2 + b^2])])/(b*(a^2 + b^2)*d^3) + (3*a*f*(e + f*x)^2*L
og[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(2*b*(a^2 + b^2)^(3/2)*d^2)
+ (3*f^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b*(a^2
+ b^2)*d^3) - (3*a*f*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2])])/(2*b*(a^2 + b^2)^(3/2)*d^2) + (3*f^3*PolyLog[2, -((b*E^(c + d*x))/(a
- Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^4) + (3*a*f^2*(e + f*x)*PolyLog[2, -
((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^3) + (3*f^
3*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^4)
```

```
 - (3*a*f^2*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])
/(b*(a^2 + b^2)^(3/2)*d^3) - (3*a*f^3*PolyLog[3, -((b*E^(c + d*x))/(a - Sqr
t[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^4) + (3*a*f^3*PolyLog[3, -((b*E^(c
+ d*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^4) - (e + f*x)^3/(2
*b*d*(a + b*Sinh[c + d*x])^2) - (3*f*(e + f*x)^2*Cosh[c + d*x])/(2*(a^2 + b
^2)*d^2*(a + b*Sinh[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 5464

```
Int[Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sinh[
(c_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sinh[c +
d*x])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^
(m - 1)*(a + b*Sinh[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)}{(a+b\sinh(c+dx))^3}\,dx = -\frac{(e+fx)^3}{2bd(a+b\sinh(c+dx))^2} + \frac{(3f)\int \frac{(e+fx)^2}{(a+b\sinh(c+dx))^2}\,dx}{2bd}$$

$$= -\frac{(e+fx)^3}{2bd(a+b\sinh(c+dx))^2} - \frac{3f(e+fx)^2\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx))} + \frac{(3af)\int \frac{(e+}{a+b\sin}}{2b\left(a^2+\right.}$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} - \frac{(e+fx)^3}{2bd(a+b\sinh(c+dx))^2} - \frac{3f(e+fx)^2\cosh(c+dx)}{2\left(a^2+b^2\right)d^2(a+b\sinh(c+dx)}$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)d^3} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c}}{a+\sqrt{a}}\right.}{b\left(a^2+b^2\right)d^3}$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)d^3} + \frac{3af(e+fx)^2\log\left(1+\frac{be}{a-\sqrt{}}\right.}{2b\left(a^2+b^2\right)^{3/2}d^2}$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)d^3} + \frac{3af(e+fx)^2\log\left(1+\frac{be}{a-\sqrt{}}\right.}{2b\left(a^2+b^2\right)^{3/2}d^2}$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)d^3} + \frac{3af(e+fx)^2\log\left(1+\frac{be}{a-\sqrt{}}\right.}{2b\left(a^2+b^2\right)^{3/2}d^2}$$

$$= -\frac{3f(e+fx)^2}{2b\left(a^2+b^2\right)d^2} + \frac{3f^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)d^3} + \frac{3af(e+fx)^2\log\left(1+\frac{be}{a-\sqrt{}}\right.}{2b\left(a^2+b^2\right)^{3/2}d^2}$$

Mathematica [B] time = 7.49, size = 5753, normalized size = 9.12

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x])/(a + b*Sinh[c + d*x])^3,x]
```

```
[Out] Result too large to show
```

fricas [C] time = 0.81, size = 11757, normalized size = 18.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="fricas")

[Out] 1/2*(6*(a^2*b^2 + b^4)*d^2*e^2*f - 12*(a^2*b^2 + b^4)*c*d*e*f^2 + 6*(a^2*b^2 + b^4)*c^2*f^3 - 6*((a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 + b^4)*d^2*e*f^2*x + 2*(a^2*b^2 + b^4)*c*d*e*f^2 - (a^2*b^2 + b^4)*c^2*f^3)*cosh(d*x + c)^4 - 6*((a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 + b^4)*d^2*e*f^2*x + 2*(a^2*b^2 + b^4)*c*d*e*f^2 - (a^2*b^2 + b^4)*c^2*f^3)*sinh(d*x + c)^4 - 6*(3*(a^3*b + a*b^3)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*e*f^2*x - (a^3*b + a*b^3)*d^2*e^2*f + 8*(a^3*b + a*b^3)*c*d*e*f^2 - 4*(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c)^3 - 6*(3*(a^3*b + a*b^3)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*e*f^2*x - (a^3*b + a*b^3)*d^2*e^2*f + 8*(a^3*b + a*b^3)*c*d*e*f^2 - 4*(a^3*b + a*b^3)*c^2*f^3 + 4*((a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 + b^4)*d^2*e*f^2*x + 2*(a^2*b^2 + b^4)*c*d*e*f^2 - (a^2*b^2 + b^4)*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 - 2*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(2*a^4 + a^2*b^2 - b^4)*d^2*e^2*f + 12*(2*a^4 + a^2*b^2 - b^4)*c*d*e*f^2 - 6*(2*a^4 + a^2*b^2 - b^4)*c^2*f^3 + 3*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2 + (2*a^4 + a^2*b^2 - b^4)*d^2*f^3)*x^2 + 6*((a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*f + (2*a^4 + a^2*b^2 - b^4)*d^2*e*f^2)*x)*cosh(d*x + c)^2 - 2*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(2*a^4 + a^2*b^2 - b^4)*d^2*e^2*f + 12*(2*a^4 + a^2*b^2 - b^4)*c*d*e*f^2 - 6*(2*a^4 + a^2*b^2 - b^4)*c^2*f^3 + 3*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2 + (2*a^4 + a^2*b^2 - b^4)*d^2*f^3)*x^2 + 18*((a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 + b^4)*d^2*e*f^2*x + 2*(a^2*b^2 + b^4)*c*d*e*f^2 - (a^2*b^2 + b^4)*c^2*f^3)*cosh(d*x + c)^2 + 6*((a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*f + (2*a^4 + a^2*b^2 - b^4)*d^2*e*f^2)*x + 9*(3*(a^3*b + a*b^3)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*e*f^2*x - (a^3*b + a*b^3)*d^2*e^2*f + 8*(a^3*b + a*b^3)*c*d*e*f^2 - 4*(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)^2 - 6*(a*b^3*f^3*cosh(d*x + c)^4 + a*b^3*f^3*sinh(d*x + c)^4 + 4*a^2*b^2*f^3*cosh(d*x + c)^3 - 4*a^2*b^2*f^3*cosh(d*x + c) + a*b^3*f^3 + 2*(2*a^3*b - a*b^3)*f^3*cosh(d*x + c)^2 + 4*(a*b^3*f^3*cosh(d*x + c) + a^2*b^2*f^3)*sinh(d*x + c)^3 + 2*(3*a*b^3*f^3*cosh(d*x + c)^2 + 6*a^2*b^2*f^3*cosh(d*x + c) + (2*a^3*b - a*b^3)*f^3)*sinh(d*x + c)^2 + 4*(a*b^3*f^3*cosh(d*x + c)^3 + 3*a^2*b^2*f^3*cosh(d*x + c)^2 - a^2*b^2*f^3 + (2*a^3*b - a*b^3)*f^3*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(a*b^3*f^3*cosh(d*x + c)^4 + a*b^3*f^3*sinh(d*x + c)^4 + 4*a^2*b^2*f^3*cosh(d*x + c)^3 - 4*a^2*b^2*f^3*cosh(d*x + c) + a*b^3*f^3 + 2*(2*a^3*b - a*b^3)*f^3*cosh(d*x + c)^2 + 4*(a*b^3*f^3*cosh(d*x + c) + a^2*b^2*f^3)*sinh(d*x + c)^3 + 2*(3*a*b^3*f^3*cosh(d*x + c)^2 + 6*a^2*b^2*f^3*cosh(d*x + c) + (2*a^3*b - a*b^3)*f^3)*sinh(d*x + c)^2 + 4*(a*b^3*f^3*cosh(d*x + c)^3 + 3*a^2*b^2*f^3*cosh(d*x + c)^2 - a^2*b^2*f^3 + (2*a^3*b - a*b^3)*f^3*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +

b^2)/b^2))/b) + 6*((a^3*b + a*b^3)*d^2*f^3*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f^2*x - 3*(a^3*b + a*b^3)*d^2*e^2*f + 8*(a^3*b + a*b^3)*c*d*e*f^2 - 4*(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c) + 6*((a^2*b^2 + b^4)*f^3*cosh(d*x + c)^4 + (a^2*b^2 + b^4)*f^3*sinh(d*x + c)^4 + 4*(a^3*b + a*b^3)*f^3*cosh(d*x + c)^3 + 2*(2*a^4 + a^2*b^2 - b^4)*f^3*cosh(d*x + c)^2 - 4*(a^3*b + a*b^3)*f^3*cosh(d*x + c) + (a^2*b^2 + b^4)*f^3 + 4*((a^2*b^2 + b^4)*f^3*cosh(d*x + c) + (a^3*b + a*b^3)*f^3)*sinh(d*x + c)^3 + 2*(3*(a^2*b^2 + b^4)*f^3*cosh(d*x + c)^2 + 6*(a^3*b + a*b^3)*f^3*cosh(d*x + c) + (2*a^4 + a^2*b^2 - b^4)*f^3)*sinh(d*x + c)^2 + 4*((a^2*b^2 + b^4)*f^3*cosh(d*x + c)^3 + 3*(a^3*b + a*b^3)*f^3*cosh(d*x + c)^2 + (2*a^4 + a^2*b^2 - b^4)*f^3*cosh(d*x + c) - (a^3*b + a*b^3)*f^3)*sinh(d*x + c) + (a*b^3*d*f^3*x + a*b^3*d*e*f^2 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c)^4 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*sinh(d*x + c)^4 + 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2)*cosh(d*x + c)^3 + 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e*f^2)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e*f^2 + 3*(a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c)^2 + 6*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2)*cosh(d*x + c) - 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2 - (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c)^3 - 3*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 6*((a^2*b^2 + b^4)*f^3*cosh(d*x + c)^4 + (a^2*b^2 + b^4)*f^3*sinh(d*x + c)^4 + 4*(a^3*b + a*b^3)*f^3*cosh(d*x + c)^3 + 2*(2*a^4 + a^2*b^2 - b^4)*f^3*cosh(d*x + c)^2 - 4*(a^3*b + a*b^3)*f^3*cosh(d*x + c) + (a^2*b^2 + b^4)*f^3 + 4*((a^2*b^2 + b^4)*f^3*cosh(d*x + c) + (a^3*b + a*b^3)*f^3)*sinh(d*x + c)^3 + 2*(3*(a^2*b^2 + b^4)*f^3*cosh(d*x + c)^2 + 6*(a^3*b + a*b^3)*f^3*cosh(d*x + c) + (2*a^4 + a^2*b^2 - b^4)*f^3)*sinh(d*x + c)^2 + 4*((a^2*b^2 + b^4)*f^3*cosh(d*x + c)^3 + 3*(a^3*b + a*b^3)*f^3*cosh(d*x + c)^2 + (2*a^4 + a^2*b^2 - b^4)*f^3*cosh(d*x + c) - (a^3*b + a*b^3)*f^3)*sinh(d*x + c) - (a*b^3*d*f^3*x + a*b^3*d*e*f^2 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c)^4 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*sinh(d*x + c)^4 + 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2)*cosh(d*x + c)^3 + 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e*f^2)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e*f^2 + 3*(a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c)^2 + 6*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2)*cosh(d*x + c) - 4*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2 - (a*b^3*d*f^3*x + a*b^3*d*e*f^2)*cosh(d*x + c)^3 - 3*(a^2*b^2*d*f^3*x + a^2*b^2*d*e*f^2)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d*f^3*x + (2*a^3*b - a*b^3)*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 3*(2*(a^2*b^2 + b^4)*d*e*f^2 - 2*(a^2*b^2 + b^4)*c*f^

3 + 2*((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^4 + 2
*((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*sinh(d*x + c)^4 + 8*((a^
3*b + a*b^3)*d*e*f^2 - (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c)^3 + 8*((a^3*b +
 a*b^3)*d*e*f^2 - (a^3*b + a*b^3)*c*f^3 + ((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b
^2 + b^4)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*((2*a^4 + a^2*b^2 - b^4
)*d*e*f^2 - (2*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c)^2 + 4*((2*a^4 + a^
2*b^2 - b^4)*d*e*f^2 - (2*a^4 + a^2*b^2 - b^4)*c*f^3 + 3*((a^2*b^2 + b^4)*d
*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^2 + 6*((a^3*b + a*b^3)*d*e*f^
2 - (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^2 - 8*((a^3*b + a*b
^3)*d*e*f^2 - (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c) - 8*((a^3*b + a*b^3)*d*e
*f^2 - (a^3*b + a*b^3)*c*f^3 - ((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c
*f^3)*cosh(d*x + c)^3 - 3*((a^3*b + a*b^3)*d*e*f^2 - (a^3*b + a*b^3)*c*f^3)
*cosh(d*x + c)^2 - ((2*a^4 + a^2*b^2 - b^4)*d*e*f^2 - (2*a^4 + a^2*b^2 - b^
4)*c*f^3)*cosh(d*x + c))*sinh(d*x + c) - (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f
^2 + a*b^3*c^2*f^3 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*
cosh(d*x + c)^4 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*sin
h(d*x + c)^4 + 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3
)*cosh(d*x + c)^3 + 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^
2*f^3 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)
)*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*
d*e*f^2 + (2*a^3*b - a*b^3)*c^2*f^3)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)
*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*d*e*f^2 + (2*a^3*b - a*b^3)*c^2*f^3 + 3*
(a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)^2 + 6*(
a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x + c))*s
inh(d*x + c)^2 - 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f
^3)*cosh(d*x + c) - 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^
2*f^3 - (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)
^3 - 3*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x
 + c)^2 - ((2*a^3*b - a*b^3)*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*d*e*f^2 + (2
*a^3*b - a*b^3)*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2
))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) +
2*a) + 3*(2*(a^2*b^2 + b^4)*d*e*f^2 - 2*(a^2*b^2 + b^4)*c*f^3 + 2*((a^2*b^2
 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^4 + 2*((a^2*b^2 + b^
4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*sinh(d*x + c)^4 + 8*((a^3*b + a*b^3)*d*
e*f^2 - (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c)^3 + 8*((a^3*b + a*b^3)*d*e*f^2
 - (a^3*b + a*b^3)*c*f^3 + ((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3
)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*((2*a^4 + a^2*b^2 - b^4)*d*e*f^2 - (2*
a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c)^2 + 4*((2*a^4 + a^2*b^2 - b^4)*d*
e*f^2 - (2*a^4 + a^2*b^2 - b^4)*c*f^3 + 3*((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b
^2 + b^4)*c*f^3)*cosh(d*x + c)^2 + 6*((a^3*b + a*b^3)*d*e*f^2 - (a^3*b + a*
b^3)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^2 - 8*((a^3*b + a*b^3)*d*e*f^2 - (
a^3*b + a*b^3)*c*f^3)*cosh(d*x + c) - 8*((a^3*b + a*b^3)*d*e*f^2 - (a^3*b +
 a*b^3)*c*f^3 - ((a^2*b^2 + b^4)*d*e*f^2 - (a^2*b^2 + b^4)*c*f^3)*cosh(d*x
+ c)^3 - 3*((a^3*b + a*b^3)*d*e*f^2 - (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c)^
2 - ((2*a^4 + a^2*b^2 - b^4)*d*e*f^2 - (2*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(

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d*x + c))*sinh(d*x + c) + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*
f^3 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)^4
 + (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*sinh(d*x + c)^4 +
4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x + c)
^3 + 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3 + (a*b^3*
d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)
^3 + 2*((2*a^3*b - a*b^3)*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*d*e*f^2 + (2*a^
3*b - a*b^3)*c^2*f^3)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d^2*e^2*f - 2*
(2*a^3*b - a*b^3)*c*d*e*f^2 + (2*a^3*b - a*b^3)*c^2*f^3 + 3*(a*b^3*d^2*e^2*
f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)^2 + 6*(a^2*b^2*d^2*e^2
*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)^2
- 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x +
c) - 4*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3 - (a*b^3*
d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a*b^3*c^2*f^3)*cosh(d*x + c)^3 - 3*(a^2*b^2
*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 + a^2*b^2*c^2*f^3)*cosh(d*x + c)^2 - ((2*a
^3*b - a*b^3)*d^2*e^2*f - 2*(2*a^3*b - a*b^3)*c*d*e*f^2 + (2*a^3*b - a*b^3)
*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))*log(2*b*cosh
(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 3*(2*(a^
2*b^2 + b^4)*d*f^3*x + 2*(a^2*b^2 + b^4)*c*f^3 + 2*((a^2*b^2 + b^4)*d*f^3*x
 + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^4 + 2*((a^2*b^2 + b^4)*d*f^3*x + (a
^2*b^2 + b^4)*c*f^3)*sinh(d*x + c)^4 + 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b
+ a*b^3)*c*f^3)*cosh(d*x + c)^3 + 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b
^3)*c*f^3 + ((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)
)*sinh(d*x + c)^3 + 4*((2*a^4 + a^2*b^2 - b^4)*d*f^3*x + (2*a^4 + a^2*b^2 -
 b^4)*c*f^3)*cosh(d*x + c)^2 + 4*((2*a^4 + a^2*b^2 - b^4)*d*f^3*x + (2*a^4
+ a^2*b^2 - b^4)*c*f^3 + 3*((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3
)*cosh(d*x + c)^2 + 6*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cos
h(d*x + c))*sinh(d*x + c)^2 - 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*
c*f^3)*cosh(d*x + c) - 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3 -
 ((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^3 - 3*((a^
3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c)^2 - ((2*a^4 + a
^2*b^2 - b^4)*d*f^3*x + (2*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c))*sinh(
d*x + c) + (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a
*b^3*c^2*f^3 + (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2
 - a*b^3*c^2*f^3)*cosh(d*x + c)^4 + (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*
x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*sinh(d*x + c)^4 + 4*(a^2*b^2*d^2*f^3
*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*cosh(
d*x + c)^3 + 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d
*e*f^2 - a^2*b^2*c^2*f^3 + (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b
^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2*a^3*b
- a*b^3)*d^2*f^3*x^2 + 2*(2*a^3*b - a*b^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3
)*c*d*e*f^2 - (2*a^3*b - a*b^3)*c^2*f^3)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*
b^3)*d^2*f^3*x^2 + 2*(2*a^3*b - a*b^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*
d*e*f^2 - (2*a^3*b - a*b^3)*c^2*f^3 + 3*(a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*
f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cosh(d*x + c)^2 + 6*(a^2*b^2*d^2
```

```
*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*c
osh(d*x + c))*sinh(d*x + c)^2 - 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^
2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*cosh(d*x + c) - 4*(a^2*b^2*d^2
*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3 -
(a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^
3)*cosh(d*x + c)^3 - 3*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2
*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d^2*
f^3*x^2 + 2*(2*a^3*b - a*b^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*d*e*f^2 -
 (2*a^3*b - a*b^3)*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 3*(2*(a^2*b^2 + b^4)*d*f^3*x + 2*(
a^2*b^2 + b^4)*c*f^3 + 2*((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*
cosh(d*x + c)^4 + 2*((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*sinh(
d*x + c)^4 + 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x +
 c)^3 + 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3 + ((a^2*b^2 + b^
4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*((2*
a^4 + a^2*b^2 - b^4)*d*f^3*x + (2*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c)
^2 + 4*((2*a^4 + a^2*b^2 - b^4)*d*f^3*x + (2*a^4 + a^2*b^2 - b^4)*c*f^3 + 3
*((a^2*b^2 + b^4)*d*f^3*x + (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^2 + 6*((a^
3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c))*sinh(d*x + c)^
2 - 8*((a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3)*cosh(d*x + c) - 8*(
(a^3*b + a*b^3)*d*f^3*x + (a^3*b + a*b^3)*c*f^3 - ((a^2*b^2 + b^4)*d*f^3*x
+ (a^2*b^2 + b^4)*c*f^3)*cosh(d*x + c)^3 - 3*((a^3*b + a*b^3)*d*f^3*x + (a^
3*b + a*b^3)*c*f^3)*cosh(d*x + c)^2 - ((2*a^4 + a^2*b^2 - b^4)*d*f^3*x + (2
*a^4 + a^2*b^2 - b^4)*c*f^3)*cosh(d*x + c))*sinh(d*x + c) - (a*b^3*d^2*f^3*
x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3 + (a*b^3*d^2*
f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cosh(d*x
 + c)^4 + (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*
b^3*c^2*f^3)*sinh(d*x + c)^4 + 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2
*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*cosh(d*x + c)^3 + 4*(a^2*b^2*d^
2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3 +
 (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f
^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((2*a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(
2*a^3*b - a*b^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*d*e*f^2 - (2*a^3*b - a
*b^3)*c^2*f^3)*cosh(d*x + c)^2 + 2*((2*a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(2*a^
3*b - a*b^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*d*e*f^2 - (2*a^3*b - a*b^3
)*c^2*f^3 + 3*(a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2
- a*b^3*c^2*f^3)*cosh(d*x + c)^2 + 6*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e
*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c
)^2 - 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2
- a^2*b^2*c^2*f^3)*cosh(d*x + c) - 4*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e
*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3 - (a*b^3*d^2*f^3*x^2 + 2*a*b
^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cosh(d*x + c)^3 - 3*(a^
2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c
^2*f^3)*cosh(d*x + c)^2 - ((2*a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(2*a^3*b - a*b
```

```
^3)*d^2*e*f^2*x + 2*(2*a^3*b - a*b^3)*c*d*e*f^2 - (2*a^3*b - a*b^3)*c^2*f^3
)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))*log(-(a*cosh(d*x + c
) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2) - b)/b) + 2*(3*(a^3*b + a*b^3)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*e*f
^2*x - 9*(a^3*b + a*b^3)*d^2*e^2*f + 24*(a^3*b + a*b^3)*c*d*e*f^2 - 12*(a^3
*b + a*b^3)*c^2*f^3 - 12*((a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 + b^4)*d
^2*e*f^2*x + 2*(a^2*b^2 + b^4)*c*d*e*f^2 - (a^2*b^2 + b^4)*c^2*f^3)*cosh(d*
x + c)^3 - 9*(3*(a^3*b + a*b^3)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*e*f^2*x
 - (a^3*b + a*b^3)*d^2*e^2*f + 8*(a^3*b + a*b^3)*c*d*e*f^2 - 4*(a^3*b + a*b
^3)*c^2*f^3)*cosh(d*x + c)^2 - 2*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 2
*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(2*a^4 + a^2*b^2 - b^4)*d^2*e^2*f + 12
*(2*a^4 + a^2*b^2 - b^4)*c*d*e*f^2 - 6*(2*a^4 + a^2*b^2 - b^4)*c^2*f^3 + 3*
(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2 + (2*a^4 + a^2*b^2 - b^4)*d^2*f^3)*x^2
 + 6*((a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*f + (2*a^4 + a^2*b^2 - b^4)*d^2*e*f^2
)*x)*cosh(d*x + c))*sinh(d*x + c))/((a^4*b^3 + 2*a^2*b^5 + b^7)*d^4*cosh(d*
x + c)^4 + (a^4*b^3 + 2*a^2*b^5 + b^7)*d^4*sinh(d*x + c)^4 + 4*(a^5*b^2 + 2
*a^3*b^4 + a*b^6)*d^4*cosh(d*x + c)^3 + 2*(2*a^6*b + 3*a^4*b^3 - b^7)*d^4*c
osh(d*x + c)^2 - 4*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^4*cosh(d*x + c) + (a^4*b
^3 + 2*a^2*b^5 + b^7)*d^4 + 4*((a^4*b^3 + 2*a^2*b^5 + b^7)*d^4*cosh(d*x + c
) + (a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^4)*sinh(d*x + c)^3 + 2*(3*(a^4*b^3 + 2*
a^2*b^5 + b^7)*d^4*cosh(d*x + c)^2 + 6*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*d^4*co
sh(d*x + c) + (2*a^6*b + 3*a^4*b^3 - b^7)*d^4)*sinh(d*x + c)^2 + 4*((a^4*b^
3 + 2*a^2*b^5 + b^7)*d^4*cosh(d*x + c)^3 + 3*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*
d^4*cosh(d*x + c)^2 + (2*a^6*b + 3*a^4*b^3 - b^7)*d^4*cosh(d*x + c) - (a^5*
b^2 + 2*a^3*b^4 + a*b^6)*d^4)*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)}{\left(b\sinh\left(dx+c\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)/(b*sinh(d*x + c) + a)^3, x)
```

maple [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)}{\left(a+b\sinh\left(dx+c\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)/(a+b*sinh(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 3*a*d*f^3*integrate(x^2*e^(d*x + c)/(a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*
e^(2*d*x + 2*c) + 2*a^3*b*d^2*e^(d*x + c) + 2*a*b^3*d^2*e^(d*x + c) - a^2*b
^2*d^2 - b^4*d^2), x) + 6*a*d*e*f^2*integrate(x*e^(d*x + c)/(a^2*b^2*d^2*e^
(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + 2*a^3*b*d^2*e^(d*x + c) + 2*a*b^3
*d^2*e^(d*x + c) - a^2*b^2*d^2 - b^4*d^2), x) + 3*b*e*f^2*(a*log((b*e^(d*x
+ c) + a - sqrt(a^2 + b^2))/(b*e^(d*x + c) + a + sqrt(a^2 + b^2)))/((a^2*b^
2 + b^4)*sqrt(a^2 + b^2)*d^3) - 2*(d*x + c)/((a^2*b^2 + b^4)*d^3) + log(b*e
^(2*d*x + 2*c) + 2*a*e^(d*x + c) - b)/((a^2*b^2 + b^4)*d^3)) - 6*a*f^3*inte
grate(x*e^(d*x + c)/(a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c)
+ 2*a^3*b*d^2*e^(d*x + c) + 2*a*b^3*d^2*e^(d*x + c) - a^2*b^2*d^2 - b^4*d^2
), x) + 6*b*f^3*integrate(x/(a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x
 + 2*c) + 2*a^3*b*d^2*e^(d*x + c) + 2*a*b^3*d^2*e^(d*x + c) - a^2*b^2*d^2 -
 b^4*d^2), x) + 3/2*e^2*f*(2*(a*b*e^(3*d*x + 3*c) - 3*a*b*e^(d*x + c) + b^2
 + (2*a^2*e^(2*c) - b^2*e^(2*c) - 2*(a^2*d*e^(2*c) + b^2*d*e^(2*c))*x)*e^(2
*d*x))/(a^2*b^3*d^2 + b^5*d^2 + (a^2*b^3*d^2*e^(4*c) + b^5*d^2*e^(4*c))*e^(
4*d*x) + 4*(a^3*b^2*d^2*e^(3*c) + a*b^4*d^2*e^(3*c))*e^(3*d*x) + 2*(2*a^4*b
*d^2*e^(2*c) + a^2*b^3*d^2*e^(2*c) - b^5*d^2*e^(2*c))*e^(2*d*x) - 4*(a^3*b^
2*d^2*e^c + a*b^4*d^2*e^c)*e^(d*x)) + a*log((b*e^(d*x + 2*c) + a*e^c - sqrt
(a^2 + b^2)*e^c)/(b*e^(d*x + 2*c) + a*e^c + sqrt(a^2 + b^2)*e^c))/((a^2*b +
 b^3)*sqrt(a^2 + b^2)*d^2)) - 2*e^3*e^(-2*d*x - 2*c)/((4*a*b^2*e^(-d*x - c)
 - 4*a*b^2*e^(-3*d*x - 3*c) + b^3*e^(-4*d*x - 4*c) + b^3 + 2*(2*a^2*b - b^3
)*e^(-2*d*x - 2*c))*d) - 3*a*e*f^2*log((b*e^(d*x + c) + a - sqrt(a^2 + b^2)
)/(b*e^(d*x + c) + a + sqrt(a^2 + b^2)))/((a^2*b + b^3)*sqrt(a^2 + b^2)*d^3
) + (3*b^2*f^3*x^2 + 6*b^2*e*f^2*x + 3*(a*b*f^3*x^2*e^(3*c) + 2*a*b*e*f^2*x
*e^(3*c))*e^(3*d*x) - (2*(a^2*d*f^3*e^(2*c) + b^2*d*f^3*e^(2*c))*x^3 + 3*(2
*(d*e*f^2 - f^3)*a^2*e^(2*c) + (2*d*e*f^2 + f^3)*b^2*e^(2*c))*x^2 - 6*(2*a^
2*e*f^2*e^(2*c) - b^2*e*f^2*e^(2*c))*x)*e^(2*d*x) - 9*(a*b*f^3*x^2*e^c + 2*
a*b*e*f^2*x*e^c)*e^(d*x))/(a^2*b^3*d^2 + b^5*d^2 + (a^2*b^3*d^2*e^(4*c) + b
^5*d^2*e^(4*c))*e^(4*d*x) + 4*(a^3*b^2*d^2*e^(3*c) + a*b^4*d^2*e^(3*c))*e^(
3*d*x) + 2*(2*a^4*b*d^2*e^(2*c) + a^2*b^3*d^2*e^(2*c) - b^5*d^2*e^(2*c))*e^
(2*d*x) - 4*(a^3*b^2*d^2*e^c + a*b^4*d^2*e^c)*e^(d*x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh (c+d\,x)\,{\left(e+f\,x\right)}^3}{{\left(a+b\,\sinh (c+d\,x)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x))^3,x)
```

```
[Out] int((cosh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x))^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)/(a+b*sinh(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.333 $\int \frac{(e+fx)^3 \cosh(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=448

$$-\frac{6af^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^4}-\frac{6af^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^4}+\frac{6af^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3}+\frac{6af^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^3}-\frac{3a}{}$$

```
[Out] 1/4*a*(f*x+e)^4/b^2/f-6*f^3*cosh(d*x+c)/b/d^4-3*f*(f*x+e)^2*cosh(d*x+c)/b/d
^2-a*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/d-a*(f*x+e)^3*ln(
1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/d-3*a*f*(f*x+e)^2*polylog(2,-b*exp(
d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/d^2-3*a*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)
/(a+(a^2+b^2)^(1/2)))/b^2/d^2+6*a*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a
^2+b^2)^(1/2)))/b^2/d^3+6*a*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2
)^(1/2)))/b^2/d^3-6*a*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/
d^4-6*a*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/d^4+6*f^2*(f*x
+e)*sinh(d*x+c)/b/d^3+(f*x+e)^3*sinh(d*x+c)/b/d
```

Rubi [A] time = 0.65, antiderivative size = 448, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {5579, 3296, 2638, 5561, 2190, 2531, 6609, 2282, 6589}

$$\frac{6af^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3}+\frac{6af^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^2d^3}-\frac{3af(e+fx)^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+}}\right)}{b^2d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(e + f*x)^4)/(4*b^2*f) - (6*f^3*Cosh[c + d*x])/(b*d^4) - (3*f*(e + f*x)^
2*Cosh[c + d*x])/(b*d^2) - (a*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt
[a^2 + b^2])])/(b^2*d) - (a*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a
^2 + b^2])])/(b^2*d) - (3*a*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a -
 Sqrt[a^2 + b^2]))])/(b^2*d^2) - (3*a*f*(e + f*x)^2*PolyLog[2, -((b*E^(c +
d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*d^2) + (6*a*f^2*(e + f*x)*PolyLog[3, -(
(b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*d^3) + (6*a*f^2*(e + f*x)*Pol
yLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*d^3) - (6*a*f^3*Pol
yLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*d^4) - (6*a*f^3*Pol
yLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*d^4) + (6*f^2*(e +
f*x)*Sinh[c + d*x])/(b*d^3) + ((e + f*x)^3*Sinh[c + d*x])/(b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
```

```
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\cosh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{(e+fx)^3\sinh(c+dx)}{bd} - \frac{a\int \frac{e^{c+dx}(e+fx)^3}{a-\sqrt{a^2+b^2}+be^{c+dx}}\,dx}{b} - \cdots$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{3f(e+fx)^2\cosh(c+dx)}{bd^2} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+\cdots}}\right.}{b^2d}\cdots$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{3f(e+fx)^2\cosh(c+dx)}{bd^2} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+\cdots}}\right.}{b^2d}\cdots$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{6f^3\cosh(c+dx)}{bd^4} - \frac{3f(e+fx)^2\cosh(c+dx)}{bd^2} - \frac{a(e+\cdots}{\cdots}$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{6f^3\cosh(c+dx)}{bd^4} - \frac{3f(e+fx)^2\cosh(c+dx)}{bd^2} - \frac{a(e+\cdots}{\cdots}$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{6f^3\cosh(c+dx)}{bd^4} - \frac{3f(e+fx)^2\cosh(c+dx)}{bd^2} - \frac{a(e+\cdots}{\cdots}$$

Mathematica [B] time = 18.88, size = 2819, normalized size = 6.29

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] ((a*(4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*x^2 + 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*
f^3*x^4 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTan[(a + b*E^(c + d*x))/
Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^
(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d)
+ (2*e^3*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))])/d - (2*e^3*E^(2*c)*L
og[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d + (6*e^2*f*x*Log[1 + (b*E
^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*
Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^
2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (
6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(
2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)
*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt
[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c +
Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x
))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c
 + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log
[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3
*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(
2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])]
)/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c
 - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(-1 + E^(2*c))*f*(e + f*x)^2*Poly
Log[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (12
*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))]
)/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2
 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c
- Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(
2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*e*f^2*PolyLog[
3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E
^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)
]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b
^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*
E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*f^3*PolyLog[4, -((b*E^(2*c +
d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[
4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 + (12*f^3
*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4
- (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*
```

```
E^(2*c)]))])/d^4))/(b^2*(-1 + E^(2*c))) + Csch[c]*(Cosh[c + d*x]/(4*b^2*d^4
) - Sinh[c + d*x]/(4*b^2*d^4))*(-4*a*d^4*e^3*x*Cosh[d*x] - 6*a*d^4*e^2*f*x^
2*Cosh[d*x] - 4*a*d^4*e*f^2*x^3*Cosh[d*x] - a*d^4*f^3*x^4*Cosh[d*x] - 4*a*d
^4*e^3*x*Cosh[2*c + d*x] - 6*a*d^4*e^2*f*x^2*Cosh[2*c + d*x] - 4*a*d^4*e*f^
2*x^3*Cosh[2*c + d*x] - a*d^4*f^3*x^4*Cosh[2*c + d*x] - 2*b*d^3*e^3*Cosh[c
+ 2*d*x] + 6*b*d^2*e^2*f*Cosh[c + 2*d*x] - 12*b*d*e*f^2*Cosh[c + 2*d*x] + 1
2*b*f^3*Cosh[c + 2*d*x] - 6*b*d^3*e^2*f*x*Cosh[c + 2*d*x] + 12*b*d^2*e*f^2*
x*Cosh[c + 2*d*x] - 12*b*d*f^3*x*Cosh[c + 2*d*x] - 6*b*d^3*e*f^2*x^2*Cosh[c
 + 2*d*x] + 6*b*d^2*f^3*x^2*Cosh[c + 2*d*x] - 2*b*d^3*f^3*x^3*Cosh[c + 2*d*
x] + 2*b*d^3*e^3*Cosh[3*c + 2*d*x] - 6*b*d^2*e^2*f*Cosh[3*c + 2*d*x] + 12*b
*d*e*f^2*Cosh[3*c + 2*d*x] - 12*b*f^3*Cosh[3*c + 2*d*x] + 6*b*d^3*e^2*f*x*C
osh[3*c + 2*d*x] - 12*b*d^2*e*f^2*x*Cosh[3*c + 2*d*x] + 12*b*d*f^3*x*Cosh[3
*c + 2*d*x] + 6*b*d^3*e*f^2*x^2*Cosh[3*c + 2*d*x] - 6*b*d^2*f^3*x^2*Cosh[3*
c + 2*d*x] + 2*b*d^3*f^3*x^3*Cosh[3*c + 2*d*x] - 4*b*d^3*e^3*Sinh[c] - 12*b
*d^2*e^2*f*Sinh[c] - 24*b*d*e*f^2*Sinh[c] - 24*b*f^3*Sinh[c] - 12*b*d^3*e^2
*f*x*Sinh[c] - 24*b*d^2*e*f^2*x*Sinh[c] - 24*b*d*f^3*x*Sinh[c] - 12*b*d^3*e
*f^2*x^2*Sinh[c] - 12*b*d^2*f^3*x^2*Sinh[c] - 4*b*d^3*f^3*x^3*Sinh[c] - 4*a
*d^4*e^3*x*Sinh[d*x] - 6*a*d^4*e^2*f*x^2*Sinh[d*x] - 4*a*d^4*e*f^2*x^3*Sinh
[d*x] - a*d^4*f^3*x^4*Sinh[d*x] - 4*a*d^4*e^3*x*Sinh[2*c + d*x] - 6*a*d^4*e
^2*f*x^2*Sinh[2*c + d*x] - 4*a*d^4*e*f^2*x^3*Sinh[2*c + d*x] - a*d^4*f^3*x^
4*Sinh[2*c + d*x] - 2*b*d^3*e^3*Sinh[c + 2*d*x] + 6*b*d^2*e^2*f*Sinh[c + 2*
d*x] - 12*b*d*e*f^2*Sinh[c + 2*d*x] + 12*b*f^3*Sinh[c + 2*d*x] - 6*b*d^3*e^
2*f*x*Sinh[c + 2*d*x] + 12*b*d^2*e*f^2*x*Sinh[c + 2*d*x] - 12*b*d*f^3*x*Sin
h[c + 2*d*x] - 6*b*d^3*e*f^2*x^2*Sinh[c + 2*d*x] + 6*b*d^2*f^3*x^2*Sinh[c +
 2*d*x] - 2*b*d^3*f^3*x^3*Sinh[c + 2*d*x] + 2*b*d^3*e^3*Sinh[3*c + 2*d*x] -
 6*b*d^2*e^2*f*Sinh[3*c + 2*d*x] + 12*b*d*e*f^2*Sinh[3*c + 2*d*x] - 12*b*f^
3*Sinh[3*c + 2*d*x] + 6*b*d^3*e^2*f*x*Sinh[3*c + 2*d*x] - 12*b*d^2*e*f^2*x*
Sinh[3*c + 2*d*x] + 12*b*d*f^3*x*Sinh[3*c + 2*d*x] + 6*b*d^3*e*f^2*x^2*Sinh
[3*c + 2*d*x] - 6*b*d^2*f^3*x^2*Sinh[3*c + 2*d*x] + 2*b*d^3*f^3*x^3*Sinh[3*
c + 2*d*x]))/2
```

fricas [C] time = 0.49, size = 1976, normalized size = 4.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -1/4*(2*b*d^3*f^3*x^3 + 2*b*d^3*e^3 + 6*b*d^2*e^2*f + 12*b*d*e*f^2 + 12*b*f
^3 + 6*(b*d^3*e*f^2 + b*d^2*f^3)*x^2 - 2*(b*d^3*f^3*x^3 + b*d^3*e^3 - 3*b*d
^2*e^2*f + 6*b*d*e*f^2 - 6*b*f^3 + 3*(b*d^3*e*f^2 - b*d^2*f^3)*x^2 + 3*(b*d
^3*e^2*f - 2*b*d^2*e*f^2 + 2*b*d*f^3)*x)*cosh(d*x + c)^2 - 2*(b*d^3*f^3*x^3
 + b*d^3*e^3 - 3*b*d^2*e^2*f + 6*b*d*e*f^2 - 6*b*f^3 + 3*(b*d^3*e*f^2 - b*d
^2*f^3)*x^2 + 3*(b*d^3*e^2*f - 2*b*d^2*e*f^2 + 2*b*d*f^3)*x)*sinh(d*x + c)^
```

```
2 + 6*(b*d^3*e^2*f + 2*b*d^2*e*f^2 + 2*b*d*f^3)*x - (a*d^4*f^3*x^4 + 4*a*d^
4*e*f^2*x^3 + 6*a*d^4*e^2*f*x^2 + 4*a*d^4*e^3*x + 8*a*c*d^3*e^3 - 12*a*c^2*
d^2*e^2*f + 8*a*c^3*d*e*f^2 - 2*a*c^4*f^3)*cosh(d*x + c) + 12*((a*d^2*f^3*x
^2 + 2*a*d^2*e*f^2*x + a*d^2*e^2*f)*cosh(d*x + c) + (a*d^2*f^3*x^2 + 2*a*d^
2*e*f^2*x + a*d^2*e^2*f)*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x
 + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b +
1) + 12*((a*d^2*f^3*x^2 + 2*a*d^2*e*f^2*x + a*d^2*e^2*f)*cosh(d*x + c) + (a
*d^2*f^3*x^2 + 2*a*d^2*e*f^2*x + a*d^2*e^2*f)*sinh(d*x + c))*dilog((a*cosh(
d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2) - b)/b + 1) + 4*((a*d^3*e^3 - 3*a*c*d^2*e^2*f + 3*a*c^2*d*e*f^2
 - a*c^3*f^3)*cosh(d*x + c) + (a*d^3*e^3 - 3*a*c*d^2*e^2*f + 3*a*c^2*d*e*f^
2 - a*c^3*f^3)*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2
*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 4*((a*d^3*e^3 - 3*a*c*d^2*e^2*f + 3*a*c^2
*d*e*f^2 - a*c^3*f^3)*cosh(d*x + c) + (a*d^3*e^3 - 3*a*c*d^2*e^2*f + 3*a*c^
2*d*e*f^2 - a*c^3*f^3)*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x
+ c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 4*((a*d^3*f^3*x^3 + 3*a*d^3*e*f^2
*x^2 + 3*a*d^3*e^2*f*x + 3*a*c*d^2*e^2*f - 3*a*c^2*d*e*f^2 + a*c^3*f^3)*cos
h(d*x + c) + (a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + 3*a*c*d
^2*e^2*f - 3*a*c^2*d*e*f^2 + a*c^3*f^3)*sinh(d*x + c))*log(-(a*cosh(d*x + c
) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2) - b)/b) + 4*((a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + 3*
a*c*d^2*e^2*f - 3*a*c^2*d*e*f^2 + a*c^3*f^3)*cosh(d*x + c) + (a*d^3*f^3*x^3
 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + 3*a*c*d^2*e^2*f - 3*a*c^2*d*e*f^2
+ a*c^3*f^3)*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*co
sh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 24*(a*f^3*co
sh(d*x + c) + a*f^3*sinh(d*x + c))*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x
 + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*
(a*f^3*cosh(d*x + c) + a*f^3*sinh(d*x + c))*polylog(4, (a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))
/b) - 24*((a*d*f^3*x + a*d*e*f^2)*cosh(d*x + c) + (a*d*f^3*x + a*d*e*f^2)*s
inh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 24*((a*d*f^3*x + a*d*e*f
^2)*cosh(d*x + c) + (a*d*f^3*x + a*d*e*f^2)*sinh(d*x + c))*polylog(3, (a*co
sh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2))/b) - (a*d^4*f^3*x^4 + 4*a*d^4*e*f^2*x^3 + 6*a*d^4*e^2*f*x^2
 + 4*a*d^4*e^3*x + 8*a*c*d^3*e^3 - 12*a*c^2*d^2*e^2*f + 8*a*c^3*d*e*f^2 - 2
*a*c^4*f^3 + 4*(b*d^3*f^3*x^3 + b*d^3*e^3 - 3*b*d^2*e^2*f + 6*b*d*e*f^2 - 6
*b*f^3 + 3*(b*d^3*e*f^2 - b*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f - 2*b*d^2*e*f^2 +
 2*b*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^2*d^4*cosh(d*x + c) + b^2*d
^4*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^3 \cosh\left(dx+c\right) \sinh\left(dx+c\right)}{b \sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)*sinh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \cosh \left(dx+c\right) \sinh \left(dx+c\right)}{a+b \sinh \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\, e^{3}\left(\frac{2\,(dx+c)a}{b^{2}d} - \frac{e^{(dx+c)}}{bd} + \frac{e^{(-dx-c)}}{bd} + \frac{2\,a \log\left(-2\,ae^{(-dx-c)} + be^{(-2\,dx-2\,c)} - b\right)}{b^{2}d}\right) - \frac{\left(ad^{4}f^{3}x^{4}e^{c} + 4\,ad^{4}ef^{2}x^{3}e^{c} + 6\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/2*e^3*(2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) + e^(-d*x - c)/(b*d) +
2*a*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^2*d)) - 1/4*(a*d^4*f
^3*x^4*e^c + 4*a*d^4*e*f^2*x^3*e^c + 6*a*d^4*e^2*f*x^2*e^c - 2*(b*d^3*f^3*x
^3*e^(2*c) + 3*(d^3*e*f^2 - d^2*f^3)*b*x^2*e^(2*c) + 3*(d^3*e^2*f - 2*d^2*e
*f^2 + 2*d*f^3)*b*x*e^(2*c) - 3*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*b*e^(2*c))*
e^(d*x) + 2*(b*d^3*f^3*x^3 + 3*(d^3*e*f^2 + d^2*f^3)*b*x^2 + 3*(d^3*e^2*f +
 2*d^2*e*f^2 + 2*d*f^3)*b*x + 3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*b)*e^(-d*x)
)*e^(-c)/(b^2*d^4) + integrate(-2*(a*b*f^3*x^3 + 3*a*b*e*f^2*x^2 + 3*a*b*e^
2*f*x - (a^2*f^3*x^3*e^c + 3*a^2*e*f^2*x^2*e^c + 3*a^2*e^2*f*x*e^c)*e^(d*x)
)/(b^3*e^(2*d*x + 2*c) + 2*a*b^2*e^(d*x + c) - b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh \left(c+d\,x\right)\,\sinh \left(c+d\,x\right)\,{\left(e+f\,x\right)}^{3}}{a+b\,\sinh \left(c+d\,x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)*sinh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.334 $\int \frac{(e+fx)^2 \cosh(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=330

$$\frac{2af^2\mathrm{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3}+\frac{2af^2\mathrm{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^3}-\frac{2af(e+fx)\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{2af(e+fx)\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{a(e+}{}$$

```
[Out] 1/3*a*(f*x+e)^3/b^2/f-2*f*(f*x+e)*cosh(d*x+c)/b/d^2-a*(f*x+e)^2*ln(1+b*exp(
d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/d-a*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2
)^(1/2)))/b^2/d-2*a*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/
b^2/d^2-2*a*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/d^2+
2*a*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/d^3+2*a*f^2*polylo
g(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/d^3+2*f^2*sinh(d*x+c)/b/d^3+(f*x
+e)^2*sinh(d*x+c)/b/d
```

Rubi [A] time = 0.55, antiderivative size = 330, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {5579, 3296, 2637, 5561, 2190, 2531, 2282, 6589}

$$-\frac{2af(e+fx)\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{2af(e+fx)\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^2d^2}+\frac{2af^2\mathrm{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^3}+\frac{2a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(e + f*x)^3)/(3*b^2*f) - (2*f*(e + f*x)*Cosh[c + d*x])/(b*d^2) - (a*(e +
 f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^2*d) - (a*(e + f
*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^2*d) - (2*a*f*(e +
 f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*d^2) - (2*
a*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*d^
2) + (2*a*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*d^
3) + (2*a*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*d^
3) + (2*f^2*Sinh[c + d*x])/(b*d^3) + ((e + f*x)^2*Sinh[c + d*x])/(b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{(e+fx)^2\sinh(c+dx)}{bd} - \frac{a\int \frac{e^{c+dx}(e+fx)^2}{a-\sqrt{a^2+b^2}+be^{c+dx}}\,dx}{b} - \frac{a\int}{}$$

$$= \frac{a(e+fx)^3}{3b^2f} - \frac{2f(e+fx)\cosh(c+dx)}{bd^2} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b}}\right.}{b^2d}$$

$$= \frac{a(e+fx)^3}{3b^2f} - \frac{2f(e+fx)\cosh(c+dx)}{bd^2} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b}}\right.}{b^2d}$$

$$= \frac{a(e+fx)^3}{3b^2f} - \frac{2f(e+fx)\cosh(c+dx)}{bd^2} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b}}\right.}{b^2d}$$

$$= \frac{a(e+fx)^3}{3b^2f} - \frac{2f(e+fx)\cosh(c+dx)}{bd^2} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b}}\right.}{b^2d}$$

Mathematica [B] time = 11.65, size = 1301, normalized size = 3.94

$$\frac{1}{2}\left(\frac{2a\left(2e^{2c}f^2x^3+6ee^{2c}fx^2-\frac{3e^{2c}f^2\log\left(\frac{e^{2c+dx}b}{ae^c-\sqrt{(a^2+b^2)e^{2c}}}+1\right)x^2}{d}+\frac{3f^2\log\left(\frac{e^{2c+dx}b}{ae^c-\sqrt{(a^2+b^2)e^{2c}}}+1\right)x^2}{d}-\frac{3e^{2c}f^2\log\left(\frac{e^{2c+dx}b}{e^ca+\sqrt{(a^2+b^2)e^{2c}}}+1\right)x^2}{d}+\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] ((2*a*(6*e^2*E^(2*c)*x + 6*e*E^(2*c)*f*x^2 + 2*E^(2*c)*f^2*x^3 + (6*a*Sqrt[
a^2 + b^2]*e^2*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/(Sqrt[-(a^2 +
b^2)^2]*d) + (6*a*Sqrt[-(a^2 + b^2)^2]*e^2*E^(2*c)*ArcTan[(a + b*E^(c + d*x
))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) - (6*a*Sqrt[-(a^2 + b^2)^2]*e^2
*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (6*
a*Sqrt[-(a^2 + b^2)^2]*e^2*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b
^2]])/((-a^2 - b^2)^(3/2)*d) + (3*e^2*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c
 + d*x)))])/d - (3*e^2*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)
))])/d + (6*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*
c)])])/d - (6*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 +
b^2)*E^(2*c)])])/d + (3*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^
2 + b^2)*E^(2*c)])])/d - (3*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^
c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*
E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c +
 d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (3*f^2*x^2*Log[1 + (b*E^(2
*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (3*E^(2*c)*f^2*x^2*Log
[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*(-1 + E
^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2
)*E^(2*c)]))])/d^2 - (6*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c +
 d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*f^2*PolyLog[3, -((b*
E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (6*E^(2*c)*f^2*
PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 -
 (6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))
])/d^3 + (6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 +
 b^2)*E^(2*c)]))])/d^3))/(3*b^2*(-1 + E^(2*c))) - (a*x*(3*e^2 + 3*e*f*x + f
^2*x^2)*Cosh[c]*Csch[c/2]*Sech[c/2])/(3*b^2) + (2*Cosh[d*x]*(-2*d*e*f*Cosh[
c] - 2*d*f^2*x*Cosh[c] + d^2*e^2*Sinh[c] + 2*f^2*Sinh[c] + 2*d^2*e*f*x*Sinh
[c] + d^2*f^2*x^2*Sinh[c]))/(b*d^3) + (2*(d^2*e^2*Cosh[c] + 2*f^2*Cosh[c] +
 2*d^2*e*f*x*Cosh[c] + d^2*f^2*x^2*Cosh[c] - 2*d*e*f*Sinh[c] - 2*d*f^2*x*Si
nh[c])*Sinh[d*x])/(b*d^3))/2
```

fricas [C] time = 0.47, size = 1265, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -1/6*(3*b*d^2*f^2*x^2 + 3*b*d^2*e^2 + 6*b*d*e*f + 6*b*f^2 - 3*(b*d^2*f^2*x^
2 + b*d^2*e^2 - 2*b*d*e*f + 2*b*f^2 + 2*(b*d^2*e*f - b*d*f^2)*x)*cosh(d*x +
 c)^2 - 3*(b*d^2*f^2*x^2 + b*d^2*e^2 - 2*b*d*e*f + 2*b*f^2 + 2*(b*d^2*e*f -
 b*d*f^2)*x)*sinh(d*x + c)^2 + 6*(b*d^2*e*f + b*d*f^2)*x - 2*(a*d^3*f^2*x^3
 + 3*a*d^3*e*f*x^2 + 3*a*d^3*e^2*x + 6*a*c*d^2*e^2 - 6*a*c^2*d*e*f + 2*a*c^
3*f^2)*cosh(d*x + c) + 12*((a*d*f^2*x + a*d*e*f)*cosh(d*x + c) + (a*d*f^2*x
```

```
 + a*d*e*f)*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*co
sh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 12*((a*d
*f^2*x + a*d*e*f)*cosh(d*x + c) + (a*d*f^2*x + a*d*e*f)*sinh(d*x + c))*dilo
g((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*
sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 6*((a*d^2*e^2 - 2*a*c*d*e*f + a*c^2*f^2
)*cosh(d*x + c) + (a*d^2*e^2 - 2*a*c*d*e*f + a*c^2*f^2)*sinh(d*x + c))*log(
2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) +
6*((a*d^2*e^2 - 2*a*c*d*e*f + a*c^2*f^2)*cosh(d*x + c) + (a*d^2*e^2 - 2*a*c
*d*e*f + a*c^2*f^2)*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c
) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 6*((a*d^2*f^2*x^2 + 2*a*d^2*e*f*x +
2*a*c*d*e*f - a*c^2*f^2)*cosh(d*x + c) + (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + 2
*a*c*d*e*f - a*c^2*f^2)*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x +
 c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 6
*((a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + 2*a*c*d*e*f - a*c^2*f^2)*cosh(d*x + c) +
 (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + 2*a*c*d*e*f - a*c^2*f^2)*sinh(d*x + c))*l
og(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2) - b)/b) - 12*(a*f^2*cosh(d*x + c) + a*f^2*sinh(d*x
+ c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*
sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(a*f^2*cosh(d*x + c) + a*f^2*
sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2*(a*d^3*f^2*x^3 + 3*a*
d^3*e*f*x^2 + 3*a*d^3*e^2*x + 6*a*c*d^2*e^2 - 6*a*c^2*d*e*f + 2*a*c^3*f^2 +
 3*(b*d^2*f^2*x^2 + b*d^2*e^2 - 2*b*d*e*f + 2*b*f^2 + 2*(b*d^2*e*f - b*d*f^
2)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^2*d^3*cosh(d*x + c) + b^2*d^3*sinh(d
*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \cosh(dx+c)\sinh(dx+c)}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)*sinh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \cosh(dx+c)\sinh(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}e^2\left(\frac{2(dx+c)a}{b^2d}-\frac{e^{(dx+c)}}{bd}+\frac{e^{(-dx-c)}}{bd}+\frac{2a\log\left(-2ae^{(-dx-c)}+be^{(-2dx-2c)}-b\right)}{b^2d}\right)-\frac{\left(2ad^3f^2x^3e^c+6ad^3efx^2e^c-3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/2*e^2*(2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) + e^(-d*x - c)/(b*d) +
2*a*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^2*d)) - 1/6*(2*a*d^3
*f^2*x^3*e^c + 6*a*d^3*e*f*x^2*e^c - 3*(b*d^2*f^2*x^2*e^(2*c) + 2*(d^2*e*f
- d*f^2)*b*x*e^(2*c) - 2*(d*e*f - f^2)*b*e^(2*c))*e^(d*x) + 3*(b*d^2*f^2*x^
2 + 2*(d^2*e*f + d*f^2)*b*x + 2*(d*e*f + f^2)*b)*e^(-d*x))*e^(-c)/(b^2*d^3)
 + integrate(-2*(a*b*f^2*x^2 + 2*a*b*e*f*x - (a^2*f^2*x^2*e^c + 2*a^2*e*f*x
*e^c)*e^(d*x))/(b^3*e^(2*d*x + 2*c) + 2*a*b^2*e^(d*x + c) - b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)\,\sinh(c+d\,x)\,{\left(e+f\,x\right)}^2}{a+b\,\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*sinh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.335 $\int \frac{(e+fx)\cosh(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=212

$$-\frac{af\,\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{af\,\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{a(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^2d}-\frac{a(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{b^2d}+\frac{a(e+fx}{2b^2f}$$

```
[Out] 1/2*a*(f*x+e)^2/b^2/f-f*cosh(d*x+c)/b/d^2-a*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a
^2+b^2)^(1/2)))/b^2/d-a*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/
d-a*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/d^2-a*f*polylog(2,-b
*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/d^2+(f*x+e)*sinh(d*x+c)/b/d
```

Rubi [A] time = 0.31, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {5579, 3296, 2638, 5561, 2190, 2279, 2391}

$$-\frac{af\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2}-\frac{af\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^2d^2}-\frac{a(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^2d}-\frac{a(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+}\right.}{b^2d}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(e + f*x)^2)/(2*b^2*f) - (f*Cosh[c + d*x])/(b*d^2) - (a*(e + f*x)*Log[1
+ (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^2*d) - (a*(e + f*x)*Log[1 + (b
*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^2*d) - (a*f*PolyLog[2, -((b*E^(c +
 d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*d^2) - (a*f*PolyLog[2, -((b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2]))])/(b^2*d^2) + ((e + f*x)*Sinh[c + d*x])/(b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{a(e+fx)^2}{2b^2f} + \frac{(e+fx)\sinh(c+dx)}{bd} - \frac{a\int \frac{e^{c+dx}(e+fx)}{a-\sqrt{a^2+b^2}+be^{c+dx}}\,dx}{b} - \frac{a\int \frac{}{a+}}{}$$

$$= \frac{a(e+fx)^2}{2b^2f} - \frac{f\cosh(c+dx)}{bd^2} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d} - \frac{a(e+}{}$$

$$= \frac{a(e+fx)^2}{2b^2f} - \frac{f\cosh(c+dx)}{bd^2} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d} - \frac{a(e+}{}$$

$$= \frac{a(e+fx)^2}{2b^2f} - \frac{f\cosh(c+dx)}{bd^2} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d} - \frac{a(e+}{}$$

Mathematica [A] time = 1.07, size = 206, normalized size = 0.97

$$\frac{-a\left(f\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)+de\log}{b^2d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-(b*f*Cosh[c + d*x]) - a*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2])] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c +
 d*x]] + f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2
, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) + b*d*(e + f*x)*Sinh[c + d*x])
/(b^2*d^2)
```

fricas [B] time = 0.49, size = 692, normalized size = 3.26

$$-\frac{bdfx+bde-\left(bdfx+bde-bf\right)\cosh\left(dx+c\right)^2-\left(bdfx+bde-bf\right)\sinh\left(dx+c\right)^2+bf-\left(ad^2fx^2+2\,ad^2ex+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] -1/2*(b*d*f*x + b*d*e - (b*d*f*x + b*d*e - b*f)*cosh(d*x + c)^2 - (b*d*f*x
+ b*d*e - b*f)*sinh(d*x + c)^2 + b*f - (a*d^2*f*x^2 + 2*a*d^2*e*x + 4*a*c*d
*e - 2*a*c^2*f)*cosh(d*x + c) + 2*(a*f*cosh(d*x + c) + a*f*sinh(d*x + c))*d
ilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(a*f*cosh(d*x + c) + a*f*sinh(d*x
+ c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(
d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*((a*d*e - a*c*f)*cosh(d*x +
 c) + (a*d*e - a*c*f)*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x +
 c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*((a*d*e - a*c*f)*cosh(d*x + c) +
 (a*d*e - a*c*f)*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) -
 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*((a*d*f*x + a*c*f)*cosh(d*x + c) + (a
*d*f*x + a*c*f)*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b
*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*((a*d*f
*x + a*c*f)*cosh(d*x + c) + (a*d*f*x + a*c*f)*sinh(d*x + c))*log(-(a*cosh(d
*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
 b^2)/b^2) - b)/b) - (a*d^2*f*x^2 + 2*a*d^2*e*x + 4*a*c*d*e - 2*a*c^2*f + 2
*(b*d*f*x + b*d*e - b*f)*cosh(d*x + c))*sinh(d*x + c))/(b^2*d^2*cosh(d*x +
c) + b^2*d^2*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx + e\right)\cosh\left(dx + c\right)\sinh\left(dx + c\right)}{b\sinh\left(dx + c\right) + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)*sinh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.12, size = 483, normalized size = 2.28

$$\frac{af\,x^2}{2b^2}-\frac{aex}{b^2}+\frac{\left(dfx+de-f\right)e^{dx+c}}{2d^2b}-\frac{\left(dfx+de+f\right)e^{-dx-c}}{2d^2b}+\frac{afc\ln\left(b\,e^{2dx+2c}+2a\,e^{dx+c}-b\right)}{d^2b^2}-\frac{2afc\ln\left(e^{dx+c}\right)}{d^2b^2}-\frac{ae}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2*a*f*x^2/b^2-a*e*x/b^2+1/2*(d*f*x+d*e-f)/d^2/b*exp(d*x+c)-1/2*(d*f*x+d*e
+f)/d^2/b*exp(-d*x-c)+1/d^2*a/b^2*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)
```

```
-2/d^2*a/b^2*f*c*ln(exp(d*x+c))-1/d*a/b^2*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x
+c)-b)+2/d*a/b^2*e*ln(exp(d*x+c))-1/d*a/b^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(
1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a/b^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(
1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a/b^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2
)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*a/b^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+
a)/(a+(a^2+b^2)^(1/2)))*c-1/d^2*a/b^2*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)
+a)/(a+(a^2+b^2)^(1/2)))-1/d^2*a/b^2*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)
-a)/(-a+(a^2+b^2)^(1/2)))+2/d*a/b^2*f*c*x+1/d^2*a/b^2*f*c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}e\left(\frac{2(dx+c)a}{b^2d}-\frac{e^{(dx+c)}}{bd}+\frac{e^{(-dx-c)}}{bd}+\frac{2a\log\left(-2ae^{(-dx-c)}+be^{(-2dx-2c)}-b\right)}{b^2d}\right)-\frac{1}{4}f\left(\frac{2\left(ad^2x^2e^c-\left(bdxe^{(2c)}-be^{(2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] -1/2*e*(2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) + e^(-d*x - c)/(b*d) + 2*
a*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^2*d)) - 1/4*f*(2*(a*d^
2*x^2*e^c - (b*d*x*e^(2*c) - b*e^(2*c))*e^(d*x) + (b*d*x + b)*e^(-d*x))*e^(
-c)/(b^2*d^2) - integrate(8*(a^2*x*e^(d*x + c) - a*b*x)/(b^3*e^(2*d*x + 2*c
) + 2*a*b^2*e^(d*x + c) - b^3), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)\,\sinh(c+d\,x)\,\left(e+f\,x\right)}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*sinh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.336 $\int \frac{\cosh(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=34

$$\frac{\sinh(c+dx)}{bd} - \frac{a\log(a+b\sinh(c+dx))}{b^2d}$$

```
[Out] -a*ln(a+b*sinh(d*x+c))/b^2/d+sinh(d*x+c)/b/d
```

Rubi [A] time = 0.06, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2833, 12, 43}

$$\frac{\sinh(c+dx)}{bd} - \frac{a\log(a+b\sinh(c+dx))}{b^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*Log[a + b*Sinh[c + d*x]])/(b^2*d)) + Sinh[c + d*x]/(b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2833

```
Int[cos[(e_.) + (f_.)*(x_)]*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((
c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b*f), Sub
st[Int[(a + x)^m*(c + (d*x)/b)^n, x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b
, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{x}{b(a+x)}\,dx, x, b\sinh(c+dx)\right)}{bd}$$
$$= \frac{\text{Subst}\left(\int \frac{x}{a+x}\,dx, x, b\sinh(c+dx)\right)}{b^2d}$$
$$= \frac{\text{Subst}\left(\int \left(1-\frac{a}{a+x}\right)\,dx, x, b\sinh(c+dx)\right)}{b^2d}$$
$$= -\frac{a\log(a+b\sinh(c+dx))}{b^2d} + \frac{\sinh(c+dx)}{bd}$$

Mathematica [A] time = 0.04, size = 33, normalized size = 0.97

$$-\frac{\frac{a\log(a+b\sinh(c+dx))}{b^2} - \frac{\sinh(c+dx)}{b}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
[Out] -(((a*Log[a + b*Sinh[c + d*x]])/b^2 - Sinh[c + d*x]/b)/d)
```

fricas [B] time = 0.49, size = 132, normalized size = 3.88

$$\frac{2\,adx\cosh\left(dx+c\right)+b\cosh\left(dx+c\right)^{2}+b\sinh\left(dx+c\right)^{2}-2\left(a\cosh\left(dx+c\right)+a\sinh\left(dx+c\right)\right)\log\left(\frac{2\,(b\sinh(dx+c}{\cosh(dx+c)-\sinh}\right.}{2\left(b^{2}d\cosh\left(dx+c\right)+b^{2}d\sinh\left(dx+c\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] 1/2*(2*a*d*x*cosh(d*x + c) + b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 - 2*(a*c
osh(d*x + c) + a*sinh(d*x + c))*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x + c)
- sinh(d*x + c))) + 2*(a*d*x + b*cosh(d*x + c))*sinh(d*x + c) - b)/(b^2*d*c
osh(d*x + c) + b^2*d*sinh(d*x + c))
```

giac [A] time = 0.24, size = 60, normalized size = 1.76

$$\frac{\frac{e^{(dx+c)}-e^{(-dx-c)}}{b} - \frac{2\,a\log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{b^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*((e^(d*x + c) - e^(-d*x - c))/b - 2*a*log(abs(b*(e^(d*x + c) - e^(-d*x
- c)) + 2*a))/b^2)/d
```

maple [A] time = 0.03, size = 35, normalized size = 1.03

$$-\frac{a \ln \left(a+b \sinh \left(d x+c\right)\right)}{b^{2} d}+\frac{\sinh \left(d x+c\right)}{b d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -a*ln(a+b*sinh(d*x+c))/b^2/d+sinh(d*x+c)/b/d
```

maxima [B] time = 0.35, size = 83, normalized size = 2.44

$$-\frac{(dx+c)a}{b^{2} d}+\frac{e^{(dx+c)}}{2\,bd}-\frac{e^{(-dx-c)}}{2\,bd}-\frac{a \log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{b^{2} d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(d*x + c)*a/(b^2*d) + 1/2*e^(d*x + c)/(b*d) - 1/2*e^(-d*x - c)/(b*d) - a*l
og(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^2*d)
```

mupad [B] time = 0.07, size = 31, normalized size = 0.91

$$-\frac{a\,\ln\left(a+b\,\sinh\left(c+d\,x\right)\right)-b\,\sinh\left(c+d\,x\right)}{b^2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] -(a*log(a + b*sinh(c + d*x)) - b*sinh(c + d*x))/(b^2*d)
```

sympy [A] time = 0.99, size = 65, normalized size = 1.91

$$\begin{cases} \frac{x \sinh{\left(c \right)} \cosh{\left(c \right)}}{a} & \text{for}\: b = 0 \wedge d = 0 \\ \frac{\cosh^{2}{\left(c + d x \right)}}{2 a d} & \text{for}\: b = 0 \\ \frac{x \sinh{\left(c \right)} \cosh{\left(c \right)}}{a + b \sinh{\left(c \right)}} & \text{for}\: d = 0 \\ - \frac{a \log{\left(\frac{a}{b} + \sinh{\left(c + d x \right)} \right)}}{b^{2} d} + \frac{\sinh{\left(c + d x \right)}}{b d} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Piecewise((x*sinh(c)*cosh(c)/a, Eq(b, 0) & Eq(d, 0)), (cosh(c + d*x)**2/(2*
a*d), Eq(b, 0)), (x*sinh(c)*cosh(c)/(a + b*sinh(c)), Eq(d, 0)), (-a*log(a/b
 + sinh(c + d*x))/(b**2*d) + sinh(c + d*x)/(b*d), True))
```

3.337 $\int \frac{\cosh(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{\sinh(c+dx)\cosh(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

[Out] Unintegrable(cosh(d*x+c)*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

[In] Int[(Cosh[c + d*x]*Sinh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]

[Out] Defer[Int][(Cosh[c + d*x]*Sinh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])), x]

Rubi steps

$$\int \frac{\cosh(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\cosh(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 73.26, size = 0, normalized size = 0.00

$$\int \frac{\cosh(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[(Cosh[c + d*x]*Sinh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]

[Out] Integrate[(Cosh[c + d*x]*Sinh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])), x]

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)\sinh(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] integral(cosh(d*x + c)*sinh(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x
+ c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)\sinh(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] integrate(cosh(d*x + c)*sinh(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.26, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)\sinh(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{e^{\left(-c+\frac{de}{f}\right)}E_1\left(\frac{(fx+e)d}{f}\right)}{2\,bf}-\frac{e^{\left(c-\frac{de}{f}\right)}E_1\left(-\frac{(fx+e)d}{f}\right)}{2\,bf}-\frac{a\log(fx+e)}{b^2f}+\frac{1}{4}\int -\frac{8\left(a^2e^{(dx+c)}-ab\right)}{b^3fx+b^3e-\left(b^3fxe^{(2c)}+b^3ee^{(2c)}\right)e^{(2dx)}-2\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] -1/2*e^(-c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b*f) - 1/2*e^(c - d*e
/f)*exp_integral_e(1, -(f*x + e)*d/f)/(b*f) - a*log(f*x + e)/(b^2*f) + 1/4*
integrate(-8*(a^2*e^(d*x + c) - a*b)/(b^3*f*x + b^3*e - (b^3*f*x*e^(2*c) +
b^3*e*e^(2*c))*e^(2*d*x) - 2*(a*b^2*f*x*e^c + a*b^2*e*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh(c+dx)\sinh(c+dx)}{\left(e+fx\right)\left(a+b\sinh(c+dx)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)*sinh(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.338 $\int \frac{(e+fx)^3 \cosh^2(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=696

$$\frac{a^2(e+fx)^4}{4b^3f}-\frac{6af^3\sqrt{a^2+b^2}\,\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^4}+\frac{6af^3\sqrt{a^2+b^2}\,\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^4}+\frac{6af^2\sqrt{a^2+b^2}\,(e+fx)\text{Li}_3\left(-\frac{be^{c+}}{a-\sqrt{a^2}}\right.}{b^3d^3}$$

```
[Out] 3/4*e*f^2*x/b/d^2+3/8*f^3*x^2/b/d^2+1/4*a^2*(f*x+e)^4/b^3/f+1/8*(f*x+e)^4/b
/f-6*a*f^2*(f*x+e)*cosh(d*x+c)/b^2/d^3-a*(f*x+e)^3*cosh(d*x+c)/b^2/d-3/8*f^
3*cosh(d*x+c)^2/b/d^4-3/4*f*(f*x+e)^2*cosh(d*x+c)^2/b/d^2+6*a*f^3*sinh(d*x+
c)/b^2/d^4+3*a*f*(f*x+e)^2*sinh(d*x+c)/b^2/d^2+3/4*f^2*(f*x+e)*cosh(d*x+c)*
sinh(d*x+c)/b/d^3+1/2*(f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)/b/d-a*(f*x+e)^3*ln(
1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^3/d+a*(f*x+e)^3*ln(1+
b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^3/d-3*a*f*(f*x+e)^2*pol
ylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^3/d^2+3*a*f*(f*
x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^3/d^2
+6*a*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/
2)/b^3/d^3-6*a*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^
2+b^2)^(1/2)/b^3/d^3-6*a*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(
a^2+b^2)^(1/2)/b^3/d^4+6*a*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))
*(a^2+b^2)^(1/2)/b^3/d^4
```

Rubi [A] time = 1.13, antiderivative size = 696, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 14, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.412, Rules used = {5579, 3311, 32, 3310, 5565, 3296, 2637, 3322, 2264, 2190, 2531, 6609, 2282, 6589}

$$\frac{6af^2\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3}-\frac{6af^2\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^3}-\frac{3af\sqrt{a^2+b^2}\,(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]^2*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (3*e*f^2*x)/(4*b*d^2) + (3*f^3*x^2)/(8*b*d^2) + (a^2*(e + f*x)^4)/(4*b^3*f)
 + (e + f*x)^4/(8*b*f) - (6*a*f^2*(e + f*x)*Cosh[c + d*x])/(b^2*d^3) - (a*(
e + f*x)^3*Cosh[c + d*x])/(b^2*d) - (3*f^3*Cosh[c + d*x]^2)/(8*b*d^4) - (3*
f*(e + f*x)^2*Cosh[c + d*x]^2)/(4*b*d^2) - (a*Sqrt[a^2 + b^2]*(e + f*x)^3*L
og[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^3*d) + (a*Sqrt[a^2 + b^2]
*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^3*d) - (3*a
*Sqrt[a^2 + b^2]*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2]))])/(b^3*d^2) + (3*a*Sqrt[a^2 + b^2]*f*(e + f*x)^2*PolyLog[2, -((b*E^
```

```
(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^2) + (6*a*Sqrt[a^2 + b^2]*f^2*(e
 + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^3) - (
6*a*Sqrt[a^2 + b^2]*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2]))])/(b^3*d^3) - (6*a*Sqrt[a^2 + b^2]*f^3*PolyLog[4, -((b*E^(c + d*
x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^4) + (6*a*Sqrt[a^2 + b^2]*f^3*PolyLog[4
, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^4) + (6*a*f^3*Sinh[c +
d*x])/(b^2*d^4) + (3*a*f*(e + f*x)^2*Sinh[c + d*x])/(b^2*d^2) + (3*f^2*(e +
 f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(4*b*d^3) + ((e + f*x)^3*Cosh[c + d*x]*S
inh[c + d*x])/(2*b*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
```

```
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3 \cosh^2(c+dx) \sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3 \cosh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{3f(e+fx)^2\cosh^2(c+dx)}{4bd^2} + \frac{(e+fx)^3\cosh(c+dx)\sinh(c+dx)}{2bd}$$

$$= \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{a(e+fx)^3\cosh(c+dx)}{b^2d} - \frac{3f^3\cosh^2(c-}{8bd^4}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{a(e+fx)^3\cosh(c+d}{b^2d}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c-}{b^2d^3}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c-}{b^2d^3}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c-}{b^2d^3}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c-}{b^2d^3}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cosh(c-}{b^2d^3}$$

Mathematica [C] time = 14.16, size = 2963, normalized size = 4.26

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^2*Sinh[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (e^3*(c/d + x - (2*a*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/(S
qrt[-a^2 - b^2]*d)))/(4*b) + (3*e^2*f*(x^2 + ((2*I)*a*Pi*ArcTanh[(-b + a*Ta
nh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(Sqrt[a^2 + b^2]*d^2) + (2*a*(2*((-I)*c
+ ArcCos[((-I)*a)/b])*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])
```

```
/Sqrt[-a^2 - b^2]] + ((-2*I)*c + Pi - (2*I)*d*x)*ArcTanh[((a - I*b)*Tan[((2
*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] - (ArcCos[((-I)*a)/b] + (2*I)
*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*L
og[((I*a + b)*(a + I*(b + Sqrt[-a^2 - b^2]))*(-I + Cot[((2*I)*c + Pi + (2*I
)*d*x)/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)
/4]))] - (ArcCos[((-I)*a)/b] - (2*I)*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi +
 (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[((I*a + b)*(I*a - b + Sqrt[-a^2 - b^
2])*(I + Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(a - I*b + Sqrt[-a^2 - b^2]
*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))] + (ArcCos[((-I)*a)/b] - (2*I)*ArcTanh
[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] - (2*I)*Ar
cTanh[((a - I*b)*Tan[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[
-(((-1)^(3/4)*Sqrt[-a^2 - b^2]*E^(-1/2*c - (d*x)/2))/(Sqrt[2]*Sqrt[(-I)*b]*
Sqrt[a + b*Sinh[c + d*x]]))] + (ArcCos[((-I)*a)/b] + (2*I)*(ArcTanh[((a + I
*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] + ArcTanh[((a - I*
b)*Tan[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]]))*Log[((-1)^(1/4)*S
qrt[-a^2 - b^2]*E^((c + d*x)/2))/(Sqrt[2]*Sqrt[(-I)*b]*Sqrt[a + b*Sinh[c +
d*x]])] + I*(PolyLog[2, ((I*a + Sqrt[-a^2 - b^2])*(I*a + b - I*Sqrt[-a^2 -
b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*C
ot[((2*I)*c + Pi + (2*I)*d*x)/4]))] - PolyLog[2, ((a + I*Sqrt[-a^2 - b^2])*
(-a + I*b + Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a +
b + I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))])))/(Sqrt[-a^2 -
 b^2]*d^2)))/(8*b) + (e*f^2*(x^3 - (3*a*(d^2*x^2*Log[1 + (b*E^(c + d*x))/(a
 - Sqrt[a^2 + b^2])] - d^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
)] + 2*d*x*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*x*PolyL
og[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*PolyLog[3, (b*E^(c + d*
x))/(-a + Sqrt[a^2 + b^2])] + 2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2
+ b^2]))]))/(Sqrt[a^2 + b^2]*d^3)))/(4*b) + (f^3*(x^4 - (4*a*(d^3*x^3*Log[1
 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d^3*x^3*Log[1 + (b*E^(c + d*x))
/(a + Sqrt[a^2 + b^2])] + 3*d^2*x^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a
^2 + b^2])] - 3*d^2*x^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
] - 6*d*x*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*d*x*PolyLo
g[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 6*PolyLog[4, (b*E^(c + d*x
))/(-a + Sqrt[a^2 + b^2])] - 6*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))]))/(Sqrt[a^2 + b^2]*d^4)))/(16*b) + (e*f^2*(2*(4*a^2 + b^2)*x^3 - (
6*a*(4*a^2 + 3*b^2)*(d^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])]
 - d^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 2*d*x*PolyLog[2
, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*x*PolyLog[2, -((b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2]))] - 2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 +
 b^2])] + 2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(Sqrt[a^
2 + b^2]*d^3) - (24*a*b*Cosh[d*x]*((2 + d^2*x^2)*Cosh[c] - 2*d*x*Sinh[c]))/
d^3 + (3*b^2*Cosh[2*d*x]*(-2*d*x*Cosh[2*c] + (1 + 2*d^2*x^2)*Sinh[2*c]))/d^
3 - (24*a*b*(-2*d*x*Cosh[c] + (2 + d^2*x^2)*Sinh[c])*Sinh[d*x])/d^3 + (3*b^
2*((1 + 2*d^2*x^2)*Cosh[2*c] - 2*d*x*Sinh[2*c])*Sinh[2*d*x])/d^3))/(8*b^3)
+ (f^3*((4*a^2 + b^2)*x^4 - (4*a*(4*a^2 + 3*b^2)*(d^3*x^3*Log[1 + (b*E^(c +
 d*x))/(a - Sqrt[a^2 + b^2])] - d^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a
```

```
^2 + b^2])] + 3*d^2*x^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
- 3*d^2*x^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 6*d*x*Po
lyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*d*x*PolyLog[3, -((b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 6*PolyLog[4, (b*E^(c + d*x))/(-a + Sqr
t[a^2 + b^2])] - 6*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(
Sqrt[a^2 + b^2]*d^4) - (16*a*b*Cosh[d*x]*(d*x*(6 + d^2*x^2)*Cosh[c] - 3*(2
+ d^2*x^2)*Sinh[c]))/d^4 + (b^2*Cosh[2*d*x]*(-3*(1 + 2*d^2*x^2)*Cosh[2*c] +
 2*d*x*(3 + 2*d^2*x^2)*Sinh[2*c]))/d^4 - (16*a*b*(-3*(2 + d^2*x^2)*Cosh[c]
+ d*x*(6 + d^2*x^2)*Sinh[c])*Sinh[d*x])/d^4 + (b^2*(2*d*x*(3 + 2*d^2*x^2)*C
osh[2*c] - 3*(1 + 2*d^2*x^2)*Sinh[2*c])*Sinh[2*d*x])/d^4))/(16*b^3) + (e^3*
((4*a^2 + b^2)*(c + d*x) - (2*a*(4*a^2 + 3*b^2)*ArcTan[(b - a*Tanh[(c + d*x
)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2 - b^2] - 4*a*b*Cosh[c + d*x] + b^2*Sinh[
2*(c + d*x)]))/(4*b^3*d) + (3*e^2*f*((4*a^2 + b^2)*(-c + d*x)*(c + d*x) - 8
*a*b*d*x*Cosh[c + d*x] - b^2*Cosh[2*(c + d*x)] - (2*a*(4*a^2 + 3*b^2)*(2*c*
ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] + (c + d*x
)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - (c +
 d*x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] +
PolyLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - Po
lyLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))]))/Sq
rt[a^2 + b^2] + 8*a*b*Sinh[c + d*x] + 2*b^2*d*x*Sinh[2*(c + d*x)]))/(8*b^3*
d^2)
```

<u>fricas</u> [C] time = 0.59, size = 3847, normalized size = 5.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -1/32*(4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 + 6*b^2*d^2*e^2*f + 6*b^2*d*e*f^2
+ 3*b^2*f^3 - (4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f + 6*b^2*
d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2*b^2*d^3*
e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c)^4 - (4*b^2*d^3*f^3*x^
3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f + 6*b^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*
d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2*b^2*d^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d
*f^3)*x)*sinh(d*x + c)^4 + 16*(a*b*d^3*f^3*x^3 + a*b*d^3*e^3 - 3*a*b*d^2*e^
2*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(
a*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c)^3 + 4*(4*a*
b*d^3*f^3*x^3 + 4*a*b*d^3*e^3 - 12*a*b*d^2*e^2*f + 24*a*b*d*e*f^2 - 24*a*b*
f^3 + 12*(a*b*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 12*(a*b*d^3*e^2*f - 2*a*b*d^2*
e*f^2 + 2*a*b*d*f^3)*x - (4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2
*f + 6*b^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*
(2*b^2*d^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c))*sinh(d*x
+ c)^3 + 6*(2*b^2*d^3*e*f^2 + b^2*d^2*f^3)*x^2 - 4*((2*a^2 + b^2)*d^4*f^3*x
```

```
^4 + 4*(2*a^2 + b^2)*d^4*e*f^2*x^3 + 6*(2*a^2 + b^2)*d^4*e^2*f*x^2 + 4*(2*a
^2 + b^2)*d^4*e^3*x)*cosh(d*x + c)^2 - 2*(2*(2*a^2 + b^2)*d^4*f^3*x^4 + 8*(
2*a^2 + b^2)*d^4*e*f^2*x^3 + 12*(2*a^2 + b^2)*d^4*e^2*f*x^2 + 8*(2*a^2 + b^
2)*d^4*e^3*x + 3*(4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f + 6*b
^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2*b^2*d
^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c)^2 - 24*(a*b*d^3*f^
3*x^3 + a*b*d^3*e^3 - 3*a*b*d^2*e^2*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*
d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(a*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d
*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 96*((a*b*d^2*f^3*x^2 + 2*a*b*d^2*
e*f^2*x + a*b*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e
*f^2*x + a*b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d^2*f^3*x^2 + 2*
a*b*d^2*e*f^2*x + a*b*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dil
og((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))
*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 96*((a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2
*x + a*b*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*
x + a*b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d^2*f^3*x^2 + 2*a*b*d
^2*e*f^2*x + a*b*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a
*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b + 1) - 32*((a*b*d^3*e^3 - 3*a*b*c*d^2*e^2*f + 3*a*
b*c^2*d*e*f^2 - a*b*c^3*f^3)*cosh(d*x + c)^2 + 2*(a*b*d^3*e^3 - 3*a*b*c*d^2
*e^2*f + 3*a*b*c^2*d*e*f^2 - a*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a*
b*d^3*e^3 - 3*a*b*c*d^2*e^2*f + 3*a*b*c^2*d*e*f^2 - a*b*c^3*f^3)*sinh(d*x +
 c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*
b*sqrt((a^2 + b^2)/b^2) + 2*a) + 32*((a*b*d^3*e^3 - 3*a*b*c*d^2*e^2*f + 3*a
*b*c^2*d*e*f^2 - a*b*c^3*f^3)*cosh(d*x + c)^2 + 2*(a*b*d^3*e^3 - 3*a*b*c*d^
2*e^2*f + 3*a*b*c^2*d*e*f^2 - a*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a
*b*d^3*e^3 - 3*a*b*c*d^2*e^2*f + 3*a*b*c^2*d*e*f^2 - a*b*c^3*f^3)*sinh(d*x
+ c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2
*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 32*((a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^
2 + 3*a*b*d^3*e^2*f*x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3
)*cosh(d*x + c)^2 + 2*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^
2*f*x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)*cosh(d*x + c)*
sinh(d*x + c) + (a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x
+ 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)*sinh(d*x + c)^2)*sqr
t((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 32*((a*b*d^3*f^3*x^3
+ 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d
*e*f^2 + a*b*c^3*f^3)*cosh(d*x + c)^2 + 2*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^
2*x^2 + 3*a*b*d^3*e^2*f*x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3
*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2
+ 3*a*b*d^3*e^2*f*x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)*
sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x +
 c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 1
92*(a*b*f^3*cosh(d*x + c)^2 + 2*a*b*f^3*cosh(d*x + c)*sinh(d*x + c) + a*b*f
^3*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*s
```

```
inh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b
) - 192*(a*b*f^3*cosh(d*x + c)^2 + 2*a*b*f^3*cosh(d*x + c)*sinh(d*x + c) +
a*b*f^3*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c)
+ a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2))/b) - 192*((a*b*d*f^3*x + a*b*d*e*f^2)*cosh(d*x + c)^2 + 2*(a*b*d*f^3*x
+ a*b*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d*f^3*x + a*b*d*e*f^2)*si
nh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d
*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 1
92*((a*b*d*f^3*x + a*b*d*e*f^2)*cosh(d*x + c)^2 + 2*(a*b*d*f^3*x + a*b*d*e*
f^2)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d*f^3*x + a*b*d*e*f^2)*sinh(d*x + c
)^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) -
(b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(2*b^2*d^
3*e^2*f + 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x + 16*(a*b*d^3*f^3*x^3 + a*b*d^3*e^
3 + 3*a*b*d^2*e^2*f + 6*a*b*d*e*f^2 + 6*a*b*f^3 + 3*(a*b*d^3*e*f^2 + a*b*d^
2*f^3)*x^2 + 3*(a*b*d^3*e^2*f + 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x
+ c) + 4*(4*a*b*d^3*f^3*x^3 + 4*a*b*d^3*e^3 + 12*a*b*d^2*e^2*f + 24*a*b*d*e
*f^2 + 24*a*b*f^3 - (4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f +
6*b^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2*b^
2*d^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c)^3 + 12*(a*b*d^3
*e*f^2 + a*b*d^2*f^3)*x^2 + 12*(a*b*d^3*f^3*x^3 + a*b*d^3*e^3 - 3*a*b*d^2*e
^2*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*
(a*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c)^2 + 12*(a*
b*d^3*e^2*f + 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x - 2*((2*a^2 + b^2)*d^4*f^3*x
^4 + 4*(2*a^2 + b^2)*d^4*e*f^2*x^3 + 6*(2*a^2 + b^2)*d^4*e^2*f*x^2 + 4*(2*a
^2 + b^2)*d^4*e^3*x)*cosh(d*x + c))*sinh(d*x + c))/(b^3*d^4*cosh(d*x + c)^2
 + 2*b^3*d^4*cosh(d*x + c)*sinh(d*x + c) + b^3*d^4*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)^{2}\sinh\left(dx+c\right)}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)^2*sinh(d*x + c)/(b*sinh(d*x + c) + a),
x)
```

maple [F] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\left(\cosh^{2}\left(dx+c\right)\right)\sinh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{8}e^3\left(\frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{b^2d}+\frac{8\,\sqrt{a^2+b^2}\,a\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{b^3d}-\frac{4\left(2\,a^2+b^2\right)(dx+c)}{b^3d}+\frac{4\,ae^{(-dx-c)}+be}{b^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/8*e^3*((4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(b^2*d) + 8*sqrt(a^2 + b^2
)*a*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a
^2 + b^2)))/(b^3*d) - 4*(2*a^2 + b^2)*(d*x + c)/(b^3*d) + (4*a*e^(-d*x - c)
 + b*e^(-2*d*x - 2*c))/(b^2*d)) + 1/32*(4*(2*a^2*d^4*f^3*e^(2*c) + b^2*d^4*
f^3*e^(2*c))*x^4 + 16*(2*a^2*d^4*e*f^2*e^(2*c) + b^2*d^4*e*f^2*e^(2*c))*x^3
 + 24*(2*a^2*d^4*e^2*f*e^(2*c) + b^2*d^4*e^2*f*e^(2*c))*x^2 + (4*b^2*d^3*f^
3*x^3*e^(4*c) + 6*(2*d^3*e*f^2 - d^2*f^3)*b^2*x^2*e^(4*c) + 6*(2*d^3*e^2*f
- 2*d^2*e*f^2 + d*f^3)*b^2*x*e^(4*c) - 3*(2*d^2*e^2*f - 2*d*e*f^2 + f^3)*b^
2*e^(4*c))*e^(2*d*x) - 16*(a*b*d^3*f^3*x^3*e^(3*c) + 3*(d^3*e*f^2 - d^2*f^3
)*a*b*x^2*e^(3*c) + 3*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*a*b*x*e^(3*c) - 3
*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a*b*e^(3*c))*e^(d*x) - 16*(a*b*d^3*f^3*x^3
*e^c + 3*(d^3*e*f^2 + d^2*f^3)*a*b*x^2*e^c + 3*(d^3*e^2*f + 2*d^2*e*f^2 + 2
*d*f^3)*a*b*x*e^c + 3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a*b*e^c)*e^(-d*x) - (
4*b^2*d^3*f^3*x^3 + 6*(2*d^3*e*f^2 + d^2*f^3)*b^2*x^2 + 6*(2*d^3*e^2*f + 2*
d^2*e*f^2 + d*f^3)*b^2*x + 3*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)*b^2)*e^(-2*d*x
))*e^(-2*c)/(b^3*d^4) - integrate(2*((a^3*f^3*e^c + a*b^2*f^3*e^c)*x^3 + 3*
(a^3*e*f^2*e^c + a*b^2*e*f^2*e^c)*x^2 + 3*(a^3*e^2*f*e^c + a*b^2*e^2*f*e^c)
*x)*e^(d*x)/(b^4*e^(2*d*x + 2*c) + 2*a*b^3*e^(d*x + c) - b^4), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)^2\,\sinh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{a+b\,\sinh\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.339 $\int \frac{(e+fx)^2 \cosh^2(c+dx) \sinh(c+dx)}{a+b \sinh(c+dx)} dx$

Optimal. Leaf size=510

$$\frac{a^2(e+fx)^3}{3b^3f}+\frac{2af^2\sqrt{a^2+b^2}\,\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3}-\frac{2af^2\sqrt{a^2+b^2}\,\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^3}-\frac{2af\sqrt{a^2+b^2}\,(e+fx)\text{Li}_2\left(-\frac{be^{c+}}{a-\sqrt{a}}\right.}{b^3d^2}$$

```
[Out] 1/4*f^2*x/b/d^2+1/3*a^2*(f*x+e)^3/b^3/f+1/6*(f*x+e)^3/b/f-2*a*f^2*cosh(d*x+
c)/b^2/d^3-a*(f*x+e)^2*cosh(d*x+c)/b^2/d-1/2*f*(f*x+e)*cosh(d*x+c)^2/b/d^2+
2*a*f*(f*x+e)*sinh(d*x+c)/b^2/d^2+1/4*f^2*cosh(d*x+c)*sinh(d*x+c)/b/d^3+1/2
*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/b/d-a*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^
2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^3/d+a*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+
b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^3/d-2*a*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a
-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^3/d^2+2*a*f*(f*x+e)*polylog(2,-b*exp(d
*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^3/d^2+2*a*f^2*polylog(3,-b*exp
(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^3/d^3-2*a*f^2*polylog(3,-b*e
xp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^3/d^3
```

Rubi [A] time = 0.96, antiderivative size = 510, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 14, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.412, Rules used = {5579, 3311, 32, 2635, 8, 5565, 3296, 2638, 3322, 2264, 2190, 2531, 2282, 6589}

$$-\frac{2af\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{2af\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^2}+\frac{2af^2\sqrt{a^2+b^2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]^2*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (f^2*x)/(4*b*d^2) + (a^2*(e + f*x)^3)/(3*b^3*f) + (e + f*x)^3/(6*b*f) - (2*
a*f^2*Cosh[c + d*x])/(b^2*d^3) - (a*(e + f*x)^2*Cosh[c + d*x])/(b^2*d) - (f
*(e + f*x)*Cosh[c + d*x]^2)/(2*b*d^2) - (a*Sqrt[a^2 + b^2]*(e + f*x)^2*Log[
1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^3*d) + (a*Sqrt[a^2 + b^2]*(e
 + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^3*d) - (2*a*Sq
rt[a^2 + b^2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]
))])/(b^3*d^2) + (2*a*Sqrt[a^2 + b^2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^2) + (2*a*Sqrt[a^2 + b^2]*f^2*PolyLog[3
, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^3) - (2*a*Sqrt[a^2 + b^
2]*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^3) + (2
*a*f*(e + f*x)*Sinh[c + d*x])/(b^2*d^2) + (f^2*Cosh[c + d*x]*Sinh[c + d*x])
/(4*b*d^3) + ((e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x])/(2*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
```

```
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
```

```
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^2(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{f(e+fx)\cosh^2(c+dx)}{2bd^2} + \frac{(e+fx)^2\cosh(c+dx)\sinh(c+dx)}{2bd} +$$

$$= \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{a(e+fx)^2\cosh(c+dx)}{b^2d} - \frac{f(e+fx)\cos}{2bd}$$

$$= \frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{a(e+fx)^2\cosh(c+dx)}{b^2d} - \frac{f(e+}{}$$

$$= \frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{2af^2\cosh(c+dx)}{b^2d^3} - \frac{a(e+fx)^2}{b}$$

$$= \frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{2af^2\cosh(c+dx)}{b^2d^3} - \frac{a(e+fx)^2}{b}$$

$$= \frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{2af^2\cosh(c+dx)}{b^2d^3} - \frac{a(e+fx)^2}{b}$$

$$= \frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{2af^2\cosh(c+dx)}{b^2d^3} - \frac{a(e+fx)^2}{b}$$

Mathematica [C] time = 9.42, size = 2172, normalized size = 4.26

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^2*Sinh[c + d*x])/(a + b*Sinh[c + d*x])
,x]

[Out] (e^2*(c/d + x - (2*a*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/(S
qrt[-a^2 - b^2]*d)))/(4*b) + (e*f*(x^2 + ((2*I)*a*Pi*ArcTanh[(-b + a*Tanh[(
c + d*x)/2])/Sqrt[a^2 + b^2]])/(Sqrt[a^2 + b^2]*d^2) + (2*a*(2*((-I)*c + Ar
cCos[((-I)*a)/b])*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqr
t[-a^2 - b^2]] + ((-2*I)*c + Pi - (2*I)*d*x)*ArcTanh[((a - I*b)*Tan[((2*I)*
c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] - (ArcCos[((-I)*a)/b] + (2*I)*Arc
Tanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[(
(I*a + b)*(a + I*(b + Sqrt[-a^2 - b^2]))*(-I + Cot[((2*I)*c + Pi + (2*I)*d*
x)/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])
)] - (ArcCos[((-I)*a)/b] - (2*I)*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*
I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[((I*a + b)*(I*a - b + Sqrt[-a^2 - b^2])*
(I + Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(a - I*b + Sqrt[-a^2 - b^2]*Cot
[((2*I)*c + Pi + (2*I)*d*x)/4]))] + (ArcCos[((-I)*a)/b] - (2*I)*ArcTanh[((a
 + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] - (2*I)*ArcTan
h[((a - I*b)*Tan[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[-(((
-1)^(3/4)*Sqrt[-a^2 - b^2]*E^(-1/2*c - (d*x)/2))/(Sqrt[2]*Sqrt[(-I)*b]*Sqrt
[a + b*Sinh[c + d*x]]))] + (ArcCos[((-I)*a)/b] + (2*I)*(ArcTanh[((a + I*b)*
Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] + ArcTanh[((a - I*b)*T
an[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]]))*Log[((-1)^(1/4)*Sqrt[
-a^2 - b^2]*E^((c + d*x)/2))/(Sqrt[2]*Sqrt[(-I)*b]*Sqrt[a + b*Sinh[c + d*x]
])] + I*(PolyLog[2, ((I*a + Sqrt[-a^2 - b^2])*(I*a + b - I*Sqrt[-a^2 - b^2]
*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*Cot[(
(2*I)*c + Pi + (2*I)*d*x)/4]))] - PolyLog[2, ((a + I*Sqrt[-a^2 - b^2])*(-a
+ I*b + Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a + b +
I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))])))/(Sqrt[-a^2 - b^2
]*d^2)))/(4*b) + (f^2*(x^3 - (3*a*(d^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqr
t[a^2 + b^2])] - d^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 2
*d*x*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*x*PolyLog[2,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*PolyLog[3, (b*E^(c + d*x))/(-
a + Sqrt[a^2 + b^2])] + 2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
))]))/(Sqrt[a^2 + b^2]*d^3)))/(12*b) + (f^2*(2*(4*a^2 + b^2)*x^3 - (6*a*(4*
a^2 + 3*b^2)*(d^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d^2*
x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 2*d*x*PolyLog[2, (b*E^
(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*x*PolyLog[2, -((b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2]))] - 2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
 + 2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(Sqrt[a^2 + b^2
]*d^3) - (24*a*b*Cosh[d*x]*((2 + d^2*x^2)*Cosh[c] - 2*d*x*Sinh[c]))/d^3 + (
3*b^2*Cosh[2*d*x]*(-2*d*x*Cosh[2*c] + (1 + 2*d^2*x^2)*Sinh[2*c]))/d^3 - (24
*a*b*(-2*d*x*Cosh[c] + (2 + d^2*x^2)*Sinh[c])*Sinh[d*x])/d^3 + (3*b^2*((1 +
 2*d^2*x^2)*Cosh[2*c] - 2*d*x*Sinh[2*c])*Sinh[2*d*x])/d^3))/(24*b^3) + (e^2
*((4*a^2 + b^2)*(c + d*x) - (2*a*(4*a^2 + 3*b^2)*ArcTan[(b - a*Tanh[(c + d*
x)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2 - b^2] - 4*a*b*Cosh[c + d*x] + b^2*Sinh
```

```
[2*(c + d*x)]))/(4*b^3*d) + (e*f*((4*a^2 + b^2)*(-c + d*x)*(c + d*x) - 8*a*
b*d*x*Cosh[c + d*x] - b^2*Cosh[2*(c + d*x)] - (2*a*(4*a^2 + 3*b^2)*(2*c*Arc
Tanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] + (c + d*x)*L
og[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - (c + d*
x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + Pol
yLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - PolyL
og[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))]))/Sqrt[
a^2 + b^2] + 8*a*b*Sinh[c + d*x] + 2*b^2*d*x*Sinh[2*(c + d*x)]))/(4*b^3*d^2
)
```

fricas [C] time = 0.56, size = 2410, normalized size = 4.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -1/48*(6*b^2*d^2*f^2*x^2 + 6*b^2*d^2*e^2 + 6*b^2*d*e*f - 3*(2*b^2*d^2*f^2*x
^2 + 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*
x)*cosh(d*x + c)^4 - 3*(2*b^2*d^2*f^2*x^2 + 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b
^2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x)*sinh(d*x + c)^4 + 3*b^2*f^2 + 24*
(a*b*d^2*f^2*x^2 + a*b*d^2*e^2 - 2*a*b*d*e*f + 2*a*b*f^2 + 2*(a*b*d^2*e*f -
 a*b*d*f^2)*x)*cosh(d*x + c)^3 + 12*(2*a*b*d^2*f^2*x^2 + 2*a*b*d^2*e^2 - 4*
a*b*d*e*f + 4*a*b*f^2 + 4*(a*b*d^2*e*f - a*b*d*f^2)*x - (2*b^2*d^2*f^2*x^2
+ 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x)*
cosh(d*x + c))*sinh(d*x + c)^3 - 8*((2*a^2 + b^2)*d^3*f^2*x^3 + 3*(2*a^2 +
b^2)*d^3*e*f*x^2 + 3*(2*a^2 + b^2)*d^3*e^2*x)*cosh(d*x + c)^2 - 2*(4*(2*a^2
 + b^2)*d^3*f^2*x^3 + 12*(2*a^2 + b^2)*d^3*e*f*x^2 + 12*(2*a^2 + b^2)*d^3*e
^2*x + 9*(2*b^2*d^2*f^2*x^2 + 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*
b^2*d^2*e*f - b^2*d*f^2)*x)*cosh(d*x + c)^2 - 36*(a*b*d^2*f^2*x^2 + a*b*d^2
*e^2 - 2*a*b*d*e*f + 2*a*b*f^2 + 2*(a*b*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x +
c))*sinh(d*x + c)^2 + 96*((a*b*d*f^2*x + a*b*d*e*f)*cosh(d*x + c)^2 + 2*(a*
b*d*f^2*x + a*b*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d*f^2*x + a*b*d*e
*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(
d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b
 + 1) - 96*((a*b*d*f^2*x + a*b*d*e*f)*cosh(d*x + c)^2 + 2*(a*b*d*f^2*x + a*
b*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d*f^2*x + a*b*d*e*f)*sinh(d*x +
 c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 48*((a
*b*d^2*e^2 - 2*a*b*c*d*e*f + a*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a*b*d^2*e^2
- 2*a*b*c*d*e*f + a*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d^2*e^2 -
 2*a*b*c*d*e*f + a*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*
b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 48
*((a*b*d^2*e^2 - 2*a*b*c*d*e*f + a*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a*b*d^2*
```

```
e^2 - 2*a*b*c*d*e*f + a*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d^2*e
^2 - 2*a*b*c*d*e*f + a*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*lo
g(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a)
+ 48*((a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f - a*b*c^2*f^2)*cos
h(d*x + c)^2 + 2*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f - a*b*c
^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x +
2*a*b*c*d*e*f - a*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a
*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b) - 48*((a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*
c*d*e*f - a*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f
*x + 2*a*b*c*d*e*f - a*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d^2*f^
2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f - a*b*c^2*f^2)*sinh(d*x + c)^2)*sqr
t((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 96*(a*b*f^2*cosh(d*x
+ c)^2 + 2*a*b*f^2*cosh(d*x + c)*sinh(d*x + c) + a*b*f^2*sinh(d*x + c)^2)*s
qrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cos
h(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 96*(a*b*f^2*cosh(
d*x + c)^2 + 2*a*b*f^2*cosh(d*x + c)*sinh(d*x + c) + a*b*f^2*sinh(d*x + c)^
2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b
*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(2*b^2*d^2*
e*f + b^2*d*f^2)*x + 24*(a*b*d^2*f^2*x^2 + a*b*d^2*e^2 + 2*a*b*d*e*f + 2*a*
b*f^2 + 2*(a*b*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c) + 4*(6*a*b*d^2*f^2*x^2
 + 6*a*b*d^2*e^2 + 12*a*b*d*e*f + 12*a*b*f^2 - 3*(2*b^2*d^2*f^2*x^2 + 2*b^2
*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x)*cosh(d*
x + c)^3 + 18*(a*b*d^2*f^2*x^2 + a*b*d^2*e^2 - 2*a*b*d*e*f + 2*a*b*f^2 + 2*
(a*b*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c)^2 + 12*(a*b*d^2*e*f + a*b*d*f^2)
*x - 4*((2*a^2 + b^2)*d^3*f^2*x^3 + 3*(2*a^2 + b^2)*d^3*e*f*x^2 + 3*(2*a^2
+ b^2)*d^3*e^2*x)*cosh(d*x + c))*sinh(d*x + c))/(b^3*d^3*cosh(d*x + c)^2 +
2*b^3*d^3*cosh(d*x + c)*sinh(d*x + c) + b^3*d^3*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\cosh\left(dx+c\right)^{2}\sinh\left(dx+c\right)}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)^2*sinh(d*x + c)/(b*sinh(d*x + c) + a),
x)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \left(\cosh^{2}\left(dx+c\right)\right) \sinh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{8}e^{2}\left(\frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{b^{2}d}+\frac{8\,\sqrt{a^{2}+b^{2}}\,a\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{b^{3}d}-\frac{4\left(2\,a^{2}+b^{2}\right)(dx+c)}{b^{3}d}+\frac{4\,ae^{(-dx-c)}+be^{(-}}{b^{2}d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
[Out] -1/8*e^2*((4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(b^2*d) + 8*sqrt(a^2 + b^2
)*a*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a
^2 + b^2)))/(b^3*d) - 4*(2*a^2 + b^2)*(d*x + c)/(b^3*d) + (4*a*e^(-d*x - c)
 + b*e^(-2*d*x - 2*c))/(b^2*d)) + 1/48*(8*(2*a^2*d^3*f^2*e^(2*c) + b^2*d^3*
f^2*e^(2*c))*x^3 + 24*(2*a^2*d^3*e*f*e^(2*c) + b^2*d^3*e*f*e^(2*c))*x^2 + 3
*(2*b^2*d^2*f^2*x^2*e^(4*c) + 2*(2*d^2*e*f - d*f^2)*b^2*x*e^(4*c) - (2*d*e*
f - f^2)*b^2*e^(4*c))*e^(2*d*x) - 24*(a*b*d^2*f^2*x^2*e^(3*c) + 2*(d^2*e*f
- d*f^2)*a*b*x*e^(3*c) - 2*(d*e*f - f^2)*a*b*e^(3*c))*e^(d*x) - 24*(a*b*d^2
*f^2*x^2*e^c + 2*(d^2*e*f + d*f^2)*a*b*x*e^c + 2*(d*e*f + f^2)*a*b*e^c)*e^(
-d*x) - 3*(2*b^2*d^2*f^2*x^2 + 2*(2*d^2*e*f + d*f^2)*b^2*x + (2*d*e*f + f^2
)*b^2)*e^(-2*d*x))*e^(-2*c)/(b^3*d^3) - integrate(2*((a^3*f^2*e^c + a*b^2*f
^2*e^c)*x^2 + 2*(a^3*e*f*e^c + a*b^2*e*f*e^c)*x)*e^(d*x)/(b^4*e^(2*d*x + 2*
c) + 2*a*b^3*e^(d*x + c) - b^4), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\cosh\left(c+d\,x\right)}^2\,\sinh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)**2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.340 $\int \frac{(e+fx)\cosh^2(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=327

$$\frac{a^2ex}{b^3}+\frac{a^2fx^2}{2b^3}-\frac{af\sqrt{a^2+b^2}\,\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{af\sqrt{a^2+b^2}\,\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^2}-\frac{a\sqrt{a^2+b^2}\,(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^3d}$$

```
[Out] a^2*e*x/b^3+1/2*e*x/b+1/2*a^2*f*x^2/b^3+1/4*f*x^2/b-a*(f*x+e)*cosh(d*x+c)/b
^2/d-1/4*f*cosh(d*x+c)^2/b/d^2+a*f*sinh(d*x+c)/b^2/d^2+1/2*(f*x+e)*cosh(d*x
+c)*sinh(d*x+c)/b/d-a*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b
^2)^(1/2)/b^3/d+a*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^
(1/2)/b^3/d-a*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2
)/b^3/d^2+a*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/
b^3/d^2
```

Rubi [A] time = 0.55, antiderivative size = 327, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {5579, 3310, 5565, 3296, 2637, 3322, 2264, 2190, 2279, 2391}

$$-\frac{af\sqrt{a^2+b^2}\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{af\sqrt{a^2+b^2}\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^2}-\frac{a\sqrt{a^2+b^2}\,(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right.}{b^3d}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^2*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*e*x)/b^3 + (e*x)/(2*b) + (a^2*f*x^2)/(2*b^3) + (f*x^2)/(4*b) - (a*(e +
 f*x)*Cosh[c + d*x])/(b^2*d) - (f*Cosh[c + d*x]^2)/(4*b*d^2) - (a*Sqrt[a^2
+ b^2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^3*d) +
(a*Sqrt[a^2 + b^2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]
)/(b^3*d) - (a*Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2
 + b^2]))])/(b^3*d^2) + (a*Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2]))])/(b^3*d^2) + (a*f*Sinh[c + d*x])/(b^2*d^2) + ((e + f
*x)*Cosh[c + d*x]*Sinh[c + d*x])/(2*b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh^2(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{f\cosh^2(c+dx)}{4bd^2} + \frac{(e+fx)\cosh(c+dx)\sinh(c+dx)}{2bd} + \frac{a^2\int(e+$$

$$= \frac{a^2ex}{b^3} + \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} + \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} - \frac{f\cosh^2(c+$$

$$= \frac{a^2ex}{b^3} + \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} + \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} - \frac{f\cosh^2(c+$$

$$= \frac{a^2ex}{b^3} + \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} + \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} - \frac{f\cosh^2(c+$$

$$= \frac{a^2ex}{b^3} + \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} + \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} - \frac{f\cosh^2(c+$$

$$= \frac{a^2ex}{b^3} + \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} + \frac{fx^2}{4b} - \frac{a(e+fx)\cosh(c+dx)}{b^2d} - \frac{f\cosh^2(c+$$

Mathematica [C] time = 3.45, size = 1551, normalized size = 4.74

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]^2*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (2*b^2*e*(c/d + x - (2*a*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]]
)/(Sqrt[-a^2 - b^2]*d)) + b^2*f*(x^2 + ((2*I)*a*Pi*ArcTanh[(-b + a*Tanh[(c
+ d*x)/2])/Sqrt[a^2 + b^2]])/(Sqrt[a^2 + b^2]*d^2) + (2*a*(2*((-I)*c + ArcC
os[((-I)*a)/b])*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[
-a^2 - b^2]] + ((-2*I)*c + Pi - (2*I)*d*x)*ArcTanh[((a - I*b)*Tan[((2*I)*c
+ Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] - (ArcCos[((-I)*a)/b] + (2*I)*ArcTa
nh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[((I
*a + b)*(a + I*(b + Sqrt[-a^2 - b^2]))*(-I + Cot[((2*I)*c + Pi + (2*I)*d*x)
/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))]
 - (ArcCos[((-I)*a)/b] - (2*I)*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)
*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[((I*a + b)*(I*a - b + Sqrt[-a^2 - b^2])*(I
 + Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(a - I*b + Sqrt[-a^2 - b^2]*Cot[(
(2*I)*c + Pi + (2*I)*d*x)/4]))] + (ArcCos[((-I)*a)/b] - (2*I)*ArcTanh[((a +
 I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] - (2*I)*ArcTanh[
((a - I*b)*Tan[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[-(((-1
)^(3/4)*Sqrt[-a^2 - b^2]*E^(-1/2*c - (d*x)/2))/(Sqrt[2]*Sqrt[(-I)*b]*Sqrt[a
 + b*Sinh[c + d*x]]))] + (ArcCos[((-I)*a)/b] + (2*I)*(ArcTanh[((a + I*b)*Co
t[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] + ArcTanh[((a - I*b)*Tan
[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]]))*Log[((-1)^(1/4)*Sqrt[-a
^2 - b^2]*E^((c + d*x)/2))/(Sqrt[2]*Sqrt[(-I)*b]*Sqrt[a + b*Sinh[c + d*x]])
] + I*(PolyLog[2, ((I*a + Sqrt[-a^2 - b^2])*(I*a + b - I*Sqrt[-a^2 - b^2]*C
ot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*Cot[((2
*I)*c + Pi + (2*I)*d*x)/4]))] - PolyLog[2, ((a + I*Sqrt[-a^2 - b^2])*(-a +
I*b + Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a + b + I*
Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))])))/(Sqrt[-a^2 - b^2]*
d^2)) + (2*e*((4*a^2 + b^2)*(c + d*x) - (2*a*(4*a^2 + 3*b^2)*ArcTan[(b - a*
Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2 - b^2] - 4*a*b*Cosh[c + d*x
] + b^2*Sinh[2*(c + d*x)]))/d + (f*((4*a^2 + b^2)*(-c + d*x)*(c + d*x) - 8*
a*b*d*x*Cosh[c + d*x] - b^2*Cosh[2*(c + d*x)] - (2*a*(4*a^2 + 3*b^2)*(2*c*A
rcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] + (c + d*x)
*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - (c +
d*x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + P
olyLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - Pol
yLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))]))/Sqr
t[a^2 + b^2] + 8*a*b*Sinh[c + d*x] + 2*b^2*d*x*Sinh[2*(c + d*x)]))/d^2)/(8*
b^3)
```

fricas [B] time = 0.54, size = 1284, normalized size = 3.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -1/16*(2*b^2*d*f*x - (2*b^2*d*f*x + 2*b^2*d*e - b^2*f)*cosh(d*x + c)^4 - (2
*b^2*d*f*x + 2*b^2*d*e - b^2*f)*sinh(d*x + c)^4 + 2*b^2*d*e + 8*(a*b*d*f*x
+ a*b*d*e - a*b*f)*cosh(d*x + c)^3 + 4*(2*a*b*d*f*x + 2*a*b*d*e - 2*a*b*f -
 (2*b^2*d*f*x + 2*b^2*d*e - b^2*f)*cosh(d*x + c))*sinh(d*x + c)^3 + b^2*f -
 4*((2*a^2 + b^2)*d^2*f*x^2 + 2*(2*a^2 + b^2)*d^2*e*x)*cosh(d*x + c)^2 - 2*
(2*(2*a^2 + b^2)*d^2*f*x^2 + 4*(2*a^2 + b^2)*d^2*e*x + 3*(2*b^2*d*f*x + 2*b
^2*d*e - b^2*f)*cosh(d*x + c)^2 - 12*(a*b*d*f*x + a*b*d*e - a*b*f)*cosh(d*x
 + c))*sinh(d*x + c)^2 + 16*(a*b*f*cosh(d*x + c)^2 + 2*a*b*f*cosh(d*x + c)*
sinh(d*x + c) + a*b*f*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(
d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2) - b)/b + 1) - 16*(a*b*f*cosh(d*x + c)^2 + 2*a*b*f*cosh(d*x + c)
*sinh(d*x + c) + a*b*f*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh
(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2) - b)/b + 1) - 16*((a*b*d*e - a*b*c*f)*cosh(d*x + c)^2 + 2*(a*b
*d*e - a*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d*e - a*b*c*f)*sinh(d*x
+ c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2
*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 16*((a*b*d*e - a*b*c*f)*cosh(d*x + c)^2 +
 2*(a*b*d*e - a*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d*e - a*b*c*f)*si
nh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x +
 c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 16*((a*b*d*f*x + a*b*c*f)*cosh(d*x
 + c)^2 + 2*(a*b*d*f*x + a*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d*f*x
+ a*b*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a
*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b) - 16*((a*b*d*f*x + a*b*c*f)*cosh(d*x + c)^2 + 2*(a*b*d*f*x + a*b*c*
f)*cosh(d*x + c)*sinh(d*x + c) + (a*b*d*f*x + a*b*c*f)*sinh(d*x + c)^2)*sqr
t((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 8*(a*b*d*f*x + a*b*d*
e + a*b*f)*cosh(d*x + c) + 4*(2*a*b*d*f*x + 2*a*b*d*e - (2*b^2*d*f*x + 2*b^
2*d*e - b^2*f)*cosh(d*x + c)^3 + 2*a*b*f + 6*(a*b*d*f*x + a*b*d*e - a*b*f)*
cosh(d*x + c)^2 - 2*((2*a^2 + b^2)*d^2*f*x^2 + 2*(2*a^2 + b^2)*d^2*e*x)*cos
h(d*x + c))*sinh(d*x + c))/(b^3*d^2*cosh(d*x + c)^2 + 2*b^3*d^2*cosh(d*x +
c)*sinh(d*x + c) + b^3*d^2*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cosh(dx+c)^2\sinh(dx+c)}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)^2*sinh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.16, size = 1012, normalized size = 3.09

$$\frac{a^2 f x^2}{2b^3}+\frac{f x^2}{4b}+\frac{a^2 ex}{b^3}+\frac{ex}{2b}+\frac{\left(2dfx+2de-f\right)\mathrm{e}^{2dx+2c}}{16d^2 b}-\frac{a\left(dfx+de-f\right)\mathrm{e}^{dx+c}}{2b^2d^2}-\frac{a\left(dfx+de+f\right)\mathrm{e}^{-dx-c}}{2b^2d^2}-\frac{\left(2dfx+2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2*a^2*f*x^2/b^3+1/4*f*x^2/b+a^2*e*x/b^3+1/2*e*x/b+1/16*(2*d*f*x+2*d*e-f)/
d^2/b*exp(2*d*x+2*c)-1/2*a*(d*f*x+d*e-f)/b^2/d^2*exp(d*x+c)-1/2*a*(d*f*x+d*
e+f)/b^2/d^2*exp(-d*x-c)-1/16*(2*d*f*x+2*d*e+f)/d^2/b*exp(-2*d*x-2*c)+2/d*a
^3/b^3*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+
2/d*a/b*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))
-1/d*a^3/b^3*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^
2+b^2)^(1/2)))*x-1/d^2*a^3/b^3*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2
)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d*a^3/b^3*f/(a^2+b^2)^(1/2)*ln((b*exp(
d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2*a^3/b^3*f/(a^2+b^2)^
(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d^2*a^3/
b^3*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)
^(1/2)))+1/d^2*a^3/b^3*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2
)+a)/(a+(a^2+b^2)^(1/2)))-1/d*a/b*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+
b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a/b*f/(a^2+b^2)^(1/2)*ln((-b*ex
p(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d*a/b*f/(a^2+b^2)^(1/
2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2*a/b*f/(
a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1
/d^2*a/b*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2
+b^2)^(1/2)))+1/d^2*a/b*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/
2)+a)/(a+(a^2+b^2)^(1/2)))-2/d^2*a^3/b^3*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2
*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d^2*a/b*f*c/(a^2+b^2)^(1/2)*arctanh(1
/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{16}\left(32\left(a^3e^c+ab^2e^c\right)\int\frac{xe^{(dx)}}{b^4e^{(2\,dx+2\,c)}+2\,ab^3e^{(dx+c)}-b^4}\,dx-\frac{\left(4\left(2\,a^2d^2e^{(2\,c)}+b^2d^2e^{(2\,c)}\right)x^2+\left(2\,b^2dxe^{(4\,c)}-b^2e^{(4}\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/16*(32*(a^3*e^c + a*b^2*e^c)*integrate(x*e^(d*x)/(b^4*e^(2*d*x + 2*c) +
2*a*b^3*e^(d*x + c) - b^4), x) - (4*(2*a^2*d^2*e^(2*c) + b^2*d^2*e^(2*c))*x
^2 + (2*b^2*d*x*e^(4*c) - b^2*e^(4*c))*e^(2*d*x) - 8*(a*b*d*x*e^(3*c) - a*b
*e^(3*c))*e^(d*x) - 8*(a*b*d*x*e^c + a*b*e^c)*e^(-d*x) - (2*b^2*d*x + b^2)*
e^(-2*d*x))*e^(-2*c)/(b^3*d^2))*f - 1/8*e*((4*a*e^(-d*x - c) - b)*e^(2*d*x
+ 2*c)/(b^2*d) + 8*sqrt(a^2 + b^2)*a*log((b*e^(-d*x - c) - a - sqrt(a^2 + b
^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(b^3*d) - 4*(2*a^2 + b^2)*(d*x
 + c)/(b^3*d) + (4*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c))/(b^2*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)^2\,\sinh(c+d\,x)\,\left(e+f\,x\right)}{a+b\,\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.341 $\int \frac{\cosh^2(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=95

$$\frac{2a\sqrt{a^2+b^2}\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^3d}+\frac{x\left(2a^2+b^2\right)}{2b^3}-\frac{\cosh(c+dx)(2a-b\sinh(c+dx))}{2b^2d}$$

```
[Out] 1/2*(2*a^2+b^2)*x/b^3-1/2*cosh(d*x+c)*(2*a-b*sinh(d*x+c))/b^2/d+2*a*arctanh
((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))*(a^2+b^2)^(1/2)/b^3/d
```

Rubi [A] time = 0.18, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {2865, 2735, 2660, 618, 204}

$$\frac{2a\sqrt{a^2+b^2}\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^3d}+\frac{x\left(2a^2+b^2\right)}{2b^3}-\frac{\cosh(c+dx)(2a-b\sinh(c+dx))}{2b^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]^2*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((2*a^2 + b^2)*x)/(2*b^3) + (2*a*Sqrt[a^2 + b^2]*ArcTanh[(b - a*Tanh[(c + d
*x)/2])/Sqrt[a^2 + b^2]])/(b^3*d) - (Cosh[c + d*x]*(2*a - b*Sinh[c + d*x]))
/(2*b^2*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
```

```
a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2865

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(g*(g
*Cos[e + f*x])^(p - 1)*(a + b*Sin[e + f*x])^(m + 1)*(b*c*(m + p + 1) - a*d*
p + b*d*(m + p)*Sin[e + f*x]))/(b^2*f*(m + p)*(m + p + 1)), x] + Dist[(g^2*
(p - 1))/(b^2*(m + p)*(m + p + 1)), Int[(g*Cos[e + f*x])^(p - 2)*(a + b*Sin
[e + f*x])^m*Simp[b*(a*d*m + b*c*(m + p + 1)) + (a*b*c*(m + p + 1) - d*(a^2
*p - b^2*(m + p)))*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[a^2 - b^2, 0] && GtQ[p, 1] && NeQ[m + p, 0] && NeQ[m + p + 1,
 0] && IntegerQ[2*m]
```

Rubi steps

$$\int \frac{\cosh^2(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\cosh(c+dx)(2a-b\sinh(c+dx))}{2b^2d} + \frac{i\int \frac{iab-i(2a^2+b^2)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx}{2b^2}$$

$$= \frac{(2a^2+b^2)x}{2b^3} - \frac{\cosh(c+dx)(2a-b\sinh(c+dx))}{2b^2d} - \frac{(a(a^2+b^2))\int \frac{1}{a+b\sinh(c}}{b^3}$$

$$= \frac{(2a^2+b^2)x}{2b^3} - \frac{\cosh(c+dx)(2a-b\sinh(c+dx))}{2b^2d} + \frac{(2ia(a^2+b^2))\,\mathrm{Subst}\Big(\int}{}$$

$$= \frac{(2a^2+b^2)x}{2b^3} - \frac{\cosh(c+dx)(2a-b\sinh(c+dx))}{2b^2d} - \frac{(4ia(a^2+b^2))\,\mathrm{Subst}\Big(\int}{}$$

$$= \frac{(2a^2+b^2)x}{2b^3} + \frac{2a\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^3d} - \frac{\cosh(c+dx)(2a-b\,s}{2b^2d}$$

Mathematica [A] time = 0.39, size = 109, normalized size = 1.15

$$\frac{8a\sqrt{-a^2-b^2}\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)+4a^2c+4a^2dx-4ab\cosh(c+dx)+b^2\sinh(2(c+dx))+2b^2c+2b^2dx}{4b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]^2*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (4*a^2*c + 2*b^2*c + 4*a^2*d*x + 2*b^2*d*x + 8*a*Sqrt[-a^2 - b^2]*ArcTan[(b
 - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]] - 4*a*b*Cosh[c + d*x] + b^2*Sinh[
2*(c + d*x)])/(4*b^3*d)
```

fricas [B] time = 0.49, size = 446, normalized size = 4.69

$$b^2\cosh(dx+c)^4+b^2\sinh(dx+c)^4+4\left(2a^2+b^2\right)dx\cosh(dx+c)^2-4ab\cosh(dx+c)^3+4\left(b^2\cosh(dx+c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/8*(b^2*cosh(d*x + c)^4 + b^2*sinh(d*x + c)^4 + 4*(2*a^2 + b^2)*d*x*cosh(d
*x + c)^2 - 4*a*b*cosh(d*x + c)^3 + 4*(b^2*cosh(d*x + c) - a*b)*sinh(d*x +
c)^3 - 4*a*b*cosh(d*x + c) + 2*(3*b^2*cosh(d*x + c)^2 + 2*(2*a^2 + b^2)*d*x
 - 6*a*b*cosh(d*x + c))*sinh(d*x + c)^2 + 8*(a*cosh(d*x + c)^2 + 2*a*cosh(d
*x + c)*sinh(d*x + c) + a*sinh(d*x + c)^2)*sqrt(a^2 + b^2)*log((b^2*cosh(d*
x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2
*cosh(d*x + c) + a*b)*sinh(d*x + c) + 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) +
b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x
 + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) - b^2 + 4*(b^2*cosh(d*x
 + c)^3 + 2*(2*a^2 + b^2)*d*x*cosh(d*x + c) - 3*a*b*cosh(d*x + c)^2 - a*b)*
sinh(d*x + c))/(b^3*d*cosh(d*x + c)^2 + 2*b^3*d*cosh(d*x + c)*sinh(d*x + c)
 + b^3*d*sinh(d*x + c)^2)
```

giac [A] time = 0.22, size = 155, normalized size = 1.63

$$\frac{\frac{4\left(2a^2+b^2\right)(dx+c)}{b^3}+\frac{be^{(2dx+2c)}-4ae^{(dx+c)}}{b^2}-\frac{\left(4abe^{(dx+c)}+b^2\right)e^{(-2dx-2c)}}{b^3}-\frac{8\left(a^3+ab^2\right)\log\left(\frac{\left|2be^{(dx+c)}+2a-2\sqrt{a^2+b^2}\right|}{\left|2be^{(dx+c)}+2a+2\sqrt{a^2+b^2}\right|}\right)}{\sqrt{a^2+b^2}b^3}}{8d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/8*(4*(2*a^2 + b^2)*(d*x + c)/b^3 + (b*e^(2*d*x + 2*c) - 4*a*e^(d*x + c))/
b^2 - (4*a*b*e^(d*x + c) + b^2)*e^(-2*d*x - 2*c)/b^3 - 8*(a^3 + a*b^2)*log(
abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d*x + c) + 2*a +
2*sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^3))/d
```

maple [B] time = 0.06, size = 260, normalized size = 2.74

$$\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^{2}}+\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}+\frac{a}{d\,b^{2}\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)a^{2}}{d\,b^{3}}-\frac{\ln\left(\tan\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2/d/b/(tanh(1/2*d*x+1/2*c)-1)^2+1/2/d/b/(tanh(1/2*d*x+1/2*c)-1)+1/d/b^2/(
tanh(1/2*d*x+1/2*c)-1)*a-1/d/b^3*ln(tanh(1/2*d*x+1/2*c)-1)*a^2-1/2/d/b*ln(t
anh(1/2*d*x+1/2*c)-1)-1/2/d/b/(tanh(1/2*d*x+1/2*c)+1)^2+1/2/d/b/(tanh(1/2*d
*x+1/2*c)+1)-1/d/b^2/(tanh(1/2*d*x+1/2*c)+1)*a+1/d/b^3*ln(tanh(1/2*d*x+1/2*
c)+1)*a^2+1/2/d/b*ln(tanh(1/2*d*x+1/2*c)+1)-2/d*a*(a^2+b^2)^(1/2)/b^3*arcta
nh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))
```

maxima [A] time = 0.42, size = 160, normalized size = 1.68

$$-\frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{8\,b^{2}d}-\frac{\sqrt{a^{2}+b^{2}}\,a\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{b^{3}d}+\frac{\left(2\,a^{2}+b^{2}\right)(dx+c)}{2\,b^{3}d}-\frac{4\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}}{8\,b^{2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -1/8*(4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(b^2*d) - sqrt(a^2 + b^2)*a*log
((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^
2)))/(b^3*d) + 1/2*(2*a^2 + b^2)*(d*x + c)/(b^3*d) - 1/8*(4*a*e^(-d*x - c)
+ b*e^(-2*d*x - 2*c))/(b^2*d)
```

mupad [B] time = 0.49, size = 212, normalized size = 2.23

$$\frac{\mathrm{e}^{2\,c+2\,d\,x}}{8\,b\,d}-\frac{\mathrm{e}^{-2\,c-2\,d\,x}}{8\,b\,d}+\frac{x\,\left(2\,a^2+b^2\right)}{2\,b^3}-\frac{a\,\mathrm{e}^{-c-d\,x}}{2\,b^2\,d}-\frac{a\,\mathrm{e}^{c+d\,x}}{2\,b^2\,d}-\frac{a\,\ln\left(\frac{2\,a\,\mathrm{e}^{c+d\,x}\,\left(a^2+b^2\right)}{b^4}-\frac{2\,a\,\sqrt{a^2+b^2}\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{b^4}\right)\,\sqrt{a^2+b^2}}{b^3\,d}+\frac{a\,\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] exp(2*c + 2*d*x)/(8*b*d) - exp(- 2*c - 2*d*x)/(8*b*d) + (x*(2*a^2 + b^2))/(
2*b^3) - (a*exp(- c - d*x))/(2*b^2*d) - (a*exp(c + d*x))/(2*b^2*d) - (a*log
((2*a*exp(c + d*x)*(a^2 + b^2))/b^4 - (2*a*(a^2 + b^2)^(1/2)*(b - a*exp(c +
 d*x)))/b^4)*(a^2 + b^2)^(1/2))/(b^3*d) + (a*log((2*a*(a^2 + b^2)^(1/2)*(b
- a*exp(c + d*x)))/b^4 + (2*a*exp(c + d*x)*(a^2 + b^2))/b^4)*(a^2 + b^2)^(1
/2))/(b^3*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.342 $\int \frac{\cosh^2(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{\sinh(c+dx)\cosh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)^2*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh^2(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]^2*Sinh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]^2*Sinh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\cosh^2(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\cosh^2(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]^2*Sinh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)^2\sinh(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(cosh(d*x + c)^2*sinh(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)^2 \sinh(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate(cosh(d*x + c)^2*sinh(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)),
x)
```

maple [A] time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\left(\cosh^2(dx+c)\right)\sinh(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)^2*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2\left(a^3e^c+ab^2e^c\right)\int -\frac{e^{(dx)}}{b^4fx+b^4e-\left(b^4fxe^{(2c)}+b^4ee^{(2c)}\right)e^{(2dx)}-2\left(ab^3fxe^c+ab^3ee^c\right)e^{(dx)}}\,dx-\frac{e^{\left(-2c+\frac{2de}{f}\right)}E_1\left(\frac{2(f}{}\right.}{4bf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -2*(a^3*e^c + a*b^2*e^c)*integrate(-e^(d*x)/(b^4*f*x + b^4*e - (b^4*f*x*e^(
2*c) + b^4*e*e^(2*c))*e^(2*d*x) - 2*(a*b^3*f*x*e^c + a*b^3*e*e^c)*e^(d*x)),
 x) - 1/4*e^(-2*c + 2*d*e/f)*exp_integral_e(1, 2*(f*x + e)*d/f)/(b*f) - 1/2
```

```
*a*e^(-c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b^2*f) + 1/2*a*e^(c - d
*e/f)*exp_integral_e(1, -(f*x + e)*d/f)/(b^2*f) - 1/4*e^(2*c - 2*d*e/f)*exp
_integral_e(1, -2*(f*x + e)*d/f)/(b*f) + 1/2*(2*a^2 + b^2)*log(f*x + e)/(b^
3*f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh (c + d\,x)^2 \sinh (c + d\,x)}{\left(e + f\,x\right)\,(a + b\sinh (c + d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)^2*sinh(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.343 $\int \frac{(e+fx)^3 \cosh^3(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=864

$$\frac{a\left(a^2+b^2\right)(e+fx)^4}{4b^4 f}-\frac{a\sinh^2(c+dx)(e+fx)^3}{2b^2 d}-\frac{a\left(a^2+b^2\right)\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)(e+fx)^3}{b^4 d}-\frac{a\left(a^2+b^2\right)\log\left(\frac{e^{c+d}}{a+\sqrt{a^2}}\right.}{b^4 d}\cdots$$

```
[Out] -a*(a^2+b^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d-a*(a^2+
b^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d-6*a*(a^2+b^2)*f
^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d^4-6*a*(a^2+b^2)*f^3*p
olylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d^4+a^2*(f*x+e)^3*sinh(d*x+
c)/b^3/d+3/4*a*f*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/b^2/d^2-1/4*a*(f*x+e)^3/
b^2/d-2/27*f^3*cosh(d*x+c)^3/b/d^4+2/3*(f*x+e)^3*sinh(d*x+c)/b/d-40/9*f^3*c
osh(d*x+c)/b/d^4-3/8*a*f^3*x/b^2/d^3+1/4*a*(a^2+b^2)*(f*x+e)^4/b^4/f-6*a^2*
f^3*cosh(d*x+c)/b^3/d^4-1/3*f*(f*x+e)^2*cosh(d*x+c)^3/b/d^2+1/3*(f*x+e)^3*c
osh(d*x+c)^2*sinh(d*x+c)/b/d-1/2*a*(f*x+e)^3*sinh(d*x+c)^2/b^2/d-2*f*(f*x+e
)^2*cosh(d*x+c)/b/d^2+40/9*f^2*(f*x+e)*sinh(d*x+c)/b/d^3+6*a^2*f^2*(f*x+e)*
sinh(d*x+c)/b^3/d^3+3/8*a*f^3*cosh(d*x+c)*sinh(d*x+c)/b^2/d^4+2/9*f^2*(f*x+
e)*cosh(d*x+c)^2*sinh(d*x+c)/b/d^3-3/4*a*f^2*(f*x+e)*sinh(d*x+c)^2/b^2/d^3-
3*a^2*f*(f*x+e)^2*cosh(d*x+c)/b^3/d^2-3*a*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-
b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d^2+6*a*(a^2+b^2)*f^2*(f*x+e)*polylog
(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d^3+6*a*(a^2+b^2)*f^2*(f*x+e)*pol
ylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d^3-3*a*(a^2+b^2)*f*(f*x+e)^2
*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d^2
```

Rubi [A] time = 1.12, antiderivative size = 864, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 16, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.471, Rules used = {5579, 3311, 3296, 2638, 3310, 5565, 5446, 32, 2635, 8, 5561, 2190, 2531, 6609, 2282, 6589}

$$\frac{a\left(a^2+b^2\right)(e+fx)^4}{4b^4 f}-\frac{a\sinh^2(c+dx)(e+fx)^3}{2b^2 d}-\frac{a\left(a^2+b^2\right)\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)(e+fx)^3}{b^4 d}-\frac{a\left(a^2+b^2\right)\log\left(\frac{e^{c+d}}{a+\sqrt{a^2}}\right.}{b^4 d}\cdots$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]^3*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-3*a*f^3*x)/(8*b^2*d^3) - (a*(e + f*x)^3)/(4*b^2*d) + (a*(a^2 + b^2)*(e +
f*x)^4)/(4*b^4*f) - (6*a^2*f^3*Cosh[c + d*x])/(b^3*d^4) - (40*f^3*Cosh[c +
d*x])/(9*b*d^4) - (3*a^2*f*(e + f*x)^2*Cosh[c + d*x])/(b^3*d^2) - (2*f*(e +
 f*x)^2*Cosh[c + d*x])/(b*d^2) - (2*f^3*Cosh[c + d*x]^3)/(27*b*d^4) - (f*(e
 + f*x)^2*Cosh[c + d*x]^3)/(3*b*d^2) - (a*(a^2 + b^2)*(e + f*x)^3*Log[1 + (
```

```
b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^4*d) - (a*(a^2 + b^2)*(e + f*x)^3
*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^4*d) - (3*a*(a^2 + b^2)
*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^4*d
^2) - (3*a*(a^2 + b^2)*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2]))])/(b^4*d^2) + (6*a*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*
E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^4*d^3) + (6*a*(a^2 + b^2)*f^2*(e +
 f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^4*d^3) - (6*
a*(a^2 + b^2)*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^
4*d^4) - (6*a*(a^2 + b^2)*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2]))])/(b^4*d^4) + (6*a^2*f^2*(e + f*x)*Sinh[c + d*x])/(b^3*d^3) + (40*f^
2*(e + f*x)*Sinh[c + d*x])/(9*b*d^3) + (a^2*(e + f*x)^3*Sinh[c + d*x])/(b^3
*d) + (2*(e + f*x)^3*Sinh[c + d*x])/(3*b*d) + (3*a*f^3*Cosh[c + d*x]*Sinh[c
 + d*x])/(8*b^2*d^4) + (3*a*f*(e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x])/(4*b
^2*d^2) + (2*f^2*(e + f*x)*Cosh[c + d*x]^2*Sinh[c + d*x])/(9*b*d^3) + ((e +
 f*x)^3*Cosh[c + d*x]^2*Sinh[c + d*x])/(3*b*d) - (3*a*f^2*(e + f*x)*Sinh[c
+ d*x]^2)/(4*b^2*d^3) - (a*(e + f*x)^3*Sinh[c + d*x]^2)/(2*b^2*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
```

```
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh^3(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\cosh^3(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{f(e+fx)^2\cosh^3(c+dx)}{3bd^2} + \frac{(e+fx)^3\cosh^2(c+dx)\sinh(c+dx)}{3bd} \cdots$$

$$= \frac{a\left(a^2+b^2\right)(e+fx)^4}{4b^4f} - \frac{2f^3\cosh^3(c+dx)}{27bd^4} - \cdots$$

$$= \frac{a\left(a^2+b^2\right)(e+fx)^4}{4b^4f} - \frac{3a^2f(e+fx)^2\cosh(c+dx)}{b^3d^2} - \cdots$$

$$= -\frac{a(e+fx)^3}{4b^2d} + \frac{a\left(a^2+b^2\right)(e+fx)^4}{4b^4f} - \frac{4f^3\cosh(c+dx)}{9bd^4} - \cdots$$

$$= -\frac{3af^3x}{8b^2d^3} - \frac{a(e+fx)^3}{4b^2d} + \frac{a\left(a^2+b^2\right)(e+fx)^4}{4b^4f} - \cdots$$

$$= -\frac{3af^3x}{8b^2d^3} - \frac{a(e+fx)^3}{4b^2d} + \frac{a\left(a^2+b^2\right)(e+fx)^4}{4b^4f} - \cdots$$

$$= -\frac{3af^3x}{8b^2d^3} - \frac{a(e+fx)^3}{4b^2d} + \frac{a\left(a^2+b^2\right)(e+fx)^4}{4b^4f} - \cdots$$

Mathematica [B] time = 48.59, size = 7375, normalized size = 8.54

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^3*Sinh[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] Result too large to show
```

fricas [C] time = 0.63, size = 7980, normalized size = 9.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -1/864*(36*b^3*d^3*f^3*x^3 + 36*b^3*d^3*e^3 + 36*b^3*d^2*e^2*f + 24*b^3*d*e
*f^2 - 4*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f
^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f
 - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^6 - 4*(9*b^3*d^3*f^3*x^3
 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d
^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*
d*f^3)*x)*sinh(d*x + c)^6 + 8*b^3*f^3 + 27*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d
^3*e^3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3
*e*f^2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*
b^2*d*f^3)*x)*cosh(d*x + c)^5 + 3*(36*a*b^2*d^3*f^3*x^3 + 36*a*b^2*d^3*e^3
- 54*a*b^2*d^2*e^2*f + 54*a*b^2*d*e*f^2 - 27*a*b^2*f^3 + 54*(2*a*b^2*d^3*e*
f^2 - a*b^2*d^2*f^3)*x^2 + 54*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^
2*d*f^3)*x - 8*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3
*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3
*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^5 -
 108*((4*a^2*b + 3*b^3)*d^3*f^3*x^3 + (4*a^2*b + 3*b^3)*d^3*e^3 - 3*(4*a^2*
b + 3*b^3)*d^2*e^2*f + 6*(4*a^2*b + 3*b^3)*d*e*f^2 - 6*(4*a^2*b + 3*b^3)*f^
3 + 3*((4*a^2*b + 3*b^3)*d^3*e*f^2 - (4*a^2*b + 3*b^3)*d^2*f^3)*x^2 + 3*((4
*a^2*b + 3*b^3)*d^3*e^2*f - 2*(4*a^2*b + 3*b^3)*d^2*e*f^2 + 2*(4*a^2*b + 3*
b^3)*d*f^3)*x)*cosh(d*x + c)^4 - 3*(36*(4*a^2*b + 3*b^3)*d^3*f^3*x^3 + 36*(
4*a^2*b + 3*b^3)*d^3*e^3 - 108*(4*a^2*b + 3*b^3)*d^2*e^2*f + 216*(4*a^2*b +
 3*b^3)*d*e*f^2 - 216*(4*a^2*b + 3*b^3)*f^3 + 108*((4*a^2*b + 3*b^3)*d^3*e*
f^2 - (4*a^2*b + 3*b^3)*d^2*f^3)*x^2 + 20*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^
3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*
d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(
d*x + c)^2 + 108*((4*a^2*b + 3*b^3)*d^3*e^2*f - 2*(4*a^2*b + 3*b^3)*d^2*e*f
^2 + 2*(4*a^2*b + 3*b^3)*d*f^3)*x - 45*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e
^3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f
^2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2*
d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^4 - 216*((a^3 + a*b^2)*d^4*f^3*x^4 +
 4*(a^3 + a*b^2)*d^4*e*f^2*x^3 + 6*(a^3 + a*b^2)*d^4*e^2*f*x^2 + 4*(a^3 + a
*b^2)*d^4*e^3*x + 8*(a^3 + a*b^2)*c*d^3*e^3 - 12*(a^3 + a*b^2)*c^2*d^2*e^2*
f + 8*(a^3 + a*b^2)*c^3*d*e*f^2 - 2*(a^3 + a*b^2)*c^4*f^3)*cosh(d*x + c)^3
- 2*(108*(a^3 + a*b^2)*d^4*f^3*x^4 + 432*(a^3 + a*b^2)*d^4*e*f^2*x^3 + 648*
(a^3 + a*b^2)*d^4*e^2*f*x^2 + 432*(a^3 + a*b^2)*d^4*e^3*x + 864*(a^3 + a*b^
2)*c*d^3*e^3 - 1296*(a^3 + a*b^2)*c^2*d^2*e^2*f + 864*(a^3 + a*b^2)*c^3*d*e
*f^2 - 216*(a^3 + a*b^2)*c^4*f^3 + 40*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 -
9*b^3*d^2*e^2*f + 6*b^3*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*
f^3)*x^2 + 3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x
+ c)^3 - 135*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^3 - 6*a*b^2*d^2*e^2*f + 6
*a*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^2 - a*b^2*d^2*f^3)*x^2 +
6*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x)*cosh(d*x + c)^2
```

+ 216*((4*a^2*b + 3*b^3)*d^3*f^3*x^3 + (4*a^2*b + 3*b^3)*d^3*e^3 - 3*(4*a^2
*b + 3*b^3)*d^2*e^2*f + 6*(4*a^2*b + 3*b^3)*d*e*f^2 - 6*(4*a^2*b + 3*b^3)*f
^3 + 3*((4*a^2*b + 3*b^3)*d^3*e*f^2 - (4*a^2*b + 3*b^3)*d^2*f^3)*x^2 + 3*((
4*a^2*b + 3*b^3)*d^3*e^2*f - 2*(4*a^2*b + 3*b^3)*d^2*e*f^2 + 2*(4*a^2*b + 3
*b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^3 + 36*(3*b^3*d^3*e*f^2 + b^3*
d^2*f^3)*x^2 + 108*((4*a^2*b + 3*b^3)*d^3*f^3*x^3 + (4*a^2*b + 3*b^3)*d^3*e
^3 + 3*(4*a^2*b + 3*b^3)*d^2*e^2*f + 6*(4*a^2*b + 3*b^3)*d*e*f^2 + 6*(4*a^2
*b + 3*b^3)*f^3 + 3*((4*a^2*b + 3*b^3)*d^3*e*f^2 + (4*a^2*b + 3*b^3)*d^2*f^
3)*x^2 + 3*((4*a^2*b + 3*b^3)*d^3*e^2*f + 2*(4*a^2*b + 3*b^3)*d^2*e*f^2 + 2
*(4*a^2*b + 3*b^3)*d*f^3)*x)*cosh(d*x + c)^2 + 6*(18*(4*a^2*b + 3*b^3)*d^3*
f^3*x^3 + 18*(4*a^2*b + 3*b^3)*d^3*e^3 + 54*(4*a^2*b + 3*b^3)*d^2*e^2*f + 1
08*(4*a^2*b + 3*b^3)*d*e*f^2 - 10*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^
3*d^2*e^2*f + 6*b^3*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)
x^2 + 3(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)
^4 + 108*(4*a^2*b + 3*b^3)*f^3 + 45*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^3
- 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^2
- a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2*d*f
^3)*x)*cosh(d*x + c)^3 + 54*((4*a^2*b + 3*b^3)*d^3*e*f^2 + (4*a^2*b + 3*b^3
)*d^2*f^3)*x^2 - 108*((4*a^2*b + 3*b^3)*d^3*f^3*x^3 + (4*a^2*b + 3*b^3)*d^3
e^3 - 3(4*a^2*b + 3*b^3)*d^2*e^2*f + 6*(4*a^2*b + 3*b^3)*d*e*f^2 - 6*(4*a
^2*b + 3*b^3)*f^3 + 3*((4*a^2*b + 3*b^3)*d^3*e*f^2 - (4*a^2*b + 3*b^3)*d^2*
f^3)*x^2 + 3*((4*a^2*b + 3*b^3)*d^3*e^2*f - 2*(4*a^2*b + 3*b^3)*d^2*e*f^2 +
2*(4*a^2*b + 3*b^3)*d*f^3)*x)*cosh(d*x + c)^2 + 54*((4*a^2*b + 3*b^3)*d^3*
e^2*f + 2*(4*a^2*b + 3*b^3)*d^2*e*f^2 + 2*(4*a^2*b + 3*b^3)*d*f^3)*x - 108*
((a^3 + a*b^2)*d^4*f^3*x^4 + 4*(a^3 + a*b^2)*d^4*e*f^2*x^3 + 6*(a^3 + a*b^2
)*d^4*e^2*f*x^2 + 4*(a^3 + a*b^2)*d^4*e^3*x + 8*(a^3 + a*b^2)*c*d^3*e^3 - 1
2*(a^3 + a*b^2)*c^2*d^2*e^2*f + 8*(a^3 + a*b^2)*c^3*d*e*f^2 - 2*(a^3 + a*b^
2)*c^4*f^3)*cosh(d*x + c))*sinh(d*x + c)^2 + 12*(9*b^3*d^3*e^2*f + 6*b^3*d^
2*e*f^2 + 2*b^3*d*f^3)*x + 27*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^3 + 6*a*
b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 + 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^2 + a*b^
2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*e^2*f + 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x)
*cosh(d*x + c) + 2592*(((a^3 + a*b^2)*d^2*f^3*x^2 + 2*(a^3 + a*b^2)*d^2*e*f
^2*x + (a^3 + a*b^2)*d^2*e^2*f)*cosh(d*x + c)^3 + 3*((a^3 + a*b^2)*d^2*f^3*
x^2 + 2*(a^3 + a*b^2)*d^2*e*f^2*x + (a^3 + a*b^2)*d^2*e^2*f)*cosh(d*x + c)^
2*sinh(d*x + c) + 3*((a^3 + a*b^2)*d^2*f^3*x^2 + 2*(a^3 + a*b^2)*d^2*e*f^2*
x + (a^3 + a*b^2)*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^3 + a*b^2)
*d^2*f^3*x^2 + 2*(a^3 + a*b^2)*d^2*e*f^2*x + (a^3 + a*b^2)*d^2*e^2*f)*sinh(
d*x + c)^3)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b
*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2592*(((a^3 + a*b^2)*d^
2*f^3*x^2 + 2*(a^3 + a*b^2)*d^2*e*f^2*x + (a^3 + a*b^2)*d^2*e^2*f)*cosh(d*x
+ c)^3 + 3*((a^3 + a*b^2)*d^2*f^3*x^2 + 2*(a^3 + a*b^2)*d^2*e*f^2*x + (a^3
+ a*b^2)*d^2*e^2*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*((a^3 + a*b^2)*d^2*f
^3*x^2 + 2*(a^3 + a*b^2)*d^2*e*f^2*x + (a^3 + a*b^2)*d^2*e^2*f)*cosh(d*x +
c)*sinh(d*x + c)^2 + ((a^3 + a*b^2)*d^2*f^3*x^2 + 2*(a^3 + a*b^2)*d^2*e*f^2
*x + (a^3 + a*b^2)*d^2*e^2*f)*sinh(d*x + c)^3)*dilog((a*cosh(d*x + c) + a*s

```
inh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) -
b)/b + 1) + 864*(((a^3 + a*b^2)*d^3*e^3 - 3*(a^3 + a*b^2)*c*d^2*e^2*f + 3*(
a^3 + a*b^2)*c^2*d*e*f^2 - (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c)^3 + 3*((a^3
 + a*b^2)*d^3*e^3 - 3*(a^3 + a*b^2)*c*d^2*e^2*f + 3*(a^3 + a*b^2)*c^2*d*e*f
^2 - (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c)^2*sinh(d*x + c) + 3*((a^3 + a*b^2
)*d^3*e^3 - 3*(a^3 + a*b^2)*c*d^2*e^2*f + 3*(a^3 + a*b^2)*c^2*d*e*f^2 - (a^
3 + a*b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^3 + a*b^2)*d^3*e^3
- 3*(a^3 + a*b^2)*c*d^2*e^2*f + 3*(a^3 + a*b^2)*c^2*d*e*f^2 - (a^3 + a*b^2)
*c^3*f^3)*sinh(d*x + c)^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*
sqrt((a^2 + b^2)/b^2) + 2*a) + 864*(((a^3 + a*b^2)*d^3*e^3 - 3*(a^3 + a*b^2
)*c*d^2*e^2*f + 3*(a^3 + a*b^2)*c^2*d*e*f^2 - (a^3 + a*b^2)*c^3*f^3)*cosh(d
*x + c)^3 + 3*((a^3 + a*b^2)*d^3*e^3 - 3*(a^3 + a*b^2)*c*d^2*e^2*f + 3*(a^3
 + a*b^2)*c^2*d*e*f^2 - (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c)^2*sinh(d*x + c
) + 3*((a^3 + a*b^2)*d^3*e^3 - 3*(a^3 + a*b^2)*c*d^2*e^2*f + 3*(a^3 + a*b^2
)*c^2*d*e*f^2 - (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^
3 + a*b^2)*d^3*e^3 - 3*(a^3 + a*b^2)*c*d^2*e^2*f + 3*(a^3 + a*b^2)*c^2*d*e*
f^2 - (a^3 + a*b^2)*c^3*f^3)*sinh(d*x + c)^3)*log(2*b*cosh(d*x + c) + 2*b*s
inh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 864*(((a^3 + a*b^2)*d^3*f
^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + 3*(a
^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 + a*b^2)*c^2*d*e*f^2 + (a^3 + a*b^2)*c^3*f
^3)*cosh(d*x + c)^3 + 3*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*
f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^
3 + a*b^2)*c^2*d*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c)^2*sinh(d*x +
c) + 3*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3
+ a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 + a*b^2)*c^2*d*
e*f^2 + (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^3 + a*b^
2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*
x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 + a*b^2)*c^2*d*e*f^2 + (a^3 + a*b^
2)*c^3*f^3)*sinh(d*x + c)^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*c
osh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 864*(((a^3
+ a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*
e^2*f*x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 + a*b^2)*c^2*d*e*f^2 + (a^3
+ a*b^2)*c^3*f^3)*cosh(d*x + c)^3 + 3*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 +
 a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*d^2
*e^2*f - 3*(a^3 + a*b^2)*c^2*d*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c)
^2*sinh(d*x + c) + 3*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2
*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 +
 a*b^2)*c^2*d*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^2
+ ((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b
^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 + a*b^2)*c^2*d*e*f^2
 + (a^3 + a*b^2)*c^3*f^3)*sinh(d*x + c)^3)*log(-(a*cosh(d*x + c) + a*sinh(d
*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b)
 + 5184*((a^3 + a*b^2)*f^3*cosh(d*x + c)^3 + 3*(a^3 + a*b^2)*f^3*cosh(d*x +
 c)^2*sinh(d*x + c) + 3*(a^3 + a*b^2)*f^3*cosh(d*x + c)*sinh(d*x + c)^2 + (
a^3 + a*b^2)*f^3*sinh(d*x + c)^3)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x
```

```
+ c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 5184
*((a^3 + a*b^2)*f^3*cosh(d*x + c)^3 + 3*(a^3 + a*b^2)*f^3*cosh(d*x + c)^2*s
inh(d*x + c) + 3*(a^3 + a*b^2)*f^3*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3 + a
*b^2)*f^3*sinh(d*x + c)^3)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) -
(b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 5184*(((a^3
 + a*b^2)*d*f^3*x + (a^3 + a*b^2)*d*e*f^2)*cosh(d*x + c)^3 + 3*((a^3 + a*b^
2)*d*f^3*x + (a^3 + a*b^2)*d*e*f^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*((a^3
 + a*b^2)*d*f^3*x + (a^3 + a*b^2)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 +
((a^3 + a*b^2)*d*f^3*x + (a^3 + a*b^2)*d*e*f^2)*sinh(d*x + c)^3)*polylog(3,
 (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*s
qrt((a^2 + b^2)/b^2))/b) - 5184*(((a^3 + a*b^2)*d*f^3*x + (a^3 + a*b^2)*d*e
*f^2)*cosh(d*x + c)^3 + 3*((a^3 + a*b^2)*d*f^3*x + (a^3 + a*b^2)*d*e*f^2)*c
osh(d*x + c)^2*sinh(d*x + c) + 3*((a^3 + a*b^2)*d*f^3*x + (a^3 + a*b^2)*d*e
*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^3 + a*b^2)*d*f^3*x + (a^3 + a*b^2
)*d*e*f^2)*sinh(d*x + c)^3)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) -
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 3*(36*a*b^
2*d^3*f^3*x^3 + 36*a*b^2*d^3*e^3 + 54*a*b^2*d^2*e^2*f + 54*a*b^2*d*e*f^2 +
27*a*b^2*f^3 - 8*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b
^3*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d
^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^5 + 45*(4*a*b^2*
d^3*f^3*x^3 + 4*a*b^2*d^3*e^3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 - 3*a*b
^2*f^3 + 6*(2*a*b^2*d^3*e*f^2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*e^2*f -
 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x)*cosh(d*x + c)^4 - 144*((4*a^2*b + 3*b^
3)*d^3*f^3*x^3 + (4*a^2*b + 3*b^3)*d^3*e^3 - 3*(4*a^2*b + 3*b^3)*d^2*e^2*f
+ 6*(4*a^2*b + 3*b^3)*d*e*f^2 - 6*(4*a^2*b + 3*b^3)*f^3 + 3*((4*a^2*b + 3*b
^3)*d^3*e*f^2 - (4*a^2*b + 3*b^3)*d^2*f^3)*x^2 + 3*((4*a^2*b + 3*b^3)*d^3*e
^2*f - 2*(4*a^2*b + 3*b^3)*d^2*e*f^2 + 2*(4*a^2*b + 3*b^3)*d*f^3)*x)*cosh(d
*x + c)^3 + 54*(2*a*b^2*d^3*e*f^2 + a*b^2*d^2*f^3)*x^2 - 216*((a^3 + a*b^2)
*d^4*f^3*x^4 + 4*(a^3 + a*b^2)*d^4*e*f^2*x^3 + 6*(a^3 + a*b^2)*d^4*e^2*f*x^
2 + 4*(a^3 + a*b^2)*d^4*e^3*x + 8*(a^3 + a*b^2)*c*d^3*e^3 - 12*(a^3 + a*b^2
)*c^2*d^2*e^2*f + 8*(a^3 + a*b^2)*c^3*d*e*f^2 - 2*(a^3 + a*b^2)*c^4*f^3)*co
sh(d*x + c)^2 + 54*(2*a*b^2*d^3*e^2*f + 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x
+ 72*((4*a^2*b + 3*b^3)*d^3*f^3*x^3 + (4*a^2*b + 3*b^3)*d^3*e^3 + 3*(4*a^2*
b + 3*b^3)*d^2*e^2*f + 6*(4*a^2*b + 3*b^3)*d*e*f^2 + 6*(4*a^2*b + 3*b^3)*f^
3 + 3*((4*a^2*b + 3*b^3)*d^3*e*f^2 + (4*a^2*b + 3*b^3)*d^2*f^3)*x^2 + 3*((4
*a^2*b + 3*b^3)*d^3*e^2*f + 2*(4*a^2*b + 3*b^3)*d^2*e*f^2 + 2*(4*a^2*b + 3*
b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^4*d^4*cosh(d*x + c)^3 + 3*b
^4*d^4*cosh(d*x + c)^2*sinh(d*x + c) + 3*b^4*d^4*cosh(d*x + c)*sinh(d*x + c
)^2 + b^4*d^4*sinh(d*x + c)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)^{3}\sinh\left(dx+c\right)}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)^3*sinh(d*x + c)/(b*sinh(d*x + c) + a),
x)
```

maple [F] time = 0.62, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\cosh^{3}\left(dx+c\right)\right) \sinh \left(dx+c\right)}{a+b\sinh \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/24*e^3*((3*a*b*e^(-d*x - c) - b^2 - 3*(4*a^2 + 3*b^2)*e^(-2*d*x - 2*c))*
e^(3*d*x + 3*c)/(b^3*d) + 24*(a^3 + a*b^2)*(d*x + c)/(b^4*d) + (3*a*b*e^(-2
*d*x - 2*c) + b^2*e^(-3*d*x - 3*c) + 3*(4*a^2 + 3*b^2)*e^(-d*x - c))/(b^3*d
) + 24*(a^3 + a*b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^4*d
)) - 1/864*(216*(a^3*d^4*f^3*e^(3*c) + a*b^2*d^4*f^3*e^(3*c))*x^4 + 864*(a^
3*d^4*e*f^2*e^(3*c) + a*b^2*d^4*e*f^2*e^(3*c))*x^3 + 1296*(a^3*d^4*e^2*f*e^
(3*c) + a*b^2*d^4*e^2*f*e^(3*c))*x^2 - 4*(9*b^3*d^3*f^3*x^3*e^(6*c) + 9*(3*
d^3*e*f^2 - d^2*f^3)*b^3*x^2*e^(6*c) + 3*(9*d^3*e^2*f - 6*d^2*e*f^2 + 2*d*f
^3)*b^3*x*e^(6*c) - (9*d^2*e^2*f - 6*d*e*f^2 + 2*f^3)*b^3*e^(6*c))*e^(3*d*x
) + 27*(4*a*b^2*d^3*f^3*x^3*e^(5*c) + 6*(2*d^3*e*f^2 - d^2*f^3)*a*b^2*x^2*e
^(5*c) + 6*(2*d^3*e^2*f - 2*d^2*e*f^2 + d*f^3)*a*b^2*x*e^(5*c) - 3*(2*d^2*e
^2*f - 2*d*e*f^2 + f^3)*a*b^2*e^(5*c))*e^(2*d*x) + 108*(12*(d^2*e^2*f - 2*d
*e*f^2 + 2*f^3)*a^2*b*e^(4*c) + 9*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*b^3*e^(4*
c) - (4*a^2*b*d^3*f^3*e^(4*c) + 3*b^3*d^3*f^3*e^(4*c))*x^3 - 3*(4*(d^3*e*f^
2 - d^2*f^3)*a^2*b*e^(4*c) + 3*(d^3*e*f^2 - d^2*f^3)*b^3*e^(4*c))*x^2 - 3*(
4*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*a^2*b*e^(4*c) + 3*(d^3*e^2*f - 2*d^2*
e*f^2 + 2*d*f^3)*b^3*e^(4*c))*x)*e^(d*x) + 108*(12*(d^2*e^2*f + 2*d*e*f^2 +
 2*f^3)*a^2*b*e^(2*c) + 9*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*b^3*e^(2*c) + (4*
```

```
a^2*b*d^3*f^3*e^(2*c) + 3*b^3*d^3*f^3*e^(2*c))*x^3 + 3*(4*(d^3*e*f^2 + d^2*
f^3)*a^2*b*e^(2*c) + 3*(d^3*e*f^2 + d^2*f^3)*b^3*e^(2*c))*x^2 + 3*(4*(d^3*e
^2*f + 2*d^2*e*f^2 + 2*d*f^3)*a^2*b*e^(2*c) + 3*(d^3*e^2*f + 2*d^2*e*f^2 +
2*d*f^3)*b^3*e^(2*c))*x)*e^(-d*x) + 27*(4*a*b^2*d^3*f^3*x^3*e^c + 6*(2*d^3*
e*f^2 + d^2*f^3)*a*b^2*x^2*e^c + 6*(2*d^3*e^2*f + 2*d^2*e*f^2 + d*f^3)*a*b^
2*x*e^c + 3*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)*a*b^2*e^c)*e^(-2*d*x) + 4*(9*b^
3*d^3*f^3*x^3 + 9*(3*d^3*e*f^2 + d^2*f^3)*b^3*x^2 + 3*(9*d^3*e^2*f + 6*d^2*
e*f^2 + 2*d*f^3)*b^3*x + (9*d^2*e^2*f + 6*d*e*f^2 + 2*f^3)*b^3)*e^(-3*d*x))
*e^(-3*c)/(b^4*d^4) + integrate(-2*((a^3*b*f^3 + a*b^3*f^3)*x^3 + 3*(a^3*b*
e*f^2 + a*b^3*e*f^2)*x^2 + 3*(a^3*b*e^2*f + a*b^3*e^2*f)*x - ((a^4*f^3*e^c
+ a^2*b^2*f^3*e^c)*x^3 + 3*(a^4*e*f^2*e^c + a^2*b^2*e*f^2*e^c)*x^2 + 3*(a^4
*e^2*f*e^c + a^2*b^2*e^2*f*e^c)*x)*e^(d*x))/(b^5*e^(2*d*x + 2*c) + 2*a*b^4*
e^(d*x + c) - b^5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)^3\,\sinh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{a+b\,\sinh\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^3*sinh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.344 $\int \frac{(e+fx)^2 \cosh^3(c+dx) \sinh(c+dx)}{a+b \sinh(c+dx)} dx$

Optimal. Leaf size=636

$$\frac{2a^2f^2\sinh(c+dx)}{b^3d^3}-\frac{2a^2f(e+fx)\cosh(c+dx)}{b^3d^2}+\frac{a^2(e+fx)^2\sinh(c+dx)}{b^3d}+\frac{2af^2\left(a^2+b^2\right)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^3}+\frac{2af}{}$$

[Out] -1/2*a*e*f*x/b^2/d-1/4*a*f^2*x^2/b^2/d+1/3*a*(a^2+b^2)*(f*x+e)^3/b^4/f-2*a^2*f*(f*x+e)*cosh(d*x+c)/b^3/d^2-4/3*f*(f*x+e)*cosh(d*x+c)/b/d^2-2/9*f*(f*x+e)*cosh(d*x+c)^3/b/d^2-a*(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d-a*(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d-2*a*(a^2+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d^2-2*a*(a^2+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d^2+2*a*(a^2+b^2)*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d^3+2*a*(a^2+b^2)*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d^3+2*a^2*f^2*sinh(d*x+c)/b^3/d^3+14/9*f^2*sinh(d*x+c)/b/d^3+a^2*(f*x+e)^2*sinh(d*x+c)/b^3/d+2/3*(f*x+e)^2*sinh(d*x+c)/b/d+1/2*a*f*(f*x+e)*cosh(d*x+c)*sinh(d*x+c)/b^2/d^2+1/3*(f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)/b/d-1/4*a*f^2*sinh(d*x+c)^2/b^2/d^3-1/2*a*(f*x+e)^2*sinh(d*x+c)^2/b^2/d+2/27*f^2*sinh(d*x+c)^3/b/d^3

Rubi [A] time = 0.88, antiderivative size = 636, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 13, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.382, Rules used = {5579, 3311, 3296, 2637, 2633, 5565, 5446, 3310, 5561, 2190, 2531, 2282, 6589}

$$-\frac{2af\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{2af\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^4d^2}+\frac{2af^2\left(a^2+b^2\right)}{}$$

Antiderivative was successfully verified.

[In] Int[((e + f*x)^2*Cosh[c + d*x]^3*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]

[Out] -(a*e*f*x)/(2*b^2*d) - (a*f^2*x^2)/(4*b^2*d) + (a*(a^2 + b^2)*(e + f*x)^3)/(3*b^4*f) - (2*a^2*f*(e + f*x)*Cosh[c + d*x])/(b^3*d^2) - (4*f*(e + f*x)*Cosh[c + d*x])/(3*b*d^2) - (2*f*(e + f*x)*Cosh[c + d*x]^3)/(9*b*d^2) - (a*(a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^4*d) - (a*(a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^4*d) - (2*a*(a^2 + b^2)*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^4*d^2) - (2*a*(a^2 + b^2)*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^4*d^2) + (2*a*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^4*d^3) + (2*a*(a^2

```
 + b^2)*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^4*d^3)
 + (2*a^2*f^2*Sinh[c + d*x])/(b^3*d^3) + (14*f^2*Sinh[c + d*x])/(9*b*d^3) +
 (a^2*(e + f*x)^2*Sinh[c + d*x])/(b^3*d) + (2*(e + f*x)^2*Sinh[c + d*x])/(3
*b*d) + (a*f*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(2*b^2*d^2) + ((e + f*x
)^2*Cosh[c + d*x]^2*Sinh[c + d*x])/(3*b*d) - (a*f^2*Sinh[c + d*x]^2)/(4*b^2
*d^3) - (a*(e + f*x)^2*Sinh[c + d*x]^2)/(2*b^2*d) + (2*f^2*Sinh[c + d*x]^3)
/(27*b*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^3(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh^3(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{2f(e+fx)\cosh^3(c+dx)}{9bd^2} + \frac{(e+fx)^2\cosh^2(c+dx)\sinh(c+dx)}{3bd}$$

$$= \frac{a\left(a^2+b^2\right)(e+fx)^3}{3b^4f} - \frac{2f(e+fx)\cosh^3(c+dx)}{9bd^2} + \frac{a^2(e+fx)^2 \text{si}}{b^3 d}$$

$$= \frac{a\left(a^2+b^2\right)(e+fx)^3}{3b^4f} - \frac{2a^2f(e+fx)\cosh(c+dx)}{b^3d^2} - \frac{4f(e+fx)\text{c}}{3bd}$$

$$= -\frac{aefx}{2b^2d} - \frac{af^2x^2}{4b^2d} + \frac{a\left(a^2+b^2\right)(e+fx)^3}{3b^4f} - \frac{2a^2f(e+fx)\cosh(c+}{b^3d^2}$$

$$= -\frac{aefx}{2b^2d} - \frac{af^2x^2}{4b^2d} + \frac{a\left(a^2+b^2\right)(e+fx)^3}{3b^4f} - \frac{2a^2f(e+fx)\cosh(c+}{b^3d^2}$$

$$= -\frac{aefx}{2b^2d} - \frac{af^2x^2}{4b^2d} + \frac{a\left(a^2+b^2\right)(e+fx)^3}{3b^4f} - \frac{2a^2f(e+fx)\cosh(c+}{b^3d^2}$$

Mathematica [B] time = 15.94, size = 3509, normalized size = 5.52

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^3*Sinh[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (f^2*(2*a*x^3*(-1 + Coth[c]) - 2*a*x^3*Coth[c] - (6*a*b^2*(d^2*x^2*Log[1 +
((a - Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 2*d*x*PolyLog[
2, ((-a + Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 2*PolyLog[
3, ((-a + Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b]))/(Sqrt[a^2
+ b^2]*(-a + Sqrt[a^2 + b^2])*d^3) - (6*a*b^2*(d^2*x^2*Log[1 + ((a + Sqrt[a
^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 2*d*x*PolyLog[2, ((a + Sqr
t[a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b] - 2*PolyLog[3, ((a + Sqr
t[a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b]))/(Sqrt[a^2 + b^2]*(a +
Sqrt[a^2 + b^2])*d^3) + (6*a^2*(d^2*x^2*Log[1 + (b*(Cosh[c + d*x] + Sinh[c
+ d*x]))/(a - Sqrt[a^2 + b^2])] + 2*d*x*PolyLog[2, (b*(Cosh[c + d*x] + Sinh
[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - 2*PolyLog[3, (b*(Cosh[c + d*x] + Sinh
[c + d*x]))/(-a + Sqrt[a^2 + b^2])]))/(Sqrt[a^2 + b^2]*d^3) - (6*a^2*(d^2*x
^2*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 2*d
*x*PolyLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))]
 - 2*PolyLog[3, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])
)]))/(Sqrt[a^2 + b^2]*d^3) + (6*b*Cosh[d*x]*(-2*d*x*Cosh[c] + (2 + d^2*x^2)
*Sinh[c]))/d^3 + (6*b*((2 + d^2*x^2)*Cosh[c] - 2*d*x*Sinh[c])*Sinh[d*x])/d^
3))/(12*b^2) - (e^2*((a*Log[a + b*Sinh[c + d*x]])/b^2 - Sinh[c + d*x]/b))/(
2*d) + (e*f*(-(b*Cosh[c + d*x]) - a*(-1/2*(c + d*x)^2 + (c + d*x)*Log[1 + (
b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + (c + d*x)*Log[1 + (b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2])] - c*Log[a + b*Sinh[c + d*x]] + PolyLog[2, (b*E^(c + d
*x))/(-a + Sqrt[a^2 + b^2])] + PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))]) + b*d*x*Sinh[c + d*x]))/(b^2*d^2) + (e^2*(-3*a*(2*a^2 + b^2)*Log[
a + b*Sinh[c + d*x]] + 3*b*(2*a^2 + b^2)*Sinh[c + d*x] - 3*a*b^2*Sinh[c + d
*x]^2 + 2*b^3*Sinh[c + d*x]^3))/(6*b^4*d) + (e*f*(-18*b*(4*a^2 + b^2)*Cosh[
c + d*x] - 18*a*b^2*d*x*Cosh[2*(c + d*x)] - 2*b^3*Cosh[3*(c + d*x)] - 36*a*
(2*a^2 + b^2)*(-1/2*(c + d*x)^2 + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sq
rt[a^2 + b^2])] + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]
- c*Log[a + b*Sinh[c + d*x]] + PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 +
b^2])] + PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) + 18*b*(4*a^
2 + b^2)*d*x*Sinh[c + d*x] + 9*a*b^2*Sinh[2*(c + d*x)] + 6*b^3*d*x*Sinh[3*(
c + d*x)]))/(36*b^4*d^2) + (f^2*((2*a*(2*a^2 + b^2)*(-1 + Coth[c])*(2*x^3 +
 (6*a*(d^2*x^2*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 +
b^2])] + 2*d*x*PolyLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^
2 + b^2])] - 2*PolyLog[3, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^
2 + b^2])])*Sinh[c]*(Cosh[c] + Sinh[c]))/(Sqrt[a^2 + b^2]*d^3) - (3*b^2*(d^
2*x^2*Log[1 + ((a - Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] -
2*d*x*PolyLog[2, ((-a + Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b
] - 2*PolyLog[3, ((-a + Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b
])*(-1 + Cosh[2*c] + Sinh[2*c]))/(Sqrt[a^2 + b^2]*(-a + Sqrt[a^2 + b^2])*d^
```

3) - (3*b^2*(d^2*x^2*Log[1 + ((a + Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 2*d*x*PolyLog[2, ((a + Sqrt[a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b] - 2*PolyLog[3, ((a + Sqrt[a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b])*(-1 + Cosh[2*c] + Sinh[2*c]))/(Sqrt[a^2 + b^2]*(a + Sqrt[a^2 + b^2])*d^3) - (3*a*(d^2*x^2*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 2*d*x*PolyLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))] - 2*PolyLog[3, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))])*(-1 + Cosh[2*c] + Sinh[2*c]))/(Sqrt[a^2 + b^2]*d^3)))/(3*b^4) + Csch[c]*(Cosh[3*c + 3*d*x]/(108*b^4*d^3) - Sinh[3*c + 3*d*x]/(108*b^4*d^3))*(27*a*b^2*Cosh[d*x] + 54*a*b^2*d*x*Cosh[d*x] + 54*a*b^2*d^2*x^2*Cosh[d*x] - 27*a*b^2*Cosh[2*c + d*x] - 54*a*b^2*d*x*Cosh[2*c + d*x] - 54*a*b^2*d^2*x^2*Cosh[2*c + d*x] + 432*a^2*b*Cosh[c + 2*d*x] + 108*b^3*Cosh[c + 2*d*x] + 432*a^2*b*d*x*Cosh[c + 2*d*x] + 108*b^3*d*x*Cosh[c + 2*d*x] + 216*a^2*b*d^2*x^2*Cosh[c + 2*d*x] + 54*b^3*d^2*x^2*Cosh[c + 2*d*x] - 432*a^2*b*Cosh[3*c + 2*d*x] - 108*b^3*Cosh[3*c + 2*d*x] - 432*a^2*b*d*x*Cosh[3*c + 2*d*x] - 108*b^3*d*x*Cosh[3*c + 2*d*x] - 216*a^2*b*d^2*x^2*Cosh[3*c + 2*d*x] - 54*b^3*d^2*x^2*Cosh[3*c + 2*d*x] - 144*a^3*d^3*x^3*Cosh[2*c + 3*d*x] - 72*a*b^2*d^3*x^3*Cosh[2*c + 3*d*x] - 144*a^3*d^3*x^3*Cosh[4*c + 3*d*x] - 72*a*b^2*d^3*x^3*Cosh[4*c + 3*d*x] - 432*a^2*b*Cosh[3*c + 4*d*x] - 108*b^3*Cosh[3*c + 4*d*x] + 432*a^2*b*d*x*Cosh[3*c + 4*d*x] + 108*b^3*d*x*Cosh[3*c + 4*d*x] - 216*a^2*b*d^2*x^2*Cosh[3*c + 4*d*x] - 54*b^3*d^2*x^2*Cosh[3*c + 4*d*x] + 432*a^2*b*Cosh[5*c + 4*d*x] + 108*b^3*Cosh[5*c + 4*d*x] - 432*a^2*b*d*x*Cosh[5*c + 4*d*x] - 108*b^3*d*x*Cosh[5*c + 4*d*x] + 216*a^2*b*d^2*x^2*Cosh[5*c + 4*d*x] + 54*b^3*d^2*x^2*Cosh[5*c + 4*d*x] + 27*a*b^2*Cosh[4*c + 5*d*x] - 54*a*b^2*d*x*Cosh[4*c + 5*d*x] + 54*a*b^2*d^2*x^2*Cosh[4*c + 5*d*x] - 27*a*b^2*Cosh[6*c + 5*d*x] + 54*a*b^2*d*x*Cosh[6*c + 5*d*x] - 54*a*b^2*d^2*x^2*Cosh[6*c + 5*d*x] - 4*b^3*Cosh[5*c + 6*d*x] + 12*b^3*d*x*Cosh[5*c + 6*d*x] - 18*b^3*d^2*x^2*Cosh[5*c + 6*d*x] + 4*b^3*Cosh[7*c + 6*d*x] - 12*b^3*d*x*Cosh[7*c + 6*d*x] + 18*b^3*d^2*x^2*Cosh[7*c + 6*d*x] - 8*b^3*Sinh[c] - 24*b^3*d*x*Sinh[c] - 36*b^3*d^2*x^2*Sinh[c] + 27*a*b^2*Sinh[d*x] + 54*a*b^2*d*x*Sinh[d*x] + 54*a*b^2*d^2*x^2*Sinh[d*x] - 27*a*b^2*Sinh[2*c + d*x] - 54*a*b^2*d*x*Sinh[2*c + d*x] - 54*a*b^2*d^2*x^2*Sinh[2*c + d*x] + 432*a^2*b*Sinh[c + 2*d*x] + 108*b^3*Sinh[c + 2*d*x] + 432*a^2*b*d*x*Sinh[c + 2*d*x] + 108*b^3*d*x*Sinh[c + 2*d*x] + 216*a^2*b*d^2*x^2*Sinh[c + 2*d*x] + 54*b^3*d^2*x^2*Sinh[c + 2*d*x] - 432*a^2*b*Sinh[3*c + 2*d*x] - 108*b^3*Sinh[3*c + 2*d*x] - 432*a^2*b*d*x*Sinh[3*c + 2*d*x] - 108*b^3*d*x*Sinh[3*c + 2*d*x] - 216*a^2*b*d^2*x^2*Sinh[3*c + 2*d*x] - 54*b^3*d^2*x^2*Sinh[3*c + 2*d*x] - 144*a^3*d^3*x^3*Sinh[2*c + 3*d*x] - 72*a*b^2*d^3*x^3*Sinh[2*c + 3*d*x] - 144*a^3*d^3*x^3*Sinh[4*c + 3*d*x] - 72*a*b^2*d^3*x^3*Sinh[4*c + 3*d*x] - 432*a^2*b*Sinh[3*c + 4*d*x] - 108*b^3*Sinh[3*c + 4*d*x] + 432*a^2*b*d*x*Sinh[3*c + 4*d*x] + 108*b^3*d*x*Sinh[3*c + 4*d*x] - 216*a^2*b*d^2*x^2*Sinh[3*c + 4*d*x] - 54*b^3*d^2*x^2*Sinh[3*c + 4*d*x] + 432*a^2*b*Sinh[5*c + 4*d*x] + 108*b^3*Sinh[5*c + 4*d*x] - 432*a^2*b*d*x*Sinh[5*c + 4*d*x] - 108*b^3*d*x*Sinh[5*c + 4*d*x] + 216*a^2*b*d^2*x^2*Sinh[5*c + 4*d*x] + 54*b^3*d^2*x^2*Sinh[5*c + 4*d*x] + 27*a*b^2*Sinh[4*c + 5*d*x] - 54*a*b^2*d*x*Sinh[4*c

```
+ 5*d*x] + 54*a*b^2*d^2*x^2*Sinh[4*c + 5*d*x] - 27*a*b^2*Sinh[6*c + 5*d*x]
+ 54*a*b^2*d*x*Sinh[6*c + 5*d*x] - 54*a*b^2*d^2*x^2*Sinh[6*c + 5*d*x] - 4*b
^3*Sinh[5*c + 6*d*x] + 12*b^3*d*x*Sinh[5*c + 6*d*x] - 18*b^3*d^2*x^2*Sinh[5
*c + 6*d*x] + 4*b^3*Sinh[7*c + 6*d*x] - 12*b^3*d*x*Sinh[7*c + 6*d*x] + 18*b
^3*d^2*x^2*Sinh[7*c + 6*d*x]))))/8
```

fricas [C] time = 0.61, size = 4887, normalized size = 7.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -1/432*(18*b^3*d^2*f^2*x^2 + 18*b^3*d^2*e^2 - 2*(9*b^3*d^2*f^2*x^2 + 9*b^3*
d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d
*x + c)^6 - 2*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2
+ 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*sinh(d*x + c)^6 + 12*b^3*d*e*f + 27*(2*a
*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 - 2*a*b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2
*d^2*e*f - a*b^2*d*f^2)*x)*cosh(d*x + c)^5 + 3*(18*a*b^2*d^2*f^2*x^2 + 18*a
*b^2*d^2*e^2 - 18*a*b^2*d*e*f + 9*a*b^2*f^2 + 18*(2*a*b^2*d^2*e*f - a*b^2*d
*f^2)*x - 4*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 +
6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^5 + 4*b^3*f^2
 - 54*((4*a^2*b + 3*b^3)*d^2*f^2*x^2 + (4*a^2*b + 3*b^3)*d^2*e^2 - 2*(4*a^2
*b + 3*b^3)*d*e*f + 2*(4*a^2*b + 3*b^3)*f^2 + 2*((4*a^2*b + 3*b^3)*d^2*e*f
- (4*a^2*b + 3*b^3)*d*f^2)*x)*cosh(d*x + c)^4 - 3*(18*(4*a^2*b + 3*b^3)*d^2
*f^2*x^2 + 18*(4*a^2*b + 3*b^3)*d^2*e^2 - 36*(4*a^2*b + 3*b^3)*d*e*f + 36*(
4*a^2*b + 3*b^3)*f^2 + 10*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f
+ 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x + c)^2 + 36*((4*a^2
*b + 3*b^3)*d^2*e*f - (4*a^2*b + 3*b^3)*d*f^2)*x - 45*(2*a*b^2*d^2*f^2*x^2
+ 2*a*b^2*d^2*e^2 - 2*a*b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f - a*b^2*
d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^4 - 144*((a^3 + a*b^2)*d^3*f^2*x^3 +
 3*(a^3 + a*b^2)*d^3*e*f*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*x + 6*(a^3 + a*b^2)*
c*d^2*e^2 - 6*(a^3 + a*b^2)*c^2*d*e*f + 2*(a^3 + a*b^2)*c^3*f^2)*cosh(d*x +
 c)^3 - 2*(72*(a^3 + a*b^2)*d^3*f^2*x^3 + 216*(a^3 + a*b^2)*d^3*e*f*x^2 + 2
16*(a^3 + a*b^2)*d^3*e^2*x + 432*(a^3 + a*b^2)*c*d^2*e^2 - 432*(a^3 + a*b^2
)*c^2*d*e*f + 144*(a^3 + a*b^2)*c^3*f^2 + 20*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2
*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x
+ c)^3 - 135*(2*a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 - 2*a*b^2*d*e*f + a*b^2
*f^2 + 2*(2*a*b^2*d^2*e*f - a*b^2*d*f^2)*x)*cosh(d*x + c)^2 + 108*((4*a^2*b
 + 3*b^3)*d^2*f^2*x^2 + (4*a^2*b + 3*b^3)*d^2*e^2 - 2*(4*a^2*b + 3*b^3)*d*e
*f + 2*(4*a^2*b + 3*b^3)*f^2 + 2*((4*a^2*b + 3*b^3)*d^2*e*f - (4*a^2*b + 3*
b^3)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^3 + 54*((4*a^2*b + 3*b^3)*d^2*f
^2*x^2 + (4*a^2*b + 3*b^3)*d^2*e^2 + 2*(4*a^2*b + 3*b^3)*d*e*f + 2*(4*a^2*b
 + 3*b^3)*f^2 + 2*((4*a^2*b + 3*b^3)*d^2*e*f + (4*a^2*b + 3*b^3)*d*f^2)*x)*
```

cosh(d*x + c)^2 + 6*(9*(4*a^2*b + 3*b^3)*d^2*f^2*x^2 + 9*(4*a^2*b + 3*b^3)*
d^2*e^2 - 5*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 +
6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x + c)^4 + 18*(4*a^2*b + 3*b^3)*d*e
f + 45(2*a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 - 2*a*b^2*d*e*f + a*b^2*f^2
+ 2*(2*a*b^2*d^2*e*f - a*b^2*d*f^2)*x)*cosh(d*x + c)^3 + 18*(4*a^2*b + 3*b^
3)*f^2 - 54*((4*a^2*b + 3*b^3)*d^2*f^2*x^2 + (4*a^2*b + 3*b^3)*d^2*e^2 - 2*
(4*a^2*b + 3*b^3)*d*e*f + 2*(4*a^2*b + 3*b^3)*f^2 + 2*((4*a^2*b + 3*b^3)*d^
2*e*f - (4*a^2*b + 3*b^3)*d*f^2)*x)*cosh(d*x + c)^2 + 18*((4*a^2*b + 3*b^3)
*d^2*e*f + (4*a^2*b + 3*b^3)*d*f^2)*x - 72*((a^3 + a*b^2)*d^3*f^2*x^3 + 3*(
a^3 + a*b^2)*d^3*e*f*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*x + 6*(a^3 + a*b^2)*c*d^
2*e^2 - 6*(a^3 + a*b^2)*c^2*d*e*f + 2*(a^3 + a*b^2)*c^3*f^2)*cosh(d*x + c))
*sinh(d*x + c)^2 + 12*(3*b^3*d^2*e*f + b^3*d*f^2)*x + 27*(2*a*b^2*d^2*f^2*x
^2 + 2*a*b^2*d^2*e^2 + 2*a*b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f + a*b
^2*d*f^2)*x)*cosh(d*x + c) + 864*(((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*d*
e*f)*cosh(d*x + c)^3 + 3*((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*d*e*f)*cosh
(d*x + c)^2*sinh(d*x + c) + 3*((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*d*e*f)
*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*d*e
*f)*sinh(d*x + c)^3)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x
 + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 864*(((a^3 + a
*b^2)*d*f^2*x + (a^3 + a*b^2)*d*e*f)*cosh(d*x + c)^3 + 3*((a^3 + a*b^2)*d*f
^2*x + (a^3 + a*b^2)*d*e*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*((a^3 + a*b^2
)*d*f^2*x + (a^3 + a*b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^3 + a*
b^2)*d*f^2*x + (a^3 + a*b^2)*d*e*f)*sinh(d*x + c)^3)*dilog((a*cosh(d*x + c)
 + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2) - b)/b + 1) + 432*(((a^3 + a*b^2)*d^2*e^2 - 2*(a^3 + a*b^2)*c*d*e*f + (
a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c)^3 + 3*((a^3 + a*b^2)*d^2*e^2 - 2*(a^3 +
 a*b^2)*c*d*e*f + (a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*
((a^3 + a*b^2)*d^2*e^2 - 2*(a^3 + a*b^2)*c*d*e*f + (a^3 + a*b^2)*c^2*f^2)*c
osh(d*x + c)*sinh(d*x + c)^2 + ((a^3 + a*b^2)*d^2*e^2 - 2*(a^3 + a*b^2)*c*d
*e*f + (a^3 + a*b^2)*c^2*f^2)*sinh(d*x + c)^3)*log(2*b*cosh(d*x + c) + 2*b*
sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 432*(((a^3 + a*b^2)*d^2*
e^2 - 2*(a^3 + a*b^2)*c*d*e*f + (a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c)^3 + 3*
((a^3 + a*b^2)*d^2*e^2 - 2*(a^3 + a*b^2)*c*d*e*f + (a^3 + a*b^2)*c^2*f^2)*c
osh(d*x + c)^2*sinh(d*x + c) + 3*((a^3 + a*b^2)*d^2*e^2 - 2*(a^3 + a*b^2)*c
*d*e*f + (a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^3 + a*b
^2)*d^2*e^2 - 2*(a^3 + a*b^2)*c*d*e*f + (a^3 + a*b^2)*c^2*f^2)*sinh(d*x + c
)^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2)
+ 2*a) + 432*(((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a
^3 + a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c)^3 + 3*((a^3 + a*
b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a
^3 + a*b^2)*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*((a^3 + a*b^2)*d^2*f
^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3 + a*b^2
)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(
a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*s
inh(d*x + c)^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)

```
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 432*(((a^3 + a*b^2)*d^2*
f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3 + a*b^
2)*c^2*f^2)*cosh(d*x + c)^3 + 3*((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2
)*d^2*e*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c
)^2*sinh(d*x + c) + 3*((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*
x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x
 + c)^2 + ((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 +
 a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*sinh(d*x + c)^3)*log(-(a*cosh(d*x
+ c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^
2)/b^2) - b)/b) - 864*((a^3 + a*b^2)*f^2*cosh(d*x + c)^3 + 3*(a^3 + a*b^2)*
f^2*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3 + a*b^2)*f^2*cosh(d*x + c)*sinh(
d*x + c)^2 + (a^3 + a*b^2)*f^2*sinh(d*x + c)^3)*polylog(3, (a*cosh(d*x + c)
 + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2))/b) - 864*((a^3 + a*b^2)*f^2*cosh(d*x + c)^3 + 3*(a^3 + a*b^2)*f^2*cosh
(d*x + c)^2*sinh(d*x + c) + 3*(a^3 + a*b^2)*f^2*cosh(d*x + c)*sinh(d*x + c)
^2 + (a^3 + a*b^2)*f^2*sinh(d*x + c)^3)*polylog(3, (a*cosh(d*x + c) + a*sin
h(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b)
+ 3*(18*a*b^2*d^2*f^2*x^2 + 18*a*b^2*d^2*e^2 + 18*a*b^2*d*e*f - 4*(9*b^3*d^
2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^
3*d*f^2)*x)*cosh(d*x + c)^5 + 9*a*b^2*f^2 + 45*(2*a*b^2*d^2*f^2*x^2 + 2*a*b
^2*d^2*e^2 - 2*a*b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f - a*b^2*d*f^2)*
x)*cosh(d*x + c)^4 - 72*((4*a^2*b + 3*b^3)*d^2*f^2*x^2 + (4*a^2*b + 3*b^3)*
d^2*e^2 - 2*(4*a^2*b + 3*b^3)*d*e*f + 2*(4*a^2*b + 3*b^3)*f^2 + 2*((4*a^2*b
 + 3*b^3)*d^2*e*f - (4*a^2*b + 3*b^3)*d*f^2)*x)*cosh(d*x + c)^3 - 144*((a^3
 + a*b^2)*d^3*f^2*x^3 + 3*(a^3 + a*b^2)*d^3*e*f*x^2 + 3*(a^3 + a*b^2)*d^3*e
^2*x + 6*(a^3 + a*b^2)*c*d^2*e^2 - 6*(a^3 + a*b^2)*c^2*d*e*f + 2*(a^3 + a*b
^2)*c^3*f^2)*cosh(d*x + c)^2 + 18*(2*a*b^2*d^2*e*f + a*b^2*d*f^2)*x + 36*((
4*a^2*b + 3*b^3)*d^2*f^2*x^2 + (4*a^2*b + 3*b^3)*d^2*e^2 + 2*(4*a^2*b + 3*b
^3)*d*e*f + 2*(4*a^2*b + 3*b^3)*f^2 + 2*((4*a^2*b + 3*b^3)*d^2*e*f + (4*a^2
*b + 3*b^3)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^4*d^3*cosh(d*x + c)^
3 + 3*b^4*d^3*cosh(d*x + c)^2*sinh(d*x + c) + 3*b^4*d^3*cosh(d*x + c)*sinh(
d*x + c)^2 + b^4*d^3*sinh(d*x + c)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \cosh\left(dx+c\right)^3 \sinh\left(dx+c\right)}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)^3*sinh(d*x + c)/(b*sinh(d*x + c) + a),
x)
```

maple [F] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \left(\cosh^3(dx+c)\right) \sinh(dx+c)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/24*e^2*((3*a*b*e^(-d*x - c) - b^2 - 3*(4*a^2 + 3*b^2)*e^(-2*d*x - 2*c))*
e^(3*d*x + 3*c)/(b^3*d) + 24*(a^3 + a*b^2)*(d*x + c)/(b^4*d) + (3*a*b*e^(-2
*d*x - 2*c) + b^2*e^(-3*d*x - 3*c) + 3*(4*a^2 + 3*b^2)*e^(-d*x - c))/(b^3*d
) + 24*(a^3 + a*b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^4*d
)) - 1/432*(144*(a^3*d^3*f^2*e^(3*c) + a*b^2*d^3*f^2*e^(3*c))*x^3 + 432*(a^
3*d^3*e*f*e^(3*c) + a*b^2*d^3*e*f*e^(3*c))*x^2 - 2*(9*b^3*d^2*f^2*x^2*e^(6*
c) + 6*(3*d^2*e*f - d*f^2)*b^3*x*e^(6*c) - 2*(3*d*e*f - f^2)*b^3*e^(6*c))*e
^(3*d*x) + 27*(2*a*b^2*d^2*f^2*x^2*e^(5*c) + 2*(2*d^2*e*f - d*f^2)*a*b^2*x*
e^(5*c) - (2*d*e*f - f^2)*a*b^2*e^(5*c))*e^(2*d*x) + 54*(8*(d*e*f - f^2)*a^
2*b*e^(4*c) + 6*(d*e*f - f^2)*b^3*e^(4*c) - (4*a^2*b*d^2*f^2*e^(4*c) + 3*b^
3*d^2*f^2*e^(4*c))*x^2 - 2*(4*(d^2*e*f - d*f^2)*a^2*b*e^(4*c) + 3*(d^2*e*f
- d*f^2)*b^3*e^(4*c))*x)*e^(d*x) + 54*(8*(d*e*f + f^2)*a^2*b*e^(2*c) + 6*(d
*e*f + f^2)*b^3*e^(2*c) + (4*a^2*b*d^2*f^2*e^(2*c) + 3*b^3*d^2*f^2*e^(2*c))
*x^2 + 2*(4*(d^2*e*f + d*f^2)*a^2*b*e^(2*c) + 3*(d^2*e*f + d*f^2)*b^3*e^(2*
c))*x)*e^(-d*x) + 27*(2*a*b^2*d^2*f^2*x^2*e^c + 2*(2*d^2*e*f + d*f^2)*a*b^2
*x*e^c + (2*d*e*f + f^2)*a*b^2*e^c)*e^(-2*d*x) + 2*(9*b^3*d^2*f^2*x^2 + 6*(
3*d^2*e*f + d*f^2)*b^3*x + 2*(3*d*e*f + f^2)*b^3)*e^(-3*d*x))*e^(-3*c)/(b^4
*d^3) + integrate(-2*((a^3*b*f^2 + a*b^3*f^2)*x^2 + 2*(a^3*b*e*f + a*b^3*e*
f)*x - ((a^4*f^2*e^c + a^2*b^2*f^2*e^c)*x^2 + 2*(a^4*e*f*e^c + a^2*b^2*e*f*
e^c)*x)*e^(d*x))/(b^5*e^(2*d*x + 2*c) + 2*a*b^4*e^(d*x + c) - b^5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)^3\,\sinh(c+d\,x)\,\left(e+f\,x\right)^2}{a+b\,\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((cosh(c + d*x)^3*sinh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)

[Out] int((cosh(c + d*x)^3*sinh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)**2*cosh(d*x+c)**3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)

[Out] Timed out

3.345 $\int \frac{(e+fx)\cosh^3(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=400

$$-\frac{a^2f\cosh(c+dx)}{b^3d^2}+\frac{a^2(e+fx)\sinh(c+dx)}{b^3d}-\frac{af\left(a^2+b^2\right)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{af\left(a^2+b^2\right)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{a(a\cdots}{\cdots}$$

```
[Out] -1/4*a*f*x/b^2/d+1/2*a*(a^2+b^2)*(f*x+e)^2/b^4/f-a^2*f*cosh(d*x+c)/b^3/d^2-
2/3*f*cosh(d*x+c)/b/d^2-1/9*f*cosh(d*x+c)^3/b/d^2-a*(a^2+b^2)*(f*x+e)*ln(1+
b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d-a*(a^2+b^2)*(f*x+e)*ln(1+b*exp(d*x+
c)/(a+(a^2+b^2)^(1/2)))/b^4/d-a*(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/(a-(a^2
+b^2)^(1/2)))/b^4/d^2-a*(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1
/2)))/b^4/d^2+a^2*(f*x+e)*sinh(d*x+c)/b^3/d+2/3*(f*x+e)*sinh(d*x+c)/b/d+1/4
*a*f*cosh(d*x+c)*sinh(d*x+c)/b^2/d^2+1/3*(f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)/
b/d-1/2*a*(f*x+e)*sinh(d*x+c)^2/b^2/d
```

Rubi [A] time = 0.48, antiderivative size = 400, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {5579, 3310, 3296, 2638, 5565, 5446, 2635, 8, 5561, 2190, 2279, 2391}

$$-\frac{af\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{af\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^4d^2}-\frac{a^2f\cosh(c+dx)}{b^3d^2}-\frac{a\left(a^2+b^2\right)(e\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^3*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a*f*x)/(4*b^2*d) + (a*(a^2 + b^2)*(e + f*x)^2)/(2*b^4*f) - (a^2*f*Cosh[c
+ d*x])/(b^3*d^2) - (2*f*Cosh[c + d*x])/(3*b*d^2) - (f*Cosh[c + d*x]^3)/(9*
b*d^2) - (a*(a^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b
^2])])/(b^4*d) - (a*(a^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2])])/(b^4*d) - (a*(a^2 + b^2)*f*PolyLog[2, -((b*E^(c + d*x))/(a -
 Sqrt[a^2 + b^2]))])/(b^4*d^2) - (a*(a^2 + b^2)*f*PolyLog[2, -((b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2]))])/(b^4*d^2) + (a^2*(e + f*x)*Sinh[c + d*x])/(b^3
*d) + (2*(e + f*x)*Sinh[c + d*x])/(3*b*d) + (a*f*Cosh[c + d*x]*Sinh[c + d*x
])/(4*b^2*d^2) + ((e + f*x)*Cosh[c + d*x]^2*Sinh[c + d*x])/(3*b*d) - (a*(e
+ f*x)*Sinh[c + d*x]^2)/(2*b^2*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh^3(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh^3(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{f\cosh^3(c+dx)}{9bd^2} + \frac{(e+fx)\cosh^2(c+dx)\sinh(c+dx)}{3bd} + \frac{a^2\int(e+$$

$$= \frac{a\left(a^2+b^2\right)(e+fx)^2}{2b^4f} - \frac{f\cosh^3(c+dx)}{9bd^2} + \frac{a^2(e+fx)\sinh(c+dx)}{b^3d} +$$

$$= \frac{a\left(a^2+b^2\right)(e+fx)^2}{2b^4f} - \frac{a^2f\cosh(c+dx)}{b^3d^2} - \frac{2f\cosh(c+dx)}{3bd^2} - \frac{f\cos$$

$$= -\frac{afx}{4b^2d} + \frac{a\left(a^2+b^2\right)(e+fx)^2}{2b^4f} - \frac{a^2f\cosh(c+dx)}{b^3d^2} - \frac{2f\cosh(c+dx}{3bd^2}$$

$$= -\frac{afx}{4b^2d} + \frac{a\left(a^2+b^2\right)(e+fx)^2}{2b^4f} - \frac{a^2f\cosh(c+dx)}{b^3d^2} - \frac{2f\cosh(c+dx}{3bd^2}$$

Mathematica [A] time = 2.76, size = 551, normalized size = 1.38

$$-\frac{36b^2f\left(a\left(\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)+(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)-c\log}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]^3*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] -1/72*(-36*b^2*d*e*(-(a*Log[a + b*Sinh[c + d*x]]) + b*Sinh[c + d*x]) + 36*b
^2*f*(b*Cosh[c + d*x] + a*(-1/2*(c + d*x)^2 + (c + d*x)*Log[1 + (b*E^(c + d
*x))/(a - Sqrt[a^2 + b^2])] + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a
^2 + b^2])] - c*Log[a + b*Sinh[c + d*x]] + PolyLog[2, (b*E^(c + d*x))/(-a +
 Sqrt[a^2 + b^2])] + PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])
- b*d*x*Sinh[c + d*x]) + 12*d*e*(3*a*(2*a^2 + b^2)*Log[a + b*Sinh[c + d*x]]
 - 3*b*(2*a^2 + b^2)*Sinh[c + d*x] + 3*a*b^2*Sinh[c + d*x]^2 - 2*b^3*Sinh[c
 + d*x]^3) + f*(18*b*(4*a^2 + b^2)*Cosh[c + d*x] + 18*a*b^2*d*x*Cosh[2*(c +
 d*x)] + 2*b^3*Cosh[3*(c + d*x)] + 36*a*(2*a^2 + b^2)*(-1/2*(c + d*x)^2 + (
c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + (c + d*x)*Log[1 +
 (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - c*Log[a + b*Sinh[c + d*x]] + Poly
```

```
Log[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + PolyLog[2, -((b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2]))]]) - 18*b*(4*a^2 + b^2)*d*x*Sinh[c + d*x] - 9*a*b^
2*Sinh[2*(c + d*x)] - 6*b^3*d*x*Sinh[3*(c + d*x)]))/(b^4*d^2)
```

fricas [B] time = 0.55, size = 2465, normalized size = 6.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] 1/144*(2*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^6 + 2*(3*b^3*d*f*x
 + 3*b^3*d*e - b^3*f)*sinh(d*x + c)^6 - 6*b^3*d*f*x - 9*(2*a*b^2*d*f*x + 2*
a*b^2*d*e - a*b^2*f)*cosh(d*x + c)^5 - 3*(6*a*b^2*d*f*x + 6*a*b^2*d*e - 3*a
*b^2*f - 4*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c))*sinh(d*x + c)^5
 - 6*b^3*d*e + 18*((4*a^2*b + 3*b^3)*d*f*x + (4*a^2*b + 3*b^3)*d*e - (4*a^2
*b + 3*b^3)*f)*cosh(d*x + c)^4 + 3*(6*(4*a^2*b + 3*b^3)*d*f*x + 6*(4*a^2*b
+ 3*b^3)*d*e + 10*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^2 - 6*(4*
a^2*b + 3*b^3)*f - 15*(2*a*b^2*d*f*x + 2*a*b^2*d*e - a*b^2*f)*cosh(d*x + c)
)*sinh(d*x + c)^4 - 2*b^3*f + 72*((a^3 + a*b^2)*d^2*f*x^2 + 2*(a^3 + a*b^2)
*d^2*e*x + 4*(a^3 + a*b^2)*c*d*e - 2*(a^3 + a*b^2)*c^2*f)*cosh(d*x + c)^3 +
 2*(36*(a^3 + a*b^2)*d^2*f*x^2 + 72*(a^3 + a*b^2)*d^2*e*x + 144*(a^3 + a*b^
2)*c*d*e - 72*(a^3 + a*b^2)*c^2*f + 20*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*co
sh(d*x + c)^3 - 45*(2*a*b^2*d*f*x + 2*a*b^2*d*e - a*b^2*f)*cosh(d*x + c)^2
+ 36*((4*a^2*b + 3*b^3)*d*f*x + (4*a^2*b + 3*b^3)*d*e - (4*a^2*b + 3*b^3)*f
)*cosh(d*x + c))*sinh(d*x + c)^3 - 18*((4*a^2*b + 3*b^3)*d*f*x + (4*a^2*b +
 3*b^3)*d*e + (4*a^2*b + 3*b^3)*f)*cosh(d*x + c)^2 + 6*(5*(3*b^3*d*f*x + 3*
b^3*d*e - b^3*f)*cosh(d*x + c)^4 - 3*(4*a^2*b + 3*b^3)*d*f*x - 15*(2*a*b^2*
d*f*x + 2*a*b^2*d*e - a*b^2*f)*cosh(d*x + c)^3 - 3*(4*a^2*b + 3*b^3)*d*e +
18*((4*a^2*b + 3*b^3)*d*f*x + (4*a^2*b + 3*b^3)*d*e - (4*a^2*b + 3*b^3)*f)*
cosh(d*x + c)^2 - 3*(4*a^2*b + 3*b^3)*f + 36*((a^3 + a*b^2)*d^2*f*x^2 + 2*(
a^3 + a*b^2)*d^2*e*x + 4*(a^3 + a*b^2)*c*d*e - 2*(a^3 + a*b^2)*c^2*f)*cosh(
d*x + c))*sinh(d*x + c)^2 - 9*(2*a*b^2*d*f*x + 2*a*b^2*d*e + a*b^2*f)*cosh(
d*x + c) - 144*((a^3 + a*b^2)*f*cosh(d*x + c)^3 + 3*(a^3 + a*b^2)*f*cosh(d*
x + c)^2*sinh(d*x + c) + 3*(a^3 + a*b^2)*f*cosh(d*x + c)*sinh(d*x + c)^2 +
(a^3 + a*b^2)*f*sinh(d*x + c)^3)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) +
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 14
4*((a^3 + a*b^2)*f*cosh(d*x + c)^3 + 3*(a^3 + a*b^2)*f*cosh(d*x + c)^2*sinh
(d*x + c) + 3*(a^3 + a*b^2)*f*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3 + a*b^2)
*f*sinh(d*x + c)^3)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 144*(((a^3 + a*
b^2)*d*e - (a^3 + a*b^2)*c*f)*cosh(d*x + c)^3 + 3*((a^3 + a*b^2)*d*e - (a^3
 + a*b^2)*c*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*((a^3 + a*b^2)*d*e - (a^3
+ a*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^3 + a*b^2)*d*e - (a^3 + a
```

```
*b^2)*c*f)*sinh(d*x + c)^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b
*sqrt((a^2 + b^2)/b^2) + 2*a) - 144*(((a^3 + a*b^2)*d*e - (a^3 + a*b^2)*c*f
)*cosh(d*x + c)^3 + 3*((a^3 + a*b^2)*d*e - (a^3 + a*b^2)*c*f)*cosh(d*x + c)
^2*sinh(d*x + c) + 3*((a^3 + a*b^2)*d*e - (a^3 + a*b^2)*c*f)*cosh(d*x + c)*
sinh(d*x + c)^2 + ((a^3 + a*b^2)*d*e - (a^3 + a*b^2)*c*f)*sinh(d*x + c)^3)*
log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a
) - 144*(((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*c*f)*cosh(d*x + c)^3 + 3*((a^
3 + a*b^2)*d*f*x + (a^3 + a*b^2)*c*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*((a
^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^2 + ((a^
3 + a*b^2)*d*f*x + (a^3 + a*b^2)*c*f)*sinh(d*x + c)^3)*log(-(a*cosh(d*x + c
) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2) - b)/b) - 144*(((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*c*f)*cosh(d*x + c)
^3 + 3*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*c*f)*cosh(d*x + c)^2*sinh(d*x +
 c) + 3*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*c*f)*cosh(d*x + c)*sinh(d*x +
c)^2 + ((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*c*f)*sinh(d*x + c)^3)*log(-(a*c
osh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((
a^2 + b^2)/b^2) - b)/b) - 3*(6*a*b^2*d*f*x - 4*(3*b^3*d*f*x + 3*b^3*d*e - b
^3*f)*cosh(d*x + c)^5 + 6*a*b^2*d*e + 15*(2*a*b^2*d*f*x + 2*a*b^2*d*e - a*b
^2*f)*cosh(d*x + c)^4 + 3*a*b^2*f - 24*((4*a^2*b + 3*b^3)*d*f*x + (4*a^2*b
+ 3*b^3)*d*e - (4*a^2*b + 3*b^3)*f)*cosh(d*x + c)^3 - 72*((a^3 + a*b^2)*d^2
*f*x^2 + 2*(a^3 + a*b^2)*d^2*e*x + 4*(a^3 + a*b^2)*c*d*e - 2*(a^3 + a*b^2)*
c^2*f)*cosh(d*x + c)^2 + 12*((4*a^2*b + 3*b^3)*d*f*x + (4*a^2*b + 3*b^3)*d*
e + (4*a^2*b + 3*b^3)*f)*cosh(d*x + c))*sinh(d*x + c))/(b^4*d^2*cosh(d*x +
c)^3 + 3*b^4*d^2*cosh(d*x + c)^2*sinh(d*x + c) + 3*b^4*d^2*cosh(d*x + c)*si
nh(d*x + c)^2 + b^4*d^2*sinh(d*x + c)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cosh(dx+c)^3\sinh(dx+c)}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)^3*sinh(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.18, size = 1102, normalized size = 2.76

$$-\frac{a^3 e x}{b^4}-\frac{a e x}{b^2}+\frac{a^3 f c\ln\left(b\,\mathrm{e}^{2dx+2c}+2a\,\mathrm{e}^{dx+c}-b\right)}{d^2 b^4}-\frac{2a^3 f c\ln\left(\mathrm{e}^{dx+c}\right)}{d^2 b^4}+\frac{2a^3 f c x}{d\,b^4}-\frac{a^3 f\ln\left(\frac{-b\,\mathrm{e}^{dx+c}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{d\,b^4}-\frac{a^3 f\ln\Big(\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -a^3*e*x/b^4-a*e*x/b^2+1/d^2*a^3/b^4*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)
-b)-2/d^2*a^3/b^4*f*c*ln(exp(d*x+c))+2/d*a^3/b^4*f*c*x-1/d*a^3/b^4*f*ln((-b
*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a^3/b^4*f*ln((
-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a^3/b^4*f*ln((
b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*a^3/b^4*f*ln((
b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/2*a*f*x^2/b^2+1/72
*(3*d*f*x+3*d*e-f)/b/d^2*exp(3*d*x+3*c)-1/72*(3*d*f*x+3*d*e+f)/b/d^2*exp(-3
*d*x-3*c)+1/8*(4*a^2*d*f*x+3*b^2*d*f*x+4*a^2*d*e+3*b^2*d*e-4*a^2*f-3*b^2*f)
/b^3/d^2*exp(d*x+c)+2/d*a/b^2*f*c*x+1/d^2*a/b^2*f*c*ln(b*exp(2*d*x+2*c)+2*a
*exp(d*x+c)-b)-2/d^2*a/b^2*f*c*ln(exp(d*x+c))-1/d*a/b^2*f*ln((-b*exp(d*x+c)
+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a/b^2*f*ln((-b*exp(d*x+c)
+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a/b^2*f*ln((b*exp(d*x+c)+(a
^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*a/b^2*f*ln((b*exp(d*x+c)+(a^2
+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/2*a^3*f*x^2/b^4+1/d^2*a/b^2*f*c^2-1
/d*a/b^2*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d*a/b^2*e*ln(exp(d*x+c))
-1/d^2*a/b^2*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-
1/d^2*a/b^2*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))
-1/16*a*(2*d*f*x+2*d*e-f)/b^2/d^2*exp(2*d*x+2*c)-1/8*(4*a^2+3*b^2)*(d*f*x+d
*e+f)/b^3/d^2*exp(-d*x-c)-1/16*a*(2*d*f*x+2*d*e+f)/b^2/d^2*exp(-2*d*x-2*c)+
1/d^2*a^3/b^4*f*c^2-1/d^2*a^3/b^4*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/
(a+(a^2+b^2)^(1/2)))-1/d^2*a^3/b^4*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a
)/(-a+(a^2+b^2)^(1/2)))-1/d*a^3/b^4*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)
+2/d*a^3/b^4*e*ln(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{24}e\left(\frac{\left(3\,abe^{(-dx-c)}-b^2-3\left(4\,a^2+3\,b^2\right)e^{(-2\,dx-2\,c)}\right)e^{(3\,dx+3\,c)}}{b^3d}+\frac{24\left(a^3+ab^2\right)(dx+c)}{b^4d}+\frac{3\,abe^{(-2\,dx-2\,c)}+b^2e^{(-3\,dx}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/24*e*((3*a*b*e^(-d*x - c) - b^2 - 3*(4*a^2 + 3*b^2)*e^(-2*d*x - 2*c))*e^
(3*d*x + 3*c)/(b^3*d) + 24*(a^3 + a*b^2)*(d*x + c)/(b^4*d) + (3*a*b*e^(-2*d
*x - 2*c) + b^2*e^(-3*d*x - 3*c) + 3*(4*a^2 + 3*b^2)*e^(-d*x - c))/(b^3*d)
+ 24*(a^3 + a*b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^4*d))
 - 1/144*f*((72*(a^3*d^2*e^(3*c) + a*b^2*d^2*e^(3*c))*x^2 - 2*(3*b^3*d*x*e^
(6*c) - b^3*e^(6*c))*e^(3*d*x) + 9*(2*a*b^2*d*x*e^(5*c) - a*b^2*e^(5*c))*e^
(2*d*x) + 18*(4*a^2*b*e^(4*c) + 3*b^3*e^(4*c) - (4*a^2*b*d*e^(4*c) + 3*b^3*
d*e^(4*c))*x)*e^(d*x) + 18*(4*a^2*b*e^(2*c) + 3*b^3*e^(2*c) + (4*a^2*b*d*e^
(2*c) + 3*b^3*d*e^(2*c))*x)*e^(-d*x) + 9*(2*a*b^2*d*x*e^c + a*b^2*e^c)*e^(-
2*d*x) + 2*(3*b^3*d*x + b^3)*e^(-3*d*x))*e^(-3*c)/(b^4*d^2) - 9*integrate(3
```

```
2*((a^4*e^c + a^2*b^2*e^c)*x*e^(d*x) - (a^3*b + a*b^3)*x)/(b^5*e^(2*d*x + 2
*c) + 2*a*b^4*e^(d*x + c) - b^5), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+dx)^3 \sinh(c+dx) \left(e+fx\right)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^3*sinh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.346 $\int \frac{\cosh^3(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=85

$$-\frac{a\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{b^4d}+\frac{\left(a^2+b^2\right)\sinh(c+dx)}{b^3d}-\frac{a\sinh^2(c+dx)}{2b^2d}+\frac{\sinh^3(c+dx)}{3bd}$$

```
[Out] -a*(a^2+b^2)*ln(a+b*sinh(d*x+c))/b^4/d+(a^2+b^2)*sinh(d*x+c)/b^3/d-1/2*a*si
nh(d*x+c)^2/b^2/d+1/3*sinh(d*x+c)^3/b/d
```

Rubi [A] time = 0.12, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2837, 12, 772}

$$\frac{\left(a^2+b^2\right)\sinh(c+dx)}{b^3d}-\frac{a\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{b^4d}-\frac{a\sinh^2(c+dx)}{2b^2d}+\frac{\sinh^3(c+dx)}{3bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]^3*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*(a^2 + b^2)*Log[a + b*Sinh[c + d*x]])/(b^4*d)) + ((a^2 + b^2)*Sinh[c +
 d*x])/(b^3*d) - (a*Sinh[c + d*x]^2)/(2*b^2*d) + Sinh[c + d*x]^3/(3*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\cosh^3(c+dx)\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\text{Subst}\left(\int \frac{x(-b^2-x^2)}{b(a+x)}\,dx, x, b\sinh(c+dx)\right)}{b^3d}$$
$$= -\frac{\text{Subst}\left(\int \frac{x(-b^2-x^2)}{a+x}\,dx, x, b\sinh(c+dx)\right)}{b^4d}$$
$$= -\frac{\text{Subst}\left(\int \left(-a^2\left(1+\frac{b^2}{a^2}\right)+ax-x^2+\frac{a(a^2+b^2)}{a+x}\right)dx, x, b\sinh(c+dx)\right)}{b^4d}$$
$$= -\frac{a\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{b^4d}+\frac{\left(a^2+b^2\right)\sinh(c+dx)}{b^3d}-\frac{a\sinh^2(c+$$

Mathematica [A] time = 0.16, size = 75, normalized size = 0.88

$$\frac{6b\left(a^2+b^2\right)\sinh(c+dx)-6a\left(a^2+b^2\right)\log(a+b\sinh(c+dx))-3ab^2\sinh^2(c+dx)+2b^3\sinh^3(c+dx)}{6b^4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]^3*Sinh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-6*a*(a^2 + b^2)*Log[a + b*Sinh[c + d*x]] + 6*b*(a^2 + b^2)*Sinh[c + d*x]
- 3*a*b^2*Sinh[c + d*x]^2 + 2*b^3*Sinh[c + d*x]^3)/(6*b^4*d)
```

fricas [B] time = 0.43, size = 652, normalized size = 7.67

$$b^3\cosh(dx+c)^6+b^3\sinh(dx+c)^6-3\,ab^2\cosh(dx+c)^5+24\left(a^3+ab^2\right)dx\cosh(dx+c)^3+3\left(2\,b^3\cosh(dx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/24*(b^3*cosh(d*x + c)^6 + b^3*sinh(d*x + c)^6 - 3*a*b^2*cosh(d*x + c)^5 +
 24*(a^3 + a*b^2)*d*x*cosh(d*x + c)^3 + 3*(2*b^3*cosh(d*x + c) - a*b^2)*sin
h(d*x + c)^5 + 3*(4*a^2*b + 3*b^3)*cosh(d*x + c)^4 + 3*(5*b^3*cosh(d*x + c)
^2 - 5*a*b^2*cosh(d*x + c) + 4*a^2*b + 3*b^3)*sinh(d*x + c)^4 - 3*a*b^2*cos
h(d*x + c) + 2*(10*b^3*cosh(d*x + c)^3 - 15*a*b^2*cosh(d*x + c)^2 + 12*(a^3
 + a*b^2)*d*x + 6*(4*a^2*b + 3*b^3)*cosh(d*x + c))*sinh(d*x + c)^3 - b^3 -
```

```
3*(4*a^2*b + 3*b^3)*cosh(d*x + c)^2 + 3*(5*b^3*cosh(d*x + c)^4 - 10*a*b^2*c
osh(d*x + c)^3 + 24*(a^3 + a*b^2)*d*x*cosh(d*x + c) - 4*a^2*b - 3*b^3 + 6*(
4*a^2*b + 3*b^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 - 24*((a^3 + a*b^2)*cosh(
d*x + c)^3 + 3*(a^3 + a*b^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3 + a*b^2
)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3 + a*b^2)*sinh(d*x + c)^3)*log(2*(b*s
inh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) + 3*(2*b^3*cosh(d*x + c)
^5 - 5*a*b^2*cosh(d*x + c)^4 + 24*(a^3 + a*b^2)*d*x*cosh(d*x + c)^2 + 4*(4*
a^2*b + 3*b^3)*cosh(d*x + c)^3 - a*b^2 - 2*(4*a^2*b + 3*b^3)*cosh(d*x + c))
*sinh(d*x + c))/(b^4*d*cosh(d*x + c)^3 + 3*b^4*d*cosh(d*x + c)^2*sinh(d*x +
 c) + 3*b^4*d*cosh(d*x + c)*sinh(d*x + c)^2 + b^4*d*sinh(d*x + c)^3)
```

giac [A] time = 0.19, size = 145, normalized size = 1.71

$$\frac{\frac{b^2\left(e^{(dx+c)}-e^{(-dx-c)}\right)^3-3\,ab\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+12\,a^2\left(e^{(dx+c)}-e^{(-dx-c)}\right)+12\,b^2\left(e^{(dx+c)}-e^{(-dx-c)}\right)}{b^3}-\frac{24\left(a^3+ab^2\right)\log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{b^4}}{24\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/24*((b^2*(e^(d*x + c) - e^(-d*x - c))^3 - 3*a*b*(e^(d*x + c) - e^(-d*x -
c))^2 + 12*a^2*(e^(d*x + c) - e^(-d*x - c)) + 12*b^2*(e^(d*x + c) - e^(-d*x
 - c)))/b^3 - 24*(a^3 + a*b^2)*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a
))/b^4)/d
```

maple [B] time = 0.07, size = 428, normalized size = 5.04

$$-\frac{1}{3db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^3}-\frac{a}{2d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2}-\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^2}-\frac{a^2}{d\,b^3\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/3/d/b/(tanh(1/2*d*x+1/2*c)-1)^3-1/2/d/b^2/(tanh(1/2*d*x+1/2*c)-1)^2*a-1/
2/d/b/(tanh(1/2*d*x+1/2*c)-1)^2-1/d/b^3/(tanh(1/2*d*x+1/2*c)-1)*a^2-1/2/d/b
^2/(tanh(1/2*d*x+1/2*c)-1)*a-1/d/b/(tanh(1/2*d*x+1/2*c)-1)+1/d*a^3/b^4*ln(t
anh(1/2*d*x+1/2*c)-1)+1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)-1)-1/3/d/b/(tanh(1/2
*d*x+1/2*c)+1)^3+1/2/d/b/(tanh(1/2*d*x+1/2*c)+1)^2-1/2/d/b^2/(tanh(1/2*d*x+
1/2*c)+1)^2*a-1/d/b^3/(tanh(1/2*d*x+1/2*c)+1)*a^2+1/2/d/b^2/(tanh(1/2*d*x+1
/2*c)+1)*a-1/d/b/(tanh(1/2*d*x+1/2*c)+1)+1/d*a^3/b^4*ln(tanh(1/2*d*x+1/2*c)
+1)+1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)+1)-1/d*a^3/b^4*ln(tanh(1/2*d*x+1/2*c)^
2*a-2*tanh(1/2*d*x+1/2*c)*b-a)-1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(
1/2*d*x+1/2*c)*b-a)
```

maxima [B] time = 0.33, size = 183, normalized size = 2.15

$$-\frac{\left(3\,abe^{(-dx-c)}-b^2-3\left(4\,a^2+3\,b^2\right)e^{(-2\,dx-2\,c)}\right)e^{(3\,dx+3\,c)}}{24\,b^3d}-\frac{\left(a^3+ab^2\right)(dx+c)}{b^4d}-\frac{3\,abe^{(-2\,dx-2\,c)}+b^2e^{(-3\,dx-3\,c)}+3\left(4\,a\right.}{24\,b^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -1/24*(3*a*b*e^(-d*x - c) - b^2 - 3*(4*a^2 + 3*b^2)*e^(-2*d*x - 2*c))*e^(3*
d*x + 3*c)/(b^3*d) - (a^3 + a*b^2)*(d*x + c)/(b^4*d) - 1/24*(3*a*b*e^(-2*d*
x - 2*c) + b^2*e^(-3*d*x - 3*c) + 3*(4*a^2 + 3*b^2)*e^(-d*x - c))/(b^3*d) -
 (a^3 + a*b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^4*d)
```

mupad [B] time = 0.43, size = 180, normalized size = 2.12

$$\frac{x\left(a^3+a\,b^2\right)}{b^4}-\frac{\mathrm{e}^{-3\,c-3\,d\,x}}{24\,b\,d}+\frac{\mathrm{e}^{3\,c+3\,d\,x}}{24\,b\,d}-\frac{a\,\mathrm{e}^{-2\,c-2\,d\,x}}{8\,b^2\,d}-\frac{a\,\mathrm{e}^{2\,c+2\,d\,x}}{8\,b^2\,d}-\frac{\mathrm{e}^{-c-d\,x}\left(4\,a^2+3\,b^2\right)}{8\,b^3\,d}-\frac{\ln\left(2\,a\,\mathrm{e}^{d\,x}\,\mathrm{e}^{c}-b+b\,\mathrm{e}^{2\,c}\,\mathrm{e}^{2\,d\,x}\right)\left(\right.}{b^4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] (x*(a*b^2 + a^3))/b^4 - exp(- 3*c - 3*d*x)/(24*b*d) + exp(3*c + 3*d*x)/(24*
b*d) - (a*exp(- 2*c - 2*d*x))/(8*b^2*d) - (a*exp(2*c + 2*d*x))/(8*b^2*d) -
(exp(- c - d*x)*(4*a^2 + 3*b^2))/(8*b^3*d) - (log(2*a*exp(d*x)*exp(c) - b +
 b*exp(2*c)*exp(2*d*x))*(a*b^2 + a^3))/(b^4*d) + (exp(c + d*x)*(4*a^2 + 3*b
^2))/(8*b^3*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**3*sinh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.347 $\int \frac{\cosh^3(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{\sinh(c+dx)\cosh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)^3*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh^3(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]^3*Sinh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]^3*Sinh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\cosh^3(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\cosh^3(c+dx)\sinh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]^3*Sinh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)^3\sinh(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(cosh(d*x + c)^3*sinh(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)^3 \sinh(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate(cosh(d*x + c)^3*sinh(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)),
x)
```

maple [A] time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{\left(\cosh^3(dx+c)\right)\sinh(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)^3*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{e^{\left(-3c+\frac{3de}{f}\right)}E_1\left(\frac{3(fx+e)d}{f}\right)}{8bf}-\frac{ae^{\left(-2c+\frac{2de}{f}\right)}E_1\left(\frac{2(fx+e)d}{f}\right)}{4b^2f}+\frac{ae^{\left(2c-\frac{2de}{f}\right)}E_1\left(-\frac{2(fx+e)d}{f}\right)}{4b^2f}-\frac{e^{\left(3c-\frac{3de}{f}\right)}E_1\left(-\frac{3(fx+e)d}{f}\right)}{8bf}-\frac{(4a^2+3\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/8*e^(-3*c + 3*d*e/f)*exp_integral_e(1, 3*(f*x + e)*d/f)/(b*f) - 1/4*a*e^
(-2*c + 2*d*e/f)*exp_integral_e(1, 2*(f*x + e)*d/f)/(b^2*f) + 1/4*a*e^(2*c
- 2*d*e/f)*exp_integral_e(1, -2*(f*x + e)*d/f)/(b^2*f) - 1/8*e^(3*c - 3*d*e
```

```
/f)*exp_integral_e(1, -3*(f*x + e)*d/f)/(b*f) - 1/8*(4*a^2 + 3*b^2)*e^(-c +
 d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b^3*f) - 1/8*(4*a^2*e^c + 3*b^2*e
^c)*e^(-d*e/f)*exp_integral_e(1, -(f*x + e)*d/f)/(b^3*f) - (a^3 + a*b^2)*lo
g(f*x + e)/(b^4*f) + 1/16*integrate(32*(a^3*b + a*b^3 - (a^4*e^c + a^2*b^2*
e^c)*e^(d*x))/(b^5*f*x + b^5*e - (b^5*f*x*e^(2*c) + b^5*e*e^(2*c))*e^(2*d*x
) - 2*(a*b^4*f*x*e^c + a*b^4*e*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh(c+dx)^3 \sinh(c+dx)}{\left(e+fx\right)\,(a+b\sinh(c+dx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)^3*sinh(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**3*sinh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.348 $\int \frac{(e+fx)^3 \tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1021

$$-\frac{6i\text{Li}_4\left(-ie^{c+dx}\right)f^3}{bd^4}+\frac{6ia^2\text{Li}_4\left(-ie^{c+dx}\right)f^3}{b\left(a^2+b^2\right)d^4}+\frac{6i\text{Li}_4\left(ie^{c+dx}\right)f^3}{bd^4}-\frac{6ia^2\text{Li}_4\left(ie^{c+dx}\right)f^3}{b\left(a^2+b^2\right)d^4}-\frac{6a\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)f^3}{\left(a^2+b^2\right)d^4}-\frac{6a\text{Li}_4\left(-\right.}{\left(a^2\right.}$$

```
[Out] 6*a*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d^3+
6*a*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d^3-
3*a*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d^2-
3*a*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d^2+
6*I*a^2*f^3*polylog(4,-I*exp(d*x+c))/b/(a^2+b^2)/d^4-3*I*a^2*f*(f*x+e)^2*po
lylog(2,I*exp(d*x+c))/b/(a^2+b^2)/d^2-6*I*a^2*f^2*(f*x+e)*polylog(3,-I*exp(
d*x+c))/b/(a^2+b^2)/d^3+3*I*f*(f*x+e)^2*polylog(2,I*exp(d*x+c))/b/d^2+6*I*f
^2*(f*x+e)*polylog(3,-I*exp(d*x+c))/b/d^3-6*I*a^2*f^3*polylog(4,I*exp(d*x+c
))/b/(a^2+b^2)/d^4+2*(f*x+e)^3*arctan(exp(d*x+c))/b/d+3/4*a*f^3*polylog(4,-
exp(2*d*x+2*c))/(a^2+b^2)/d^4-6*I*f^3*polylog(4,-I*exp(d*x+c))/b/d^4+6*I*f^
3*polylog(4,I*exp(d*x+c))/b/d^4-3*I*f*(f*x+e)^2*polylog(2,-I*exp(d*x+c))/b/
d^2-6*I*f^2*(f*x+e)*polylog(3,I*exp(d*x+c))/b/d^3-2*a^2*(f*x+e)^3*arctan(ex
p(d*x+c))/b/(a^2+b^2)/d+3/2*a*f*(f*x+e)^2*polylog(2,-exp(2*d*x+2*c))/(a^2+b
^2)/d^2-3/2*a*f^2*(f*x+e)*polylog(3,-exp(2*d*x+2*c))/(a^2+b^2)/d^3+3*I*a^2*
f*(f*x+e)^2*polylog(2,-I*exp(d*x+c))/b/(a^2+b^2)/d^2+6*I*a^2*f^2*(f*x+e)*po
lylog(3,I*exp(d*x+c))/b/(a^2+b^2)/d^3+a*(f*x+e)^3*ln(1+exp(2*d*x+2*c))/(a^2
+b^2)/d-a*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d-a*(f
*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d-6*a*f^3*polylog(
4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d^4-6*a*f^3*polylog(4,-b*exp
(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d^4
```

Rubi [A] time = 1.33, antiderivative size = 1021, normalized size of antiderivative = 1.00, number of steps used = 39, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423, Rules used = {5567, 4180, 2531, 6609, 2282, 6589, 5573, 5561, 2190, 6742, 3718}

$$-\frac{6i\text{PolyLog}\left(4,-ie^{c+dx}\right)f^3}{bd^4}+\frac{6ia^2\text{PolyLog}\left(4,-ie^{c+dx}\right)f^3}{b\left(a^2+b^2\right)d^4}+\frac{6i\text{PolyLog}\left(4,ie^{c+dx}\right)f^3}{bd^4}-\frac{6ia^2\text{PolyLog}\left(4,ie^{c+dx}\right)f^3}{b\left(a^2+b^2\right)d^4}-$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*(e + f*x)^3*ArcTan[E^(c + d*x)])/(b*d) - (2*a^2*(e + f*x)^3*ArcTan[E^(c
+ d*x)])/(b*(a^2 + b^2)*d) - (a*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sq
```

```
rt[a^2 + b^2])])/((a^2 + b^2)*d) - (a*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2])])/((a^2 + b^2)*d) + (a*(e + f*x)^3*Log[1 + E^(2*(c + d
*x))])/((a^2 + b^2)*d) - ((3*I)*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)])
/(b*d^2) + ((3*I)*a^2*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)])/(b*(a^2 +
 b^2)*d^2) + ((3*I)*f*(e + f*x)^2*PolyLog[2, I*E^(c + d*x)])/(b*d^2) - ((3*
I)*a^2*f*(e + f*x)^2*PolyLog[2, I*E^(c + d*x)])/(b*(a^2 + b^2)*d^2) - (3*a*
f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 +
 b^2)*d^2) - (3*a*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2
+ b^2]))])/((a^2 + b^2)*d^2) + (3*a*f*(e + f*x)^2*PolyLog[2, -E^(2*(c + d*x
))])/(2*(a^2 + b^2)*d^2) + ((6*I)*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)
])/(b*d^3) - ((6*I)*a^2*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/(b*(a^2
 + b^2)*d^3) - ((6*I)*f^2*(e + f*x)*PolyLog[3, I*E^(c + d*x)])/(b*d^3) + ((
6*I)*a^2*f^2*(e + f*x)*PolyLog[3, I*E^(c + d*x)])/(b*(a^2 + b^2)*d^3) + (6*
a*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2
 + b^2)*d^3) + (6*a*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2]))])/((a^2 + b^2)*d^3) - (3*a*f^2*(e + f*x)*PolyLog[3, -E^(2*(c + d
*x))])/(2*(a^2 + b^2)*d^3) - ((6*I)*f^3*PolyLog[4, (-I)*E^(c + d*x)])/(b*d^
4) + ((6*I)*a^2*f^3*PolyLog[4, (-I)*E^(c + d*x)])/(b*(a^2 + b^2)*d^4) + ((6
*I)*f^3*PolyLog[4, I*E^(c + d*x)])/(b*d^4) - ((6*I)*a^2*f^3*PolyLog[4, I*E^
(c + d*x)])/(b*(a^2 + b^2)*d^4) - (6*a*f^3*PolyLog[4, -((b*E^(c + d*x))/(a
- Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d^4) - (6*a*f^3*PolyLog[4, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d^4) + (3*a*f^3*PolyLog[4, -E^(2
*(c + d*x))])/(4*(a^2 + b^2)*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\operatorname{sech}(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a\int (e+fx)^3\operatorname{sech}(c+dx)(a-b\sinh(c+dx))\,dx}{b\left(a^2+b^2\right)} - \frac{(ab}{}$$

$$= \frac{a(e+fx)^4}{4\left(a^2+b^2\right)f} + \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{3if(e+fx)^2\operatorname{Li}_2\left(-ie^{c+dx}\right)}{bd^2} + \frac{3if(e+f}{}$$

$$= \frac{a(e+fx)^4}{4\left(a^2+b^2\right)f} + \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} - \frac{a(e+}{}$$

$$= \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+d}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+d}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+d}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+d}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+d}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^3\log\left(1+\frac{be^{c+d}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

Mathematica [B] time = 23.81, size = 3088, normalized size = 3.02

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-8*a*d^4*e^3*E^(2*c)*x - 12*a*d^4*e^2*E^(2*c)*f*x^2 - 8*a*d^4*e*E^(2*c)*f^
2*x^3 - 2*a*d^4*E^(2*c)*f^3*x^4 + 8*b*d^3*e^3*ArcTan[E^(c + d*x)] + 8*b*d^3
*e^3*E^(2*c)*ArcTan[E^(c + d*x)] + (12*I)*b*d^3*e^2*f*x*Log[1 - I*E^(c + d*
x)] + (12*I)*b*d^3*e^2*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] + (12*I)*b*d^3*e*
f^2*x^2*Log[1 - I*E^(c + d*x)] + (12*I)*b*d^3*e*E^(2*c)*f^2*x^2*Log[1 - I*E
^(c + d*x)] + (4*I)*b*d^3*f^3*x^3*Log[1 - I*E^(c + d*x)] + (4*I)*b*d^3*E^(2
*c)*f^3*x^3*Log[1 - I*E^(c + d*x)] - (12*I)*b*d^3*e^2*f*x*Log[1 + I*E^(c +
d*x)] - (12*I)*b*d^3*e^2*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] - (12*I)*b*d^3*
e*f^2*x^2*Log[1 + I*E^(c + d*x)] - (12*I)*b*d^3*e*E^(2*c)*f^2*x^2*Log[1 + I
*E^(c + d*x)] - (4*I)*b*d^3*f^3*x^3*Log[1 + I*E^(c + d*x)] - (4*I)*b*d^3*E^
(2*c)*f^3*x^3*Log[1 + I*E^(c + d*x)] + 4*a*d^3*e^3*Log[1 + E^(2*(c + d*x))]
 + 4*a*d^3*e^3*E^(2*c)*Log[1 + E^(2*(c + d*x))] + 12*a*d^3*e^2*f*x*Log[1 +
E^(2*(c + d*x))] + 12*a*d^3*e^2*E^(2*c)*f*x*Log[1 + E^(2*(c + d*x))] + 12*a
*d^3*e*f^2*x^2*Log[1 + E^(2*(c + d*x))] + 12*a*d^3*e*E^(2*c)*f^2*x^2*Log[1
+ E^(2*(c + d*x))] + 4*a*d^3*f^3*x^3*Log[1 + E^(2*(c + d*x))] + 4*a*d^3*E^(
2*c)*f^3*x^3*Log[1 + E^(2*(c + d*x))] - (12*I)*b*d^2*(1 + E^(2*c))*f*(e + f
*x)^2*PolyLog[2, (-I)*E^(c + d*x)] + (12*I)*b*d^2*(1 + E^(2*c))*f*(e + f*x)
^2*PolyLog[2, I*E^(c + d*x)] + 6*a*d^2*e^2*f*PolyLog[2, -E^(2*(c + d*x))] +
 6*a*d^2*e^2*E^(2*c)*f*PolyLog[2, -E^(2*(c + d*x))] + 12*a*d^2*e*f^2*x*Poly
Log[2, -E^(2*(c + d*x))] + 12*a*d^2*e*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(c + d
*x))] + 6*a*d^2*f^3*x^2*PolyLog[2, -E^(2*(c + d*x))] + 6*a*d^2*E^(2*c)*f^3*
x^2*PolyLog[2, -E^(2*(c + d*x))] + (24*I)*b*d*e*f^2*PolyLog[3, (-I)*E^(c +
d*x)] + (24*I)*b*d*e*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (24*I)*b*d*
f^3*x*PolyLog[3, (-I)*E^(c + d*x)] + (24*I)*b*d*E^(2*c)*f^3*x*PolyLog[3, (-
I)*E^(c + d*x)] - (24*I)*b*d*e*f^2*PolyLog[3, I*E^(c + d*x)] - (24*I)*b*d*e
*E^(2*c)*f^2*PolyLog[3, I*E^(c + d*x)] - (24*I)*b*d*f^3*x*PolyLog[3, I*E^(c
 + d*x)] - (24*I)*b*d*E^(2*c)*f^3*x*PolyLog[3, I*E^(c + d*x)] - 6*a*d*e*f^2
*PolyLog[3, -E^(2*(c + d*x))] - 6*a*d*e*E^(2*c)*f^2*PolyLog[3, -E^(2*(c + d
*x))] - 6*a*d*f^3*x*PolyLog[3, -E^(2*(c + d*x))] - 6*a*d*E^(2*c)*f^3*x*Poly
Log[3, -E^(2*(c + d*x))] - (24*I)*b*f^3*PolyLog[4, (-I)*E^(c + d*x)] - (24*
I)*b*E^(2*c)*f^3*PolyLog[4, (-I)*E^(c + d*x)] + (24*I)*b*f^3*PolyLog[4, I*E
^(c + d*x)] + (24*I)*b*E^(2*c)*f^3*PolyLog[4, I*E^(c + d*x)] + 3*a*f^3*Poly
Log[4, -E^(2*(c + d*x))] + 3*a*E^(2*c)*f^3*PolyLog[4, -E^(2*(c + d*x))])/(4
*(a^2 + b^2)*d^4*(1 + E^(2*c))) + (a*(4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*x^2
 + 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*f^3*x^4 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^
(2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) +
 (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2
 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (2*e^3*Log[b - 2*a*E^(c + d*x) - b*E^(2*
(c + d*x))])/d - (2*e^3*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x
)))])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^
(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a
^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - S
qrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*
x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c
+ d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1
```

```
+ (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x*Lo
g[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^
(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d
 + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)
])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2
+ b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(
a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*
E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*Poly
Log[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*
(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(
a^2 + b^2)*E^(2*c)]))])/d^2 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E
^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*
E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyL
og[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*
E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2
*c)]))])/d^3 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2
+ b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/
(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2
*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*P
olyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 +
(12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))
])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2
+ b^2)*E^(2*c)]))])/d^4 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + S
qrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c +
 d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4))/(2*(a^2 + b^2)*(-1 + E^
(2*c))) - (a*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3)*Csch[c/2]*Sech[c
/2]*Sech[c])/(8*(a^2 + b^2))
```

fricas [C] time = 0.69, size = 1723, normalized size = 1.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(6*a*f^3*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*a*f^3*polylog(4, (a*cosh(d
*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
 b^2)/b^2))/b) + 3*(a*d^2*f^3*x^2 + 2*a*d^2*e*f^2*x + a*d^2*e^2*f)*dilog((a
*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b + 1) + 3*(a*d^2*f^3*x^2 + 2*a*d^2*e*f^2*x + a*d^2*
e^2*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (3*a*d^2*f^3*x^2 + 3*I*b*d^2
*f^3*x^2 + 6*a*d^2*e*f^2*x + 6*I*b*d^2*e*f^2*x + 3*a*d^2*e^2*f + 3*I*b*d^2*
e^2*f)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) - (3*a*d^2*f^3*x^2 - 3*I*b*
```

```
d^2*f^3*x^2 + 6*a*d^2*e*f^2*x - 6*I*b*d^2*e*f^2*x + 3*a*d^2*e^2*f - 3*I*b*d
^2*e^2*f)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + (a*d^3*e^3 - 3*a*c*d^
2*e^2*f + 3*a*c^2*d*e*f^2 - a*c^3*f^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x
 + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (a*d^3*e^3 - 3*a*c*d^2*e^2*f + 3
*a*c^2*d*e*f^2 - a*c^3*f^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b
*sqrt((a^2 + b^2)/b^2) + 2*a) + (a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^
3*e^2*f*x + 3*a*c*d^2*e^2*f - 3*a*c^2*d*e*f^2 + a*c^3*f^3)*log(-(a*cosh(d*x
 + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2) - b)/b) + (a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + 3
*a*c*d^2*e^2*f - 3*a*c^2*d*e*f^2 + a*c^3*f^3)*log(-(a*cosh(d*x + c) + a*sin
h(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)
/b) - (a*d^3*e^3 + I*b*d^3*e^3 - 3*a*c*d^2*e^2*f - 3*I*b*c*d^2*e^2*f + 3*a*
c^2*d*e*f^2 + 3*I*b*c^2*d*e*f^2 - a*c^3*f^3 - I*b*c^3*f^3)*log(cosh(d*x + c
) + sinh(d*x + c) + I) - (a*d^3*e^3 - I*b*d^3*e^3 - 3*a*c*d^2*e^2*f + 3*I*b
*c*d^2*e^2*f + 3*a*c^2*d*e*f^2 - 3*I*b*c^2*d*e*f^2 - a*c^3*f^3 + I*b*c^3*f^
3)*log(cosh(d*x + c) + sinh(d*x + c) - I) - (a*d^3*f^3*x^3 - I*b*d^3*f^3*x^
3 + 3*a*d^3*e*f^2*x^2 - 3*I*b*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x - 3*I*b*d^3*e
^2*f*x + 3*a*c*d^2*e^2*f - 3*I*b*c*d^2*e^2*f - 3*a*c^2*d*e*f^2 + 3*I*b*c^2*
d*e*f^2 + a*c^3*f^3 - I*b*c^3*f^3)*log(I*cosh(d*x + c) + I*sinh(d*x + c) +
1) - (a*d^3*f^3*x^3 + I*b*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*I*b*d^3*e*f^2
*x^2 + 3*a*d^3*e^2*f*x + 3*I*b*d^3*e^2*f*x + 3*a*c*d^2*e^2*f + 3*I*b*c*d^2*
e^2*f - 3*a*c^2*d*e*f^2 - 3*I*b*c^2*d*e*f^2 + a*c^3*f^3 + I*b*c^3*f^3)*log(
-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) - (6*a*f^3 + 6*I*b*f^3)*polylog(4,
I*cosh(d*x + c) + I*sinh(d*x + c)) - (6*a*f^3 - 6*I*b*f^3)*polylog(4, -I*co
sh(d*x + c) - I*sinh(d*x + c)) - 6*(a*d*f^3*x + a*d*e*f^2)*polylog(3, (a*co
sh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2))/b) - 6*(a*d*f^3*x + a*d*e*f^2)*polylog(3, (a*cosh(d*x + c)
+ a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2))/b) + (6*a*d*f^3*x + 6*I*b*d*f^3*x + 6*a*d*e*f^2 + 6*I*b*d*e*f^2)*polylo
g(3, I*cosh(d*x + c) + I*sinh(d*x + c)) + (6*a*d*f^3*x - 6*I*b*d*f^3*x + 6*
a*d*e*f^2 - 6*I*b*d*e*f^2)*polylog(3, -I*cosh(d*x + c) - I*sinh(d*x + c)))/
((a^2 + b^2)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.70, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\tanh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^3\left(\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}+\frac{a\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^2+b^2\right)d}-\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}\right)+\int\frac{2\,f^3x^3\left(e^{(}\right.}{\left(b\left(e^{(dx+c)}-e^{(-dx-c)}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e^3*(2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + a*log(-2*a*e^(-d*x - c) +
b*e^(-2*d*x - 2*c) - b)/((a^2 + b^2)*d) - a*log(e^(-2*d*x - 2*c) + 1)/((a^2
 + b^2)*d)) + integrate(2*f^3*x^3*(e^(d*x + c) - e^(-d*x - c))/((b*(e^(d*x
+ c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c) + e^(-d*x - c))) + 6*e*f^2*x^2*(e^
(d*x + c) - e^(-d*x - c))/((b*(e^(d*x + c) - e^(-d*x - c)) + 2*a)*(e^(d*x +
 c) + e^(-d*x - c))) + 6*e^2*f*x*(e^(d*x + c) - e^(-d*x - c))/((b*(e^(d*x +
 c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c) + e^(-d*x - c))), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\tanh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((tanh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(e+fx\right)^{3}\tanh\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*tanh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.349 $\int \frac{(e+fx)^2 \tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=716

$$-\frac{2ia^2f^2\text{Li}_3\left(-ie^{c+dx}\right)}{bd^3\left(a^2+b^2\right)}+\frac{2ia^2f^2\text{Li}_3\left(ie^{c+dx}\right)}{bd^3\left(a^2+b^2\right)}+\frac{2af^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)}+\frac{2af^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)}-\frac{af^2\text{Li}_3\left(-e^{2(c+dx)}\right)}{2d^3\left(a^2+b^2\right)}+$$

```
[Out] 2*(f*x+e)^2*arctan(exp(d*x+c))/b/d-2*a^2*(f*x+e)^2*arctan(exp(d*x+c))/b/(a^
2+b^2)/d+a*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/(a^2+b^2)/d-a*(f*x+e)^2*ln(1+b*ex
p(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d-a*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))/(a^2+b^2)/d-2*I*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b/d^2+
2*I*a^2*f^2*polylog(3,I*exp(d*x+c))/b/(a^2+b^2)/d^3-2*I*a^2*f^2*polylog(3,-
I*exp(d*x+c))/b/(a^2+b^2)/d^3+2*I*a^2*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b/
(a^2+b^2)/d^2+a*f*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2)/d^2-2*a*f*(f
*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d^2-2*a*f*(f*x
+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d^2+2*I*f*(f*x+e
)*polylog(2,I*exp(d*x+c))/b/d^2+2*I*f^2*polylog(3,-I*exp(d*x+c))/b/d^3-2*I*
a^2*f*(f*x+e)*polylog(2,I*exp(d*x+c))/b/(a^2+b^2)/d^2-2*I*f^2*polylog(3,I*e
xp(d*x+c))/b/d^3-1/2*a*f^2*polylog(3,-exp(2*d*x+2*c))/(a^2+b^2)/d^3+2*a*f^2
*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d^3+2*a*f^2*polylog
(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d^3
```

Rubi [A] time = 1.07, antiderivative size = 716, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {5567, 4180, 2531, 2282, 6589, 5573, 5561, 2190, 6742, 3718}

$$\frac{2ia^2f(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)}{bd^2\left(a^2+b^2\right)}-\frac{2ia^2f(e+fx)\text{PolyLog}\left(2,ie^{c+dx}\right)}{bd^2\left(a^2+b^2\right)}-\frac{2af(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)}-$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b*d) - (2*a^2*(e + f*x)^2*ArcTan[E^(c
+ d*x)])/(b*(a^2 + b^2)*d) - (a*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sq
rt[a^2 + b^2])])/((a^2 + b^2)*d) - (a*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2])])/((a^2 + b^2)*d) + (a*(e + f*x)^2*Log[1 + E^(2*(c + d
*x))])/((a^2 + b^2)*d) - ((2*I)*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(
b*d^2) + ((2*I)*a^2*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(b*(a^2 + b^2
)*d^2) + ((2*I)*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b*d^2) - ((2*I)*a^2
*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b*(a^2 + b^2)*d^2) - (2*a*f*(e + f
```

```
*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d^2)
 - (2*a*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(
(a^2 + b^2)*d^2) + (a*f*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/((a^2 + b^2
)*d^2) + ((2*I)*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(b*d^3) - ((2*I)*a^2*f^2*
PolyLog[3, (-I)*E^(c + d*x)])/(b*(a^2 + b^2)*d^3) - ((2*I)*f^2*PolyLog[3, I
*E^(c + d*x)])/(b*d^3) + ((2*I)*a^2*f^2*PolyLog[3, I*E^(c + d*x)])/(b*(a^2
+ b^2)*d^3) + (2*a*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))]
)/((a^2 + b^2)*d^3) + (2*a*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))])/((a^2 + b^2)*d^3) - (a*f^2*PolyLog[3, -E^(2*(c + d*x))])/(2*(a^2
+ b^2)*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
```

```
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{sech}(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a\int (e+fx)^2\text{sech}(c+dx)(a-b\sinh(c+dx))\,dx}{b\left(a^2+b^2\right)} - \frac{(ab$$

$$= \frac{a(e+fx)^3}{3\left(a^2+b^2\right)f} + \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2if(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)}{bd^2} + \frac{2if(e+fx}{b$$

$$= \frac{a(e+fx)^3}{3\left(a^2+b^2\right)f} + \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} - \frac{a(e+$$

$$= \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)^2\log\left(1+\frac{be^{c+}}{a-\sqrt{a^2}}\right.}{\left(a^2+b^2\right)d}$$

Mathematica [A] time = 9.93, size = 872, normalized size = 1.22

$$-\frac{-4be^2\tan^{-1}\left(e^{c+dx}\right)d^2 - 2ibf^2x^2\log\left(1-ie^{c+dx}\right)d^2 - 4ibefx\log\left(1-ie^{c+dx}\right)d^2 + 2ibf^2x^2\log\left(1+ie^{c+dx}\right)d^2 + 4}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(-4*b*d^2*e^2*ArcTan[E^(c + d*x)] - (4*I)*b*d^2*e*f*x*Log[1 - I*E^(c +
 d*x)] - (2*I)*b*d^2*f^2*x^2*Log[1 - I*E^(c + d*x)] + (4*I)*b*d^2*e*f*x*Log
[1 + I*E^(c + d*x)] + (2*I)*b*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] - 2*a*d^2*
e^2*Log[1 + E^(2*(c + d*x))] - 4*a*d^2*e*f*x*Log[1 + E^(2*(c + d*x))] - 2*a
*d^2*f^2*x^2*Log[1 + E^(2*(c + d*x))] + 2*a*d^2*e^2*Log[b - 2*a*E^(c + d*x)
 - b*E^(2*(c + d*x))] + 4*a*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sq
rt[(a^2 + b^2)*E^(2*c)])] + 2*a*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^
c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 4*a*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(
a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + 2*a*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d
*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + (4*I)*b*d*f*(e + f*x)*PolyLog[2
, (-I)*E^(c + d*x)] - (4*I)*b*d*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)] - 2*a
*d*e*f*PolyLog[2, -E^(2*(c + d*x))] - 2*a*d*f^2*x*PolyLog[2, -E^(2*(c + d*x
))] + 4*a*d*e*f*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^
(2*c)]))] + 4*a*d*f^2*x*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 +
 b^2)*E^(2*c)]))] + 4*a*d*e*f*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[
(a^2 + b^2)*E^(2*c)]))] + 4*a*d*f^2*x*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c
 + Sqrt[(a^2 + b^2)*E^(2*c)]))] - (4*I)*b*f^2*PolyLog[3, (-I)*E^(c + d*x)]
+ (4*I)*b*f^2*PolyLog[3, I*E^(c + d*x)] + a*f^2*PolyLog[3, -E^(2*(c + d*x))
] - 4*a*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c
)]))] - 4*a*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^
(2*c)]))])/((a^2 + b^2)*d^3)
```

fricas [C] time = 0.57, size = 1087, normalized size = 1.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*a*f^2*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
 b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 2*a*f^2*polylog(3, (a*cosh(d*
x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
b^2)/b^2))/b) - 2*(a*d*f^2*x + a*d*e*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x
 + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b +
1) - 2*(a*d*f^2*x + a*d*e*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (2*a*d
*f^2*x + 2*I*b*d*f^2*x + 2*a*d*e*f + 2*I*b*d*e*f)*dilog(I*cosh(d*x + c) + I
*sinh(d*x + c)) + (2*a*d*f^2*x - 2*I*b*d*f^2*x + 2*a*d*e*f - 2*I*b*d*e*f)*d
ilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) - (a*d^2*e^2 - 2*a*c*d*e*f + a*c^2
*f^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2)
 + 2*a) - (a*d^2*e^2 - 2*a*c*d*e*f + a*c^2*f^2)*log(2*b*cosh(d*x + c) + 2*b
*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (a*d^2*f^2*x^2 + 2*a*d^
2*e*f*x + 2*a*c*d*e*f - a*c^2*f^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c)
+ (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (a*d^
2*f^2*x^2 + 2*a*d^2*e*f*x + 2*a*c*d*e*f - a*c^2*f^2)*log(-(a*cosh(d*x + c)
```

```
+ a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2) - b)/b) + (a*d^2*e^2 + I*b*d^2*e^2 - 2*a*c*d*e*f - 2*I*b*c*d*e*f + a*c^2
*f^2 + I*b*c^2*f^2)*log(cosh(d*x + c) + sinh(d*x + c) + I) + (a*d^2*e^2 - I
*b*d^2*e^2 - 2*a*c*d*e*f + 2*I*b*c*d*e*f + a*c^2*f^2 - I*b*c^2*f^2)*log(cos
h(d*x + c) + sinh(d*x + c) - I) + (a*d^2*f^2*x^2 - I*b*d^2*f^2*x^2 + 2*a*d^
2*e*f*x - 2*I*b*d^2*e*f*x + 2*a*c*d*e*f - 2*I*b*c*d*e*f - a*c^2*f^2 + I*b*c
^2*f^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) + (a*d^2*f^2*x^2 + I*b*d
^2*f^2*x^2 + 2*a*d^2*e*f*x + 2*I*b*d^2*e*f*x + 2*a*c*d*e*f + 2*I*b*c*d*e*f
- a*c^2*f^2 - I*b*c^2*f^2)*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) - (2
*a*f^2 + 2*I*b*f^2)*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) - (2*a*f^
2 - 2*I*b*f^2)*polylog(3, -I*cosh(d*x + c) - I*sinh(d*x + c)))/((a^2 + b^2)
*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \tanh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^{2}\left(\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^{2}+b^{2}\right)d}+\frac{a\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^{2}+b^{2}\right)d}-\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d}\right)+\int\frac{2\,f^{2}x^{2}\left(e^{(}\right.}{\left(b\left(e^{(dx+c)}-e^{(-dx-c)}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e^2*(2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + a*log(-2*a*e^(-d*x - c) +
b*e^(-2*d*x - 2*c) - b)/((a^2 + b^2)*d) - a*log(e^(-2*d*x - 2*c) + 1)/((a^2
 + b^2)*d)) + integrate(2*f^2*x^2*(e^(d*x + c) - e^(-d*x - c))/((b*(e^(d*x
```

```
+ c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c) + e^(-d*x - c))) + 4*e*f*x*(e^(d*x
 + c) - e^(-d*x - c))/((b*(e^(d*x + c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c)
+ e^(-d*x - c))), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh(c+dx)\left(e+fx\right)^2}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((tanh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**2*tanh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.350 $\int \frac{(e+fx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=421

$$\frac{ia^2f\text{Li}_2\left(-ie^{c+dx}\right)}{bd^2\left(a^2+b^2\right)}-\frac{ia^2f\text{Li}_2\left(ie^{c+dx}\right)}{bd^2\left(a^2+b^2\right)}-\frac{af\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)}-\frac{af\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)}+\frac{af\text{Li}_2\left(-e^{2(c+dx)}\right)}{2d^2\left(a^2+b^2\right)}-\frac{a(e+fx)\log\left(\ldots\right.}{d\left(a^2+\ldots\right.}$$

```
[Out] 2*(f*x+e)*arctan(exp(d*x+c))/b/d-2*a^2*(f*x+e)*arctan(exp(d*x+c))/b/(a^2+b^
2)/d+a*(f*x+e)*ln(1+exp(2*d*x+2*c))/(a^2+b^2)/d-a*(f*x+e)*ln(1+b*exp(d*x+c)
/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d-a*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^
(1/2)))/(a^2+b^2)/d-I*f*polylog(2,-I*exp(d*x+c))/b/d^2+I*a^2*f*polylog(2,-I
*exp(d*x+c))/b/(a^2+b^2)/d^2+I*f*polylog(2,I*exp(d*x+c))/b/d^2-I*a^2*f*poly
log(2,I*exp(d*x+c))/b/(a^2+b^2)/d^2+1/2*a*f*polylog(2,-exp(2*d*x+2*c))/(a^2
+b^2)/d^2-a*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)/d^2-a*
f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)/d^2
```

Rubi [A] time = 0.60, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {5567, 4180, 2279, 2391, 5573, 5561, 2190, 6742, 3718}

$$\frac{ia^2f\text{PolyLog}\left(2,-ie^{c+dx}\right)}{bd^2\left(a^2+b^2\right)}-\frac{ia^2f\text{PolyLog}\left(2,ie^{c+dx}\right)}{bd^2\left(a^2+b^2\right)}-\frac{af\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)}-\frac{af\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{d^2\left(a^2+b^2\right)}+\frac{af\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*(e + f*x)*ArcTan[E^(c + d*x)])/(b*d) - (2*a^2*(e + f*x)*ArcTan[E^(c + d*
x)])/(b*(a^2 + b^2)*d) - (a*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2
 + b^2])])/((a^2 + b^2)*d) - (a*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2])])/((a^2 + b^2)*d) + (a*(e + f*x)*Log[1 + E^(2*(c + d*x))])/((a
^2 + b^2)*d) - (I*f*PolyLog[2, (-I)*E^(c + d*x)])/(b*d^2) + (I*a^2*f*PolyLo
g[2, (-I)*E^(c + d*x)])/(b*(a^2 + b^2)*d^2) + (I*f*PolyLog[2, I*E^(c + d*x)
])/(b*d^2) - (I*a^2*f*PolyLog[2, I*E^(c + d*x)])/(b*(a^2 + b^2)*d^2) - (a*f
*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d^2) -
(a*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)*d^2
) + (a*f*PolyLog[2, -E^(2*(c + d*x))])/(2*(a^2 + b^2)*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
```

```
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{sech}(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a\int (e+fx)\text{sech}(c+dx)(a-b\sinh(c+dx))\,dx}{b\left(a^2+b^2\right)} - \frac{(ab)}{}$$

$$= \frac{a(e+fx)^2}{2\left(a^2+b^2\right)f} + \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a\int (a(e+fx)\text{sech}(c+dx) - b(e+fx)}{b\left(a^2+b^2\right)}$$

$$= \frac{a(e+fx)^2}{2\left(a^2+b^2\right)f} + \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)d} - \frac{a(e+f}{}$$

$$= \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)d} - \frac{a(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right.}{\left(a^2+b^2\right)d}$$

Mathematica [A] time = 2.55, size = 438, normalized size = 1.04

$$\frac{-2afLi_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right) - 2afLi_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right) - 2acf\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) - 2acf\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right) - 2adfx\log\left(\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*a*c*d*e + 2*a*c^2*f - 2*a*d^2*e*x + 2*a*c*d*f*x + 4*b*d*e*ArcTan[Cosh[c
 + d*x] + Sinh[c + d*x]] + 4*b*d*f*x*ArcTan[Cosh[c + d*x] + Sinh[c + d*x]]
- 2*a*c*f*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 2*a*d*f*x*Log[1
```

```
+ (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 2*a*c*f*Log[1 + (b*E^(c + d*x))/
(a + Sqrt[a^2 + b^2])] - 2*a*d*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2])] - 2*a*d*e*Log[a + b*Sinh[c + d*x]] + 2*a*c*f*Log[a + b*Sinh[c + d*x]
] + 2*a*d*e*Log[1 + Cosh[2*(c + d*x)] + Sinh[2*(c + d*x)]] + 2*a*d*f*x*Log[
1 + Cosh[2*(c + d*x)] + Sinh[2*(c + d*x)]] - 2*a*f*PolyLog[2, (b*E^(c + d*x
))/(-a + Sqrt[a^2 + b^2])] - 2*a*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a
^2 + b^2]))] - (2*I)*b*f*PolyLog[2, (-I)*(Cosh[c + d*x] + Sinh[c + d*x])] +
 (2*I)*b*f*PolyLog[2, I*(Cosh[c + d*x] + Sinh[c + d*x])] + a*f*PolyLog[2, -
Cosh[2*(c + d*x)] - Sinh[2*(c + d*x)]])/(2*(a^2 + b^2)*d^2)
```

fricas [A] time = 0.51, size = 589, normalized size = 1.40

$$-\frac{afLi_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}-b}{b}+1\right)+afLi_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)-(b\cosh(dx+c)+b\sinh(dx+c)\cdots}{b}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(a*f*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(
d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + a*f*dilog((a*cosh(d*x + c) +
a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
 - b)/b + 1) - (a*f + I*b*f)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) - (a*
f - I*b*f)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + (a*d*e - a*c*f)*log(
2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) +
(a*d*e - a*c*f)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 +
 b^2)/b^2) + 2*a) + (a*d*f*x + a*c*f)*log(-(a*cosh(d*x + c) + a*sinh(d*x +
c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (a
*d*f*x + a*c*f)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (a*d*e + I*b*d*e - a*c*f
 - I*b*c*f)*log(cosh(d*x + c) + sinh(d*x + c) + I) - (a*d*e - I*b*d*e - a*c
*f + I*b*c*f)*log(cosh(d*x + c) + sinh(d*x + c) - I) - (a*d*f*x - I*b*d*f*x
 + a*c*f - I*b*c*f)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) - (a*d*f*x +
 I*b*d*f*x + a*c*f + I*b*c*f)*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1))/
((a^2 + b^2)*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.23, size = 1287, normalized size = 3.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 2*I/d^2*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*b*c-2*I/d*f/(2*a^2+2*b^2)*ln(1+I
*exp(d*x+c))*b*x-2/(a^2+b^2)^(1/2)/d*b^2*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*e
xp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2*I/d^2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*
b*c+2*I/d*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*b*x+2/d^2*f*c/(2*a^2+2*b^2)/(a
^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2-4/d^2*f
*c/(2*a^2+2*b^2)*b*arctan(exp(d*x+c))-2/d*e/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*a
rctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2+2/d^2*f*c/(2*a^2+2*b^2
)*a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/d^2*f*c/(2*a^2+2*b^2)*(a^2+b^2)
^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d^2*f*c/(2*a^2+2
*b^2)*a*ln(1+exp(2*d*x+2*c))-2/d^2*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^
2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a*c+2/d*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))
*a*x+2/d^2*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*a*c-2/d*f/(2*a^2+2*b^2)*ln((-
b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a*x-2/d^2*f/(2*a^2+2*
b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a*c-2/d*f/(
2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a*x+2
/d*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*a*x+2/d^2*f/(2*a^2+2*b^2)*ln(1+I*exp(
d*x+c))*a*c+2*I/d^2*f/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+c))*b-2*I/d^2*f/(2*a^
2+2*b^2)*dilog(1+I*exp(d*x+c))*b+2/d*e/(2*a^2+2*b^2)*(a^2+b^2)^(1/2)*arctan
h(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d*e/(2*a^2+2*b^2)*a*ln(b*exp(
2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d*e/(2*a^2+2*b^2)*a*ln(1+exp(2*d*x+2*c))+4/d
*e/(2*a^2+2*b^2)*b*arctan(exp(d*x+c))+2/(a^2+b^2)^(1/2)/d^2*b^2*f*c/(2*a^2+
2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d^2*f/(2*a^2+2*b
^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a-2/d^2*f
/(2*a^2+2*b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*
a+2/d^2*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))*a+2/d^2*f/(2*a^2+2*b^2)*dilog
(1-I*exp(d*x+c))*a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e\left(\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}+\frac{a\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^2+b^2\right)d}-\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}\right)+f\int\frac{2\,x\left(e\right.}{\left(b\left(e^{(dx+c)}-e^{(-dx\right.}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e*(2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + a*log(-2*a*e^(-d*x - c) + b*
e^(-2*d*x - 2*c) - b)/((a^2 + b^2)*d) - a*log(e^(-2*d*x - 2*c) + 1)/((a^2 +
 b^2)*d)) + f*integrate(2*x*(e^(d*x + c) - e^(-d*x - c))/((b*(e^(d*x + c) -
 e^(-d*x - c)) + 2*a)*(e^(d*x + c) + e^(-d*x - c))), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh(c+d\,x)\,\left(e+f\,x\right)}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((tanh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*tanh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.351 $\int \frac{\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=69

$$-\frac{a\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)}+\frac{b\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)}+\frac{a\log(\cosh(c+dx))}{d\left(a^2+b^2\right)}$$

```
[Out] b*arctan(sinh(d*x+c))/(a^2+b^2)/d+a*ln(cosh(d*x+c))/(a^2+b^2)/d-a*ln(a+b*si
nh(d*x+c))/(a^2+b^2)/d
```

Rubi [A] time = 0.08, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {2721, 801, 635, 203, 260}

$$-\frac{a\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)}+\frac{b\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)}+\frac{a\log(\cosh(c+dx))}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Tanh[c + d*x]/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)*d) + (a*Log[Cosh[c + d*x]])/((a^2 +
b^2)*d) - (a*Log[a + b*Sinh[c + d*x]])/((a^2 + b^2)*d)
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
```

```
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 2721

```
Int[((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*tan[(e_.) + (f_.)*(x_)]^(p
_.), x_Symbol] :> Dist[1/f, Subst[Int[(x^p*(a + x)^m)/(b^2 - x^2)^((p + 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && NeQ[a^2 - b^
2, 0] && IntegerQ[(p + 1)/2]
```

Rubi steps

$$\int \frac{\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\text{Subst}\left(\int \frac{x}{(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{\text{Subst}\left(\int \left(\frac{a}{\left(a^2+b^2\right)(a+x)}+\frac{-b^2-ax}{\left(a^2+b^2\right)\left(b^2+x^2\right)}\right) dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{a\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)d} - \frac{\text{Subst}\left(\int \frac{-b^2-ax}{b^2+x^2}\,dx, x, b\sinh(c+dx)\right)}{\left(a^2+b^2\right)d}$$

$$= -\frac{a\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)d} + \frac{a\,\text{Subst}\left(\int \frac{x}{b^2+x^2}\,dx, x, b\sinh(c+dx)\right)}{\left(a^2+b^2\right)d} + \frac{b^2\,\text{Subst}\left(\int \frac{\cdots}{b^2\cdots}\right.}{\cdots}$$

$$= \frac{b\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d} + \frac{a\log(\cosh(c+dx))}{\left(a^2+b^2\right)d} - \frac{a\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)d}$$

Mathematica [A] time = 0.07, size = 51, normalized size = 0.74

$$\frac{a(\log(\cosh(c+dx))-\log(a+b\sinh(c+dx)))+2b\tan^{-1}\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tanh[c + d*x]/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*b*ArcTan[Tanh[(c + d*x)/2]] + a*(Log[Cosh[c + d*x]] - Log[a + b*Sinh[c +
 d*x]]))/((a^2 + b^2)*d)
```

fricas [A] time = 0.49, size = 92, normalized size = 1.33

$$\frac{2\,b\arctan\left(\cosh\left(dx+c\right)+\sinh\left(dx+c\right)\right)-a\log\left(\frac{2\,\left(b\sinh(dx+c)+a\right)}{\cosh(dx+c)-\sinh(dx+c)}\right)+a\log\left(\frac{2\,\cosh(dx+c)}{\cosh(dx+c)-\sinh(dx+c)}\right)}{\left(a^2+b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*b*arctan(cosh(d*x + c) + sinh(d*x + c)) - a*log(2*(b*sinh(d*x + c) + a)/
(cosh(d*x + c) - sinh(d*x + c))) + a*log(2*cosh(d*x + c)/(cosh(d*x + c) - s
inh(d*x + c))))/((a^2 + b^2)*d)
```

giac [A] time = 2.00, size = 85, normalized size = 1.23

$$\frac{\frac{2\,b\arctan\left(e^{(dx+c)}\right)}{a^2+b^2}+\frac{a\log\left(e^{(2\,dx+2\,c)}+1\right)}{a^2+b^2}-\frac{a\log\left(\left|be^{(2\,dx+2\,c)}+2\,ae^{(dx+c)}-b\right|\right)}{a^2+b^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (2*b*arctan(e^(d*x + c))/(a^2 + b^2) + a*log(e^(2*d*x + 2*c) + 1)/(a^2 + b^
2) - a*log(abs(b*e^(2*d*x + 2*c) + 2*a*e^(d*x + c) - b))/(a^2 + b^2))/d
```

maple [A] time = 0.00, size = 113, normalized size = 1.64

$$-\frac{2a\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\left(2a^2+2b^2\right)}+\frac{2a\ln\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{d\left(2a^2+2b^2\right)}+\frac{4b\arctan\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\left(2a^2+2b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -2/d*a/(2*a^2+2*b^2)*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)+
2/d/(2*a^2+2*b^2)*a*ln(tanh(1/2*d*x+1/2*c)^2+1)+4/d/(2*a^2+2*b^2)*b*arctan(
tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.42, size = 95, normalized size = 1.38

$$-\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}-\frac{a\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^2+b^2\right)d}+\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) - a*log(-2*a*e^(-d*x - c) + b*e^(
-2*d*x - 2*c) - b)/((a^2 + b^2)*d) + a*log(e^(-2*d*x - 2*c) + 1)/((a^2 + b^
2)*d)
```

mupad [B] time = 1.27, size = 130, normalized size = 1.88

$$\frac{\ln\left(e^{c+d\,x}+1i\right)}{a\,d-b\,d\,1i}-\frac{a\,\ln\left(8\,a^3\,e^{d\,x}\,e^c-b^3-4\,a^2\,b+b^3\,e^{2\,c}\,e^{2\,d\,x}+4\,a^2\,b\,e^{2\,c}\,e^{2\,d\,x}+2\,a\,b^2\,e^{d\,x}\,e^c\right)}{d\,a^2+d\,b^2}+\frac{\ln\left(1+e^{c+d\,x}\,1i\right)\,1i}{-b\,d+a\,d\,1i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)/(a + b*sinh(c + d*x)),x)
```

```
[Out] log(exp(c + d*x) + 1i)/(a*d - b*d*1i) + (log(exp(c + d*x)*1i + 1)*1i)/(a*d*
1i - b*d) - (a*log(8*a^3*exp(d*x)*exp(c) - b^3 - 4*a^2*b + b^3*exp(2*c)*exp
(2*d*x) + 4*a^2*b*exp(2*c)*exp(2*d*x) + 2*a*b^2*exp(d*x)*exp(c)))/(a^2*d +
b^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh{\left(c + dx \right)}}{a + b \sinh{\left(c + dx \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(tanh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.352 $\int \frac{\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=29

$$\operatorname{Int}\left(\frac{\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Tanh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][Tanh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 16.49, size = 0, normalized size = 0.00

$$\int \frac{\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tanh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Integrate[Tanh[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\tanh(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(tanh(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\tanh(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] int(tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] integrate(tanh(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\tanh(c+d\,x)}{(e+f\,x)\,(a+b\sinh(c+d\,x))}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(tanh(c + d*x)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(tanh(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.353 $\int \frac{(e+fx)^3\mathbf{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=917

$$\frac{6ia\text{Li}_3\left(-ie^{c+dx}\right)f^3}{\left(a^2+b^2\right)d^4}-\frac{6ia\text{Li}_3\left(ie^{c+dx}\right)f^3}{\left(a^2+b^2\right)d^4}+\frac{3\text{Li}_3\left(-e^{2(c+dx)}\right)f^3}{2bd^4}-\frac{3a^2\text{Li}_3\left(-e^{2(c+dx)}\right)f^3}{2b\left(a^2+b^2\right)d^4}-\frac{6ab\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)f^3}{\left(a^2+b^2\right)^{3/2}d^4}+\frac{6ab\text{L}}{(}$$

```
[Out] (f*x+e)^3/b/d-a^2*(f*x+e)^3/b/(a^2+b^2)/d+6*a*f*(f*x+e)^2*arctan(exp(d*x+c)
)/(a^2+b^2)/d^2-3*f*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/b/d^2+3*a^2*f*(f*x+e)^2*
ln(1+exp(2*d*x+2*c))/b/(a^2+b^2)/d^2-a*b*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^
2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d+a*b*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^
2)^(1/2)))/(a^2+b^2)^(3/2)/d-6*I*a*f^2*(f*x+e)*polylog(2,-I*exp(d*x+c))/(a^
2+b^2)/d^3+6*I*a*f^3*polylog(3,-I*exp(d*x+c))/(a^2+b^2)/d^4-3*f^2*(f*x+e)*p
olylog(2,-exp(2*d*x+2*c))/b/d^3+3*a^2*f^2*(f*x+e)*polylog(2,-exp(2*d*x+2*c)
)/b/(a^2+b^2)/d^3-3*a*b*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1
/2)))/(a^2+b^2)^(3/2)/d^2+3*a*b*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2
+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-6*I*a*f^3*polylog(3,I*exp(d*x+c))/(a^2+b^
2)/d^4+6*I*a*f^2*(f*x+e)*polylog(2,I*exp(d*x+c))/(a^2+b^2)/d^3+3/2*f^3*poly
log(3,-exp(2*d*x+2*c))/b/d^4-3/2*a^2*f^3*polylog(3,-exp(2*d*x+2*c))/b/(a^2+
b^2)/d^4+6*a*b*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^
2+b^2)^(3/2)/d^3-6*a*b*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/
2)))/(a^2+b^2)^(3/2)/d^3-6*a*b*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/
2)))/(a^2+b^2)^(3/2)/d^4+6*a*b*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/
2)))/(a^2+b^2)^(3/2)/d^4-a*(f*x+e)^3*sech(d*x+c)/(a^2+b^2)/d+(f*x+e)^3*tanh
(d*x+c)/b/d-a^2*(f*x+e)^3*tanh(d*x+c)/b/(a^2+b^2)/d
```

Rubi [A] time = 1.71, antiderivative size = 917, normalized size of antiderivative = 1.00, number of steps used = 36, number of rules used = 14, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {5583, 4184, 3718, 2190, 2531, 2282, 6589, 5573, 3322, 2264, 6609, 6742, 5451, 4180}

$$\frac{6ia\text{PolyLog}\left(3,-ie^{c+dx}\right)f^3}{\left(a^2+b^2\right)d^4}-\frac{6ia\text{PolyLog}\left(3,ie^{c+dx}\right)f^3}{\left(a^2+b^2\right)d^4}+\frac{3\text{PolyLog}\left(3,-e^{2(c+dx)}\right)f^3}{2bd^4}-\frac{3a^2\text{PolyLog}\left(3,-e^{2(c+dx)}\right)f^3}{2b\left(a^2+b^2\right)d^4}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sech[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e + f*x)^3/(b*d) - (a^2*(e + f*x)^3)/(b*(a^2 + b^2)*d) + (6*a*f*(e + f*x)^
2*ArcTan[E^(c + d*x)])/((a^2 + b^2)*d^2) - (a*b*(e + f*x)^3*Log[1 + (b*E^(c
 + d*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) + (a*b*(e + f*x)^3*L
```

```
og[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) - (3*f
*(e + f*x)^2*Log[1 + E^(2*(c + d*x))])/(b*d^2) + (3*a^2*f*(e + f*x)^2*Log[1
 + E^(2*(c + d*x))])/(b*(a^2 + b^2)*d^2) - ((6*I)*a*f^2*(e + f*x)*PolyLog[2
, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^3) + ((6*I)*a*f^2*(e + f*x)*PolyLog[2,
I*E^(c + d*x)])/((a^2 + b^2)*d^3) - (3*a*b*f*(e + f*x)^2*PolyLog[2, -((b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) + (3*a*b*f*(e +
 f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^
(3/2)*d^2) - (3*f^2*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/(b*d^3) + (3*a^
2*f^2*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/(b*(a^2 + b^2)*d^3) + ((6*I)*
a*f^3*PolyLog[3, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^4) - ((6*I)*a*f^3*PolyLo
g[3, I*E^(c + d*x)])/((a^2 + b^2)*d^4) + (6*a*b*f^2*(e + f*x)*PolyLog[3, -(
(b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^3) - (6*a*b*f
^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 +
b^2)^(3/2)*d^3) + (3*f^3*PolyLog[3, -E^(2*(c + d*x))])/(2*b*d^4) - (3*a^2*f
^3*PolyLog[3, -E^(2*(c + d*x))])/(2*b*(a^2 + b^2)*d^4) - (6*a*b*f^3*PolyLog
[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^4) + (6
*a*b*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)
^(3/2)*d^4) - (a*(e + f*x)^3*Sech[c + d*x])/((a^2 + b^2)*d) + ((e + f*x)^3*
Tanh[c + d*x])/(b*d) - (a^2*(e + f*x)^3*Tanh[c + d*x])/(b*(a^2 + b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\operatorname{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\operatorname{sech}^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)^3\tanh(c+dx)}{bd} - \frac{a\int (e+fx)^3\operatorname{sech}^2(c+dx)(a-b\sinh(c+a}{b\left(a^2+b^2\right)}$$

$$= \frac{(e+fx)^3}{bd} + \frac{(e+fx)^3\tanh(c+dx)}{bd} - \frac{a\int \left(a(e+fx)^3\operatorname{sech}^2(c+dx)\right.}{}$$

$$= \frac{(e+fx)^3}{bd} - \frac{3f(e+fx)^2\log\left(1+e^{2(c+dx)}\right)}{bd^2} + \frac{(e+fx)^3\tanh(c+dx)}{bd}$$

$$= \frac{(e+fx)^3}{bd} - \frac{ab(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} + \frac{ab(e+fx)^3\log\left(1+\right.}{\left(a^2+b^2\right)^{3/2}d}$$

$$= \frac{(e+fx)^3}{bd} - \frac{a^2(e+fx)^3}{b\left(a^2+b^2\right)d} + \frac{6af(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx)^3}{(a}$$

$$= \frac{(e+fx)^3}{bd} - \frac{a^2(e+fx)^3}{b\left(a^2+b^2\right)d} + \frac{6af(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx)^3}{(a}$$

$$= \frac{(e+fx)^3}{bd} - \frac{a^2(e+fx)^3}{b\left(a^2+b^2\right)d} + \frac{6af(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx)^3}{(a}$$

$$= \frac{(e+fx)^3}{bd} - \frac{a^2(e+fx)^3}{b\left(a^2+b^2\right)d} + \frac{6af(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx)^3}{(a}$$

$$= \frac{(e+fx)^3}{bd} - \frac{a^2(e+fx)^3}{b\left(a^2+b^2\right)d} + \frac{6af(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx)^3}{(a}$$

Mathematica [A] time = 12.97, size = 1143, normalized size = 1.25

$$\frac{f\left(-4bf^2x^3d^3 - 12befx^2d^3 + 12be^2e^{2c}xd^3 - 12be^2\left(1+e^{2c}\right)xd^3 + 12ae^2\left(1+e^{2c}\right)\tan^{-1}\left(e^{c+dx}\right)d^2 + 6be^2\left(1+e^{2c}\right)\right(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sech[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (f*(12*b*d^3*e^2*E^(2*c)*x - 12*b*d^3*e^2*(1 + E^(2*c))*x - 12*b*d^3*e*f*x^
2 - 4*b*d^3*f^2*x^3 + 12*a*d^2*e^2*(1 + E^(2*c))*ArcTan[E^(c + d*x)] + 6*b*
d^2*e^2*(1 + E^(2*c))*(2*d*x - Log[1 + E^(2*(c + d*x))]) + (12*I)*a*d*e*(1
+ E^(2*c))*f*(d*x*(Log[1 - I*E^(c + d*x)] - Log[1 + I*E^(c + d*x)]) - PolyL
og[2, (-I)*E^(c + d*x)] + PolyLog[2, I*E^(c + d*x)]) + 6*b*d*e*(1 + E^(2*c)
)*f*(2*d*x*(d*x - Log[1 + E^(2*(c + d*x))]) - PolyLog[2, -E^(2*(c + d*x))])
 + (6*I)*a*(1 + E^(2*c))*f^2*(d^2*x^2*Log[1 - I*E^(c + d*x)] - d^2*x^2*Log[
1 + I*E^(c + d*x)] - 2*d*x*PolyLog[2, (-I)*E^(c + d*x)] + 2*d*x*PolyLog[2,
I*E^(c + d*x)] + 2*PolyLog[3, (-I)*E^(c + d*x)] - 2*PolyLog[3, I*E^(c + d*x
)]) + b*(1 + E^(2*c))*f^2*(2*d^2*x^2*(2*d*x - 3*Log[1 + E^(2*(c + d*x))]) -
 6*d*x*PolyLog[2, -E^(2*(c + d*x))] + 3*PolyLog[3, -E^(2*(c + d*x))]))))/(2*
(a^2 + b^2)*d^4*(1 + E^(2*c))) + (a*b*(2*d^3*e^3*ArcTanh[(a + b*E^(c + d*x)
)/Sqrt[a^2 + b^2]] - 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
b^2])] - 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d
^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 3*d^3*e^2*f*x*L
og[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 3*d^3*e*f^2*x^2*Log[1 + (b*
E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2])] - 3*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))/(-a
+ Sqrt[a^2 + b^2])] + 3*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2]))] + 6*d*e*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 +
 b^2])] + 6*d*f^3*x*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 6*
d*e*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 6*d*f^3*x*Po
lyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 6*f^3*PolyLog[4, (b*E^
(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*f^3*PolyLog[4, -((b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2]))]))/((a^2 + b^2)^(3/2)*d^4) + (Sech[c]*Sech[c + d*x]*(-(
a*e^3*Cosh[c]) - 3*a*e^2*f*x*Cosh[c] - 3*a*e*f^2*x^2*Cosh[c] - a*f^3*x^3*Co
sh[c] + b*e^3*Sinh[d*x] + 3*b*e^2*f*x*Sinh[d*x] + 3*b*e*f^2*x^2*Sinh[d*x] +
 b*f^3*x^3*Sinh[d*x]))/((a^2 + b^2)*d)
```

fricas [C] time = 0.80, size = 6537, normalized size = 7.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -1/2*(4*(a^2*b + b^3)*d^3*e^3 - 12*(a^2*b + b^3)*c*d^2*e^2*f + 12*(a^2*b +
b^3)*c^2*d*e*f^2 - 4*(a^2*b + b^3)*c^3*f^3 - 4*((a^2*b + b^3)*d^3*f^3*x^3 +
 3*(a^2*b + b^3)*d^3*e*f^2*x^2 + 3*(a^2*b + b^3)*d^3*e^2*f*x + 3*(a^2*b + b
```

^3)*c*d^2*e^2*f - 3*(a^2*b + b^3)*c^2*d*e*f^2 + (a^2*b + b^3)*c^3*f^3)*cosh
(d*x + c)^2 - 4*((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*d^3*e*f^2*x^2
+ 3*(a^2*b + b^3)*d^3*e^2*f*x + 3*(a^2*b + b^3)*c*d^2*e^2*f - 3*(a^2*b + b^
3)*c^2*d*e*f^2 + (a^2*b + b^3)*c^3*f^3)*sinh(d*x + c)^2 + 6*(a*b^2*d^2*f^3*
x^2 + 2*a*b^2*d^2*e*f^2*x + a*b^2*d^2*e^2*f + (a*b^2*d^2*f^3*x^2 + 2*a*b^2*
d^2*e*f^2*x + a*b^2*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(a*b^2*d^2*f^3*x^2 + 2*a
*b^2*d^2*e*f^2*x + a*b^2*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d^
2*f^3*x^2 + 2*a*b^2*d^2*e*f^2*x + a*b^2*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a
^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 6*(a*b^2*d^2*f^3*x^2
 + 2*a*b^2*d^2*e*f^2*x + a*b^2*d^2*e^2*f + (a*b^2*d^2*f^3*x^2 + 2*a*b^2*d^2
*e*f^2*x + a*b^2*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(a*b^2*d^2*f^3*x^2 + 2*a*b^
2*d^2*e*f^2*x + a*b^2*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d^2*f
^3*x^2 + 2*a*b^2*d^2*e*f^2*x + a*b^2*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2
+ b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b
*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(a*b^2*d^3*e^3 - 3*a*
b^2*c*d^2*e^2*f + 3*a*b^2*c^2*d*e*f^2 - a*b^2*c^3*f^3 + (a*b^2*d^3*e^3 - 3*
a*b^2*c*d^2*e^2*f + 3*a*b^2*c^2*d*e*f^2 - a*b^2*c^3*f^3)*cosh(d*x + c)^2 +
2*(a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*b^2*c^2*d*e*f^2 - a*b^2*c^3*f^
3)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a
*b^2*c^2*d*e*f^2 - a*b^2*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*lo
g(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a)
+ 2*(a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*b^2*c^2*d*e*f^2 - a*b^2*c^3*
f^3 + (a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*b^2*c^2*d*e*f^2 - a*b^2*c^
3*f^3)*cosh(d*x + c)^2 + 2*(a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*b^2*c
^2*d*e*f^2 - a*b^2*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d^3*e^3 -
3*a*b^2*c*d^2*e^2*f + 3*a*b^2*c^2*d*e*f^2 - a*b^2*c^3*f^3)*sinh(d*x + c)^2)
*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt
((a^2 + b^2)/b^2) + 2*a) + 2*(a*b^2*d^3*f^3*x^3 + 3*a*b^2*d^3*e*f^2*x^2 + 3
*a*b^2*d^3*e^2*f*x + 3*a*b^2*c*d^2*e^2*f - 3*a*b^2*c^2*d*e*f^2 + a*b^2*c^3*
f^3 + (a*b^2*d^3*f^3*x^3 + 3*a*b^2*d^3*e*f^2*x^2 + 3*a*b^2*d^3*e^2*f*x + 3*
a*b^2*c*d^2*e^2*f - 3*a*b^2*c^2*d*e*f^2 + a*b^2*c^3*f^3)*cosh(d*x + c)^2 +
2*(a*b^2*d^3*f^3*x^3 + 3*a*b^2*d^3*e*f^2*x^2 + 3*a*b^2*d^3*e^2*f*x + 3*a*b^
2*c*d^2*e^2*f - 3*a*b^2*c^2*d*e*f^2 + a*b^2*c^3*f^3)*cosh(d*x + c)*sinh(d*x
 + c) + (a*b^2*d^3*f^3*x^3 + 3*a*b^2*d^3*e*f^2*x^2 + 3*a*b^2*d^3*e^2*f*x +
3*a*b^2*c*d^2*e^2*f - 3*a*b^2*c^2*d*e*f^2 + a*b^2*c^3*f^3)*sinh(d*x + c)^2)
*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*
x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(a*b^2*d^3*f^3*
x^3 + 3*a*b^2*d^3*e*f^2*x^2 + 3*a*b^2*d^3*e^2*f*x + 3*a*b^2*c*d^2*e^2*f - 3
*a*b^2*c^2*d*e*f^2 + a*b^2*c^3*f^3 + (a*b^2*d^3*f^3*x^3 + 3*a*b^2*d^3*e*f^2
*x^2 + 3*a*b^2*d^3*e^2*f*x + 3*a*b^2*c*d^2*e^2*f - 3*a*b^2*c^2*d*e*f^2 + a*
b^2*c^3*f^3)*cosh(d*x + c)^2 + 2*(a*b^2*d^3*f^3*x^3 + 3*a*b^2*d^3*e*f^2*x^2
 + 3*a*b^2*d^3*e^2*f*x + 3*a*b^2*c*d^2*e^2*f - 3*a*b^2*c^2*d*e*f^2 + a*b^2*
c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d^3*f^3*x^3 + 3*a*b^2*d^3*e*f
^2*x^2 + 3*a*b^2*d^3*e^2*f*x + 3*a*b^2*c*d^2*e^2*f - 3*a*b^2*c^2*d*e*f^2 +

```
a*b^2*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c)
 + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2) - b)/b) + 12*(a*b^2*f^3*cosh(d*x + c)^2 + 2*a*b^2*f^3*cosh(d*x + c)*sin
h(d*x + c) + a*b^2*f^3*sinh(d*x + c)^2 + a*b^2*f^3)*sqrt((a^2 + b^2)/b^2)*p
olylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*
x + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(a*b^2*f^3*cosh(d*x + c)^2 + 2*a*b^2
*f^3*cosh(d*x + c)*sinh(d*x + c) + a*b^2*f^3*sinh(d*x + c)^2 + a*b^2*f^3)*s
qrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cos
h(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(a*b^2*d*f^3*x
 + a*b^2*d*e*f^2 + (a*b^2*d*f^3*x + a*b^2*d*e*f^2)*cosh(d*x + c)^2 + 2*(a*b
^2*d*f^3*x + a*b^2*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d*f^3*x +
a*b^2*d*e*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*
x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
b^2)/b^2))/b) + 12*(a*b^2*d*f^3*x + a*b^2*d*e*f^2 + (a*b^2*d*f^3*x + a*b^2*
d*e*f^2)*cosh(d*x + c)^2 + 2*(a*b^2*d*f^3*x + a*b^2*d*e*f^2)*cosh(d*x + c)*
sinh(d*x + c) + (a*b^2*d*f^3*x + a*b^2*d*e*f^2)*sinh(d*x + c)^2)*sqrt((a^2
+ b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c
) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 4*((a^3 + a*b^2)*d^3*f^3*x
^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + (a^3 + a
*b^2)*d^3*e^3)*cosh(d*x + c) - (12*I*(a^3 + a*b^2)*d*f^3*x - 12*(a^2*b + b^
3)*d*f^3*x + 12*I*(a^3 + a*b^2)*d*e*f^2 - 12*(a^2*b + b^3)*d*e*f^2 + (12*I*
(a^3 + a*b^2)*d*f^3*x - 12*(a^2*b + b^3)*d*f^3*x + 12*I*(a^3 + a*b^2)*d*e*f
^2 - 12*(a^2*b + b^3)*d*e*f^2)*cosh(d*x + c)^2 + (24*I*(a^3 + a*b^2)*d*f^3*
x - 24*(a^2*b + b^3)*d*f^3*x + 24*I*(a^3 + a*b^2)*d*e*f^2 - 24*(a^2*b + b^3
)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (12*I*(a^3 + a*b^2)*d*f^3*x - 12*(
a^2*b + b^3)*d*f^3*x + 12*I*(a^3 + a*b^2)*d*e*f^2 - 12*(a^2*b + b^3)*d*e*f^
2)*sinh(d*x + c)^2)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) - (-12*I*(a^3
+ a*b^2)*d*f^3*x - 12*(a^2*b + b^3)*d*f^3*x - 12*I*(a^3 + a*b^2)*d*e*f^2 -
12*(a^2*b + b^3)*d*e*f^2 + (-12*I*(a^3 + a*b^2)*d*f^3*x - 12*(a^2*b + b^3)*
d*f^3*x - 12*I*(a^3 + a*b^2)*d*e*f^2 - 12*(a^2*b + b^3)*d*e*f^2)*cosh(d*x +
 c)^2 + (-24*I*(a^3 + a*b^2)*d*f^3*x - 24*(a^2*b + b^3)*d*f^3*x - 24*I*(a^3
 + a*b^2)*d*e*f^2 - 24*(a^2*b + b^3)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) +
 (-12*I*(a^3 + a*b^2)*d*f^3*x - 12*(a^2*b + b^3)*d*f^3*x - 12*I*(a^3 + a*b^
2)*d*e*f^2 - 12*(a^2*b + b^3)*d*e*f^2)*sinh(d*x + c)^2)*dilog(-I*cosh(d*x +
 c) - I*sinh(d*x + c)) - (6*I*(a^3 + a*b^2)*d^2*e^2*f - 6*(a^2*b + b^3)*d^2
*e^2*f - 12*I*(a^3 + a*b^2)*c*d*e*f^2 + 12*(a^2*b + b^3)*c*d*e*f^2 + 6*I*(a
^3 + a*b^2)*c^2*f^3 - 6*(a^2*b + b^3)*c^2*f^3 + (6*I*(a^3 + a*b^2)*d^2*e^2*
f - 6*(a^2*b + b^3)*d^2*e^2*f - 12*I*(a^3 + a*b^2)*c*d*e*f^2 + 12*(a^2*b +
b^3)*c*d*e*f^2 + 6*I*(a^3 + a*b^2)*c^2*f^3 - 6*(a^2*b + b^3)*c^2*f^3)*cosh(
d*x + c)^2 + (12*I*(a^3 + a*b^2)*d^2*e^2*f - 12*(a^2*b + b^3)*d^2*e^2*f - 2
4*I*(a^3 + a*b^2)*c*d*e*f^2 + 24*(a^2*b + b^3)*c*d*e*f^2 + 12*I*(a^3 + a*b^
2)*c^2*f^3 - 12*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)*sinh(d*x + c) + (6*I*(
a^3 + a*b^2)*d^2*e^2*f - 6*(a^2*b + b^3)*d^2*e^2*f - 12*I*(a^3 + a*b^2)*c*d
*e*f^2 + 12*(a^2*b + b^3)*c*d*e*f^2 + 6*I*(a^3 + a*b^2)*c^2*f^3 - 6*(a^2*b
+ b^3)*c^2*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) + I) - (
```

```
-6*I*(a^3 + a*b^2)*d^2*e^2*f - 6*(a^2*b + b^3)*d^2*e^2*f + 12*I*(a^3 + a*b^
2)*c*d*e*f^2 + 12*(a^2*b + b^3)*c*d*e*f^2 - 6*I*(a^3 + a*b^2)*c^2*f^3 - 6*(
a^2*b + b^3)*c^2*f^3 + (-6*I*(a^3 + a*b^2)*d^2*e^2*f - 6*(a^2*b + b^3)*d^2*
e^2*f + 12*I*(a^3 + a*b^2)*c*d*e*f^2 + 12*(a^2*b + b^3)*c*d*e*f^2 - 6*I*(a^
3 + a*b^2)*c^2*f^3 - 6*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)^2 + (-12*I*(a^3
 + a*b^2)*d^2*e^2*f - 12*(a^2*b + b^3)*d^2*e^2*f + 24*I*(a^3 + a*b^2)*c*d*e
*f^2 + 24*(a^2*b + b^3)*c*d*e*f^2 - 12*I*(a^3 + a*b^2)*c^2*f^3 - 12*(a^2*b
+ b^3)*c^2*f^3)*cosh(d*x + c)*sinh(d*x + c) + (-6*I*(a^3 + a*b^2)*d^2*e^2*f
 - 6*(a^2*b + b^3)*d^2*e^2*f + 12*I*(a^3 + a*b^2)*c*d*e*f^2 + 12*(a^2*b + b
^3)*c*d*e*f^2 - 6*I*(a^3 + a*b^2)*c^2*f^3 - 6*(a^2*b + b^3)*c^2*f^3)*sinh(d
*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - I) - (-6*I*(a^3 + a*b^2)*d^2
*f^3*x^2 - 6*(a^2*b + b^3)*d^2*f^3*x^2 - 12*I*(a^3 + a*b^2)*d^2*e*f^2*x - 1
2*(a^2*b + b^3)*d^2*e*f^2*x - 12*I*(a^3 + a*b^2)*c*d*e*f^2 - 12*(a^2*b + b^
3)*c*d*e*f^2 + 6*I*(a^3 + a*b^2)*c^2*f^3 + 6*(a^2*b + b^3)*c^2*f^3 + (-6*I*
(a^3 + a*b^2)*d^2*f^3*x^2 - 6*(a^2*b + b^3)*d^2*f^3*x^2 - 12*I*(a^3 + a*b^2
)*d^2*e*f^2*x - 12*(a^2*b + b^3)*d^2*e*f^2*x - 12*I*(a^3 + a*b^2)*c*d*e*f^2
 - 12*(a^2*b + b^3)*c*d*e*f^2 + 6*I*(a^3 + a*b^2)*c^2*f^3 + 6*(a^2*b + b^3)
*c^2*f^3)*cosh(d*x + c)^2 + (-12*I*(a^3 + a*b^2)*d^2*f^3*x^2 - 12*(a^2*b +
b^3)*d^2*f^3*x^2 - 24*I*(a^3 + a*b^2)*d^2*e*f^2*x - 24*(a^2*b + b^3)*d^2*e*
f^2*x - 24*I*(a^3 + a*b^2)*c*d*e*f^2 - 24*(a^2*b + b^3)*c*d*e*f^2 + 12*I*(a
^3 + a*b^2)*c^2*f^3 + 12*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)*sinh(d*x + c)
 + (-6*I*(a^3 + a*b^2)*d^2*f^3*x^2 - 6*(a^2*b + b^3)*d^2*f^3*x^2 - 12*I*(a^
3 + a*b^2)*d^2*e*f^2*x - 12*(a^2*b + b^3)*d^2*e*f^2*x - 12*I*(a^3 + a*b^2)*
c*d*e*f^2 - 12*(a^2*b + b^3)*c*d*e*f^2 + 6*I*(a^3 + a*b^2)*c^2*f^3 + 6*(a^2
*b + b^3)*c^2*f^3)*sinh(d*x + c)^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) +
 1) - (6*I*(a^3 + a*b^2)*d^2*f^3*x^2 - 6*(a^2*b + b^3)*d^2*f^3*x^2 + 12*I*(
a^3 + a*b^2)*d^2*e*f^2*x - 12*(a^2*b + b^3)*d^2*e*f^2*x + 12*I*(a^3 + a*b^2
)*c*d*e*f^2 - 12*(a^2*b + b^3)*c*d*e*f^2 - 6*I*(a^3 + a*b^2)*c^2*f^3 + 6*(a
^2*b + b^3)*c^2*f^3 + (6*I*(a^3 + a*b^2)*d^2*f^3*x^2 - 6*(a^2*b + b^3)*d^2*
f^3*x^2 + 12*I*(a^3 + a*b^2)*d^2*e*f^2*x - 12*(a^2*b + b^3)*d^2*e*f^2*x + 1
2*I*(a^3 + a*b^2)*c*d*e*f^2 - 12*(a^2*b + b^3)*c*d*e*f^2 - 6*I*(a^3 + a*b^2
)*c^2*f^3 + 6*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)^2 + (12*I*(a^3 + a*b^2)*
d^2*f^3*x^2 - 12*(a^2*b + b^3)*d^2*f^3*x^2 + 24*I*(a^3 + a*b^2)*d^2*e*f^2*x
 - 24*(a^2*b + b^3)*d^2*e*f^2*x + 24*I*(a^3 + a*b^2)*c*d*e*f^2 - 24*(a^2*b
+ b^3)*c*d*e*f^2 - 12*I*(a^3 + a*b^2)*c^2*f^3 + 12*(a^2*b + b^3)*c^2*f^3)*c
osh(d*x + c)*sinh(d*x + c) + (6*I*(a^3 + a*b^2)*d^2*f^3*x^2 - 6*(a^2*b + b^
3)*d^2*f^3*x^2 + 12*I*(a^3 + a*b^2)*d^2*e*f^2*x - 12*(a^2*b + b^3)*d^2*e*f^
2*x + 12*I*(a^3 + a*b^2)*c*d*e*f^2 - 12*(a^2*b + b^3)*c*d*e*f^2 - 6*I*(a^3
+ a*b^2)*c^2*f^3 + 6*(a^2*b + b^3)*c^2*f^3)*sinh(d*x + c)^2)*log(-I*cosh(d*
x + c) - I*sinh(d*x + c) + 1) - (-12*I*(a^3 + a*b^2)*f^3 + 12*(a^2*b + b^3)
*f^3 + (-12*I*(a^3 + a*b^2)*f^3 + 12*(a^2*b + b^3)*f^3)*cosh(d*x + c)^2 + (
-24*I*(a^3 + a*b^2)*f^3 + 24*(a^2*b + b^3)*f^3)*cosh(d*x + c)*sinh(d*x + c)
 + (-12*I*(a^3 + a*b^2)*f^3 + 12*(a^2*b + b^3)*f^3)*sinh(d*x + c)^2)*polylo
g(3, I*cosh(d*x + c) + I*sinh(d*x + c)) - (12*I*(a^3 + a*b^2)*f^3 + 12*(a^2
*b + b^3)*f^3 + (12*I*(a^3 + a*b^2)*f^3 + 12*(a^2*b + b^3)*f^3)*cosh(d*x +
```

```
c)^2 + (24*I*(a^3 + a*b^2)*f^3 + 24*(a^2*b + b^3)*f^3)*cosh(d*x + c)*sinh(d
*x + c) + (12*I*(a^3 + a*b^2)*f^3 + 12*(a^2*b + b^3)*f^3)*sinh(d*x + c)^2)*
polylog(3, -I*cosh(d*x + c) - I*sinh(d*x + c)) + 4*((a^3 + a*b^2)*d^3*f^3*x
^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + (a^3 + a
*b^2)*d^3*e^3 - 2*((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*d^3*e*f^2*x^
2 + 3*(a^2*b + b^3)*d^3*e^2*f*x + 3*(a^2*b + b^3)*c*d^2*e^2*f - 3*(a^2*b +
b^3)*c^2*d*e*f^2 + (a^2*b + b^3)*c^3*f^3)*cosh(d*x + c))*sinh(d*x + c))/((a
^4 + 2*a^2*b^2 + b^4)*d^4*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^4*c
osh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*d^4*sinh(d*x + c)^2 +
(a^4 + 2*a^2*b^2 + b^4)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [F] time = 1.82, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{sech}\left(dx+c\right) \tanh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$3\,be^{2}f\left(\frac{2\,(dx+c)}{\left(a^{2}+b^{2}\right)d^{2}}-\frac{\log\left(e^{(2\,dx+2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d^{2}}\right)+6\,af^{3}\int \frac{x^{2}e^{(dx+c)}}{a^{2}de^{(2\,dx+2\,c)}+b^{2}de^{(2\,dx+2\,c)}+a^{2}d+b^{2}d}\,dx+6\,bf^{3}\int \frac{}{a^{2}de^{(2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] 3*b*e^2*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2 +
 b^2)*d^2)) + 6*a*f^3*integrate(x^2*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^
```

```
2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) + 6*b*f^3*integrate(x^2/(a^2*d*e^(
2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) + 12*a*e*f^2*inte
grate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d
+ b^2*d), x) + 12*b*e*f^2*integrate(x/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d
*x + 2*c) + a^2*d + b^2*d), x) - e^3*(a*b*log((b*e^(-d*x - c) - a - sqrt(a^
2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^2 + b^2)^(3/2)*d) + 2
*(a*e^(-d*x - c) - b)/((a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d)) + 6*a
*e^2*f*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) - 2*(b*f^3*x^3 + 3*b*e*f^2*x^2
 + 3*b*e^2*f*x + (a*f^3*x^3*e^c + 3*a*e*f^2*x^2*e^c + 3*a*e^2*f*x*e^c)*e^(d
*x))/(a^2*d + b^2*d + (a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) - integrat
e(-2*(a*b*f^3*x^3*e^c + 3*a*b*e*f^2*x^2*e^c + 3*a*b*e^2*f*x*e^c)*e^(d*x)/(a
^2*b + b^3 - (a^2*b*e^(2*c) + b^3*e^(2*c))*e^(2*d*x) - 2*(a^3*e^c + a*b^2*e
^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh(c+d\,x)\,\left(e+f\,x\right)^3}{\cosh(c+d\,x)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)*(e + f*x)^3)/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int((tanh(c + d*x)*(e + f*x)^3)/(cosh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^3\tanh(c+dx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**3*tanh(c + d*x)*sech(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.354 $\int \frac{(e+fx)^2\textbf{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=648

$$\frac{a^2f^2\text{Li}_2\left(-e^{2(c+dx)}\right)}{bd^3\left(a^2+b^2\right)}-\frac{2iaf^2\text{Li}_2\left(-ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}+\frac{2iaf^2\text{Li}_2\left(ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}+\frac{2abf^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)^{3/2}}-\frac{2abf^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)^{3/2}}-2a$$

```
[Out] (f*x+e)^2/b/d-a^2*(f*x+e)^2/b/(a^2+b^2)/d+4*a*f*(f*x+e)*arctan(exp(d*x+c))/
(a^2+b^2)/d^2-2*f*(f*x+e)*ln(1+exp(2*d*x+2*c))/b/d^2+2*a^2*f*(f*x+e)*ln(1+e
xp(2*d*x+2*c))/b/(a^2+b^2)/d^2-a*b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))/(a^2+b^2)^(3/2)/d+a*b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/
2)))/(a^2+b^2)^(3/2)/d-2*I*a*f^2*polylog(2,-I*exp(d*x+c))/(a^2+b^2)/d^3+2*I
*a*f^2*polylog(2,I*exp(d*x+c))/(a^2+b^2)/d^3-f^2*polylog(2,-exp(2*d*x+2*c))
/b/d^3+a^2*f^2*polylog(2,-exp(2*d*x+2*c))/b/(a^2+b^2)/d^3-2*a*b*f*(f*x+e)*p
olylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2+2*a*b*f*(f*
x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2+2*a*b
*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^3-2*a*b
*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^3-a*(f*
x+e)^2*sech(d*x+c)/(a^2+b^2)/d+(f*x+e)^2*tanh(d*x+c)/b/d-a^2*(f*x+e)^2*tanh
(d*x+c)/b/(a^2+b^2)/d
```

Rubi [A] time = 1.32, antiderivative size = 648, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.469$, Rules used = {5583, 4184, 3718, 2190, 2279, 2391, 5573, 3322, 2264, 2531, 2282, 6589, 6742, 5451, 4180}

$$-\frac{2abf(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}+\frac{2abf(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{d^2\left(a^2+b^2\right)^{3/2}}+\frac{a^2f^2\text{PolyLog}\left(2,-e^{2(c+dx)}\right)}{bd^3\left(a^2+b^2\right)}-2$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sech[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e + f*x)^2/(b*d) - (a^2*(e + f*x)^2)/(b*(a^2 + b^2)*d) + (4*a*f*(e + f*x)*
ArcTan[E^(c + d*x)])/((a^2 + b^2)*d^2) - (a*b*(e + f*x)^2*Log[1 + (b*E^(c +
 d*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) + (a*b*(e + f*x)^2*Log
[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) - (2*f*(
e + f*x)*Log[1 + E^(2*(c + d*x))])/(b*d^2) + (2*a^2*f*(e + f*x)*Log[1 + E^(
2*(c + d*x))])/(b*(a^2 + b^2)*d^2) - ((2*I)*a*f^2*PolyLog[2, (-I)*E^(c + d*
x)])/((a^2 + b^2)*d^3) + ((2*I)*a*f^2*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^
2)*d^3) - (2*a*b*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b
```

```
^2]))])/((a^2 + b^2)^(3/2)*d^2) + (2*a*b*f*(e + f*x)*PolyLog[2, -((b*E^(c +
 d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) - (f^2*PolyLog[2, -
E^(2*(c + d*x))])/(b*d^3) + (a^2*f^2*PolyLog[2, -E^(2*(c + d*x))])/(b*(a^2
+ b^2)*d^3) + (2*a*b*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])
)])/((a^2 + b^2)^(3/2)*d^3) - (2*a*b*f^2*PolyLog[3, -((b*E^(c + d*x))/(a +
Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^3) - (a*(e + f*x)^2*Sech[c + d*x])
/((a^2 + b^2)*d) + ((e + f*x)^2*Tanh[c + d*x])/(b*d) - (a^2*(e + f*x)^2*Tan
h[c + d*x])/(b*(a^2 + b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\operatorname{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\operatorname{sech}^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)^2\tanh(c+dx)}{bd} - \frac{a\int (e+fx)^2\operatorname{sech}^2(c+dx)(a-b\sinh(c+ \cdots}{b\left(a^2+b^2\right)}$$

$$= \frac{(e+fx)^2}{bd} + \frac{(e+fx)^2\tanh(c+dx)}{bd} - \frac{a\int \left(a(e+fx)^2\operatorname{sech}^2(c+dx) \cdots}{\cdots}$$

$$= \frac{(e+fx)^2}{bd} - \frac{2f(e+fx)\log\left(1+e^{2(c+dx)}\right)}{bd^2} + \frac{(e+fx)^2\tanh(c+dx)}{bd} \cdots$$

$$= \frac{(e+fx)^2}{bd} - \frac{ab(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} + \frac{ab(e+fx)^2\log\left(1+ \cdots\right.}{\left(a^2+b^2\right)^{3/2} \cdots}$$

$$= \frac{(e+fx)^2}{bd} - \frac{a^2(e+fx)^2}{b\left(a^2+b^2\right)d} + \frac{4af(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx) \cdots}{\left(\cdots\right.}$$

$$= \frac{(e+fx)^2}{bd} - \frac{a^2(e+fx)^2}{b\left(a^2+b^2\right)d} + \frac{4af(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx) \cdots}{\left(\cdots\right.}$$

$$= \frac{(e+fx)^2}{bd} - \frac{a^2(e+fx)^2}{b\left(a^2+b^2\right)d} + \frac{4af(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx) \cdots}{\left(\cdots\right.}$$

$$= \frac{(e+fx)^2}{bd} - \frac{a^2(e+fx)^2}{b\left(a^2+b^2\right)d} + \frac{4af(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx) \cdots}{\left(\cdots\right.}$$

Mathematica [A] time = 8.10, size = 906, normalized size = 1.40

$$\frac{2a\left(-\frac{2\tan^{-1}\left(\frac{\sinh(c)+\cosh(c)\tanh\left(\frac{dx}{2}\right)}{\sqrt{\cosh^2(c)-\sinh^2(c)}}\right)\tanh^{-1}(\coth(c))}{\sqrt{\cosh^2(c)-\sinh^2(c)}} - \frac{i\operatorname{csch}(c)\left(i\left(dx+\tanh^{-1}(\coth(c))\right)\left(\log\left(1-e^{-dx-\tanh^{-1}(\coth(c))}\right)-\log\left(1+e^{-dx-\tanh^{-1}(\coth(c))}\right) \cdots\right.\right.}{\sqrt{1-\coth^2(c)}} \cdots\right.}{\left(a^2+b^2\right)d^3}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sech[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (a*b*(2*d^2*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 2*d^2*e*f*x*
Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2])] - 2*d*f*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] +
 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 2*f
^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*f^2*PolyLog[3, -(
(b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/((a^2 + b^2)^(3/2)*d^3) - (2*b*e*
f*Sech[c]*(Cosh[c]*Log[Cosh[c]*Cosh[d*x] + Sinh[c]*Sinh[d*x]] - d*x*Sinh[c]
))/((a^2 + b^2)*d^2*(Cosh[c]^2 - Sinh[c]^2)) + (4*a*e*f*ArcTan[(Sinh[c] + C
osh[c]*Tanh[(d*x)/2])/Sqrt[Cosh[c]^2 - Sinh[c]^2]])/((a^2 + b^2)*d^2*Sqrt[C
osh[c]^2 - Sinh[c]^2]) - (b*f^2*Csch[c]*((d^2*x^2)/E^ArcTanh[Coth[c]] - (I*
Coth[c]*(-(d*x*(-Pi + (2*I)*ArcTanh[Coth[c]])) - Pi*Log[1 + E^(2*d*x)] - 2*
(I*d*x + I*ArcTanh[Coth[c]])*Log[1 - E^((2*I)*(I*d*x + I*ArcTanh[Coth[c]]))
] + Pi*Log[Cosh[d*x]] + (2*I)*ArcTanh[Coth[c]]*Log[I*Sinh[d*x + ArcTanh[Cot
h[c]]]] + I*PolyLog[2, E^((2*I)*(I*d*x + I*ArcTanh[Coth[c]]))]))/Sqrt[1 - C
oth[c]^2])*Sech[c])/((a^2 + b^2)*d^3*Sqrt[Csch[c]^2*(-Cosh[c]^2 + Sinh[c]^2
)]) + (2*a*f^2*(((-I)*Csch[c]*(I*(d*x + ArcTanh[Coth[c]])*(Log[1 - E^(-(d*x
) - ArcTanh[Coth[c]])] - Log[1 + E^(-(d*x) - ArcTanh[Coth[c]])]) + I*(PolyL
og[2, -E^(-(d*x) - ArcTanh[Coth[c]])] - PolyLog[2, E^(-(d*x) - ArcTanh[Coth
[c]])])))/Sqrt[1 - Coth[c]^2] - (2*ArcTan[(Sinh[c] + Cosh[c]*Tanh[(d*x)/2])
/Sqrt[Cosh[c]^2 - Sinh[c]^2]]*ArcTanh[Coth[c]])/Sqrt[Cosh[c]^2 - Sinh[c]^2]
))/((a^2 + b^2)*d^3) + (Sech[c]*Sech[c + d*x]*(-(a*e^2*Cosh[c]) - 2*a*e*f*x
*Cosh[c] - a*f^2*x^2*Cosh[c] + b*e^2*Sinh[d*x] + 2*b*e*f*x*Sinh[d*x] + b*f^
2*x^2*Sinh[d*x]))/((a^2 + b^2)*d)
```

fricas [C] time = 1.05, size = 3690, normalized size = 5.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -1/2*(4*(a^2*b + b^3)*d^2*e^2 - 8*(a^2*b + b^3)*c*d*e*f + 4*(a^2*b + b^3)*c
^2*f^2 - 4*((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*d^2*e*f*x + 2*(a^2*
b + b^3)*c*d*e*f - (a^2*b + b^3)*c^2*f^2)*cosh(d*x + c)^2 - 4*((a^2*b + b^3
)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*d^2*e*f*x + 2*(a^2*b + b^3)*c*d*e*f - (a^2*
b + b^3)*c^2*f^2)*sinh(d*x + c)^2 + 4*(a*b^2*d*f^2*x + a*b^2*d*e*f + (a*b^2
*d*f^2*x + a*b^2*d*e*f)*cosh(d*x + c)^2 + 2*(a*b^2*d*f^2*x + a*b^2*d*e*f)*c
```

```
osh(d*x + c)*sinh(d*x + c) + (a*b^2*d*f^2*x + a*b^2*d*e*f)*sinh(d*x + c)^2)
*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d
*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 4*(a*b^2*d*f
^2*x + a*b^2*d*e*f + (a*b^2*d*f^2*x + a*b^2*d*e*f)*cosh(d*x + c)^2 + 2*(a*b
^2*d*f^2*x + a*b^2*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d*f^2*x + a*
b^2*d*e*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) +
a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
 - b)/b + 1) - 2*(a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2 + (a*b^2*
d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c)^2 + 2*(a*b^2*d^2*e
^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*
d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2
)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2
) + 2*a) + 2*(a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2 + (a*b^2*d^2*
e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c)^2 + 2*(a*b^2*d^2*e^2 -
 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d^2*
e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^
2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) +
2*a) + 2*(a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c
^2*f^2 + (a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c
^2*f^2)*cosh(d*x + c)^2 + 2*(a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^
2*c*d*e*f - a*b^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d^2*f^2*x^2
 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*sinh(d*x + c)^2)*sq
rt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(a*b^2*d^2*f^2*x^2
 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2 + (a*b^2*d^2*f^2*x^2
 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*cosh(d*x + c)^2 + 2
*(a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*
cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*
b^2*c*d*e*f - a*b^2*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a
*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b) - 4*(a*b^2*f^2*cosh(d*x + c)^2 + 2*a*b^2*f^2*cosh
(d*x + c)*sinh(d*x + c) + a*b^2*f^2*sinh(d*x + c)^2 + a*b^2*f^2)*sqrt((a^2
+ b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c
) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 4*(a*b^2*f^2*cosh(d*x + c)
^2 + 2*a*b^2*f^2*cosh(d*x + c)*sinh(d*x + c) + a*b^2*f^2*sinh(d*x + c)^2 +
a*b^2*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x +
 c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 4*((a
^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + (a^3 + a*b^2)*d^2*e^2
)*cosh(d*x + c) - (4*I*(a^3 + a*b^2)*f^2 - 4*(a^2*b + b^3)*f^2 + (4*I*(a^3
+ a*b^2)*f^2 - 4*(a^2*b + b^3)*f^2)*cosh(d*x + c)^2 + (8*I*(a^3 + a*b^2)*f^
2 - 8*(a^2*b + b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c) + (4*I*(a^3 + a*b^2)*f
^2 - 4*(a^2*b + b^3)*f^2)*sinh(d*x + c)^2)*dilog(I*cosh(d*x + c) + I*sinh(d
*x + c)) - (-4*I*(a^3 + a*b^2)*f^2 - 4*(a^2*b + b^3)*f^2 + (-4*I*(a^3 + a*b
^2)*f^2 - 4*(a^2*b + b^3)*f^2)*cosh(d*x + c)^2 + (-8*I*(a^3 + a*b^2)*f^2 -
8*(a^2*b + b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c) + (-4*I*(a^3 + a*b^2)*f^2
```

```
- 4*(a^2*b + b^3)*f^2)*sinh(d*x + c)^2)*dilog(-I*cosh(d*x + c) - I*sinh(d*x
 + c)) - (4*I*(a^3 + a*b^2)*d*e*f - 4*(a^2*b + b^3)*d*e*f - 4*I*(a^3 + a*b^
2)*c*f^2 + 4*(a^2*b + b^3)*c*f^2 + (4*I*(a^3 + a*b^2)*d*e*f - 4*(a^2*b + b^
3)*d*e*f - 4*I*(a^3 + a*b^2)*c*f^2 + 4*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)^2
 + (8*I*(a^3 + a*b^2)*d*e*f - 8*(a^2*b + b^3)*d*e*f - 8*I*(a^3 + a*b^2)*c*f
^2 + 8*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (4*I*(a^3 + a*b^2
)*d*e*f - 4*(a^2*b + b^3)*d*e*f - 4*I*(a^3 + a*b^2)*c*f^2 + 4*(a^2*b + b^3)
*c*f^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) + I) - (-4*I*(a^
3 + a*b^2)*d*e*f - 4*(a^2*b + b^3)*d*e*f + 4*I*(a^3 + a*b^2)*c*f^2 + 4*(a^2
*b + b^3)*c*f^2 + (-4*I*(a^3 + a*b^2)*d*e*f - 4*(a^2*b + b^3)*d*e*f + 4*I*(
a^3 + a*b^2)*c*f^2 + 4*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)^2 + (-8*I*(a^3 +
a*b^2)*d*e*f - 8*(a^2*b + b^3)*d*e*f + 8*I*(a^3 + a*b^2)*c*f^2 + 8*(a^2*b +
 b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (-4*I*(a^3 + a*b^2)*d*e*f - 4*(a
^2*b + b^3)*d*e*f + 4*I*(a^3 + a*b^2)*c*f^2 + 4*(a^2*b + b^3)*c*f^2)*sinh(d
*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - I) - (-4*I*(a^3 + a*b^2)*d*f
^2*x - 4*(a^2*b + b^3)*d*f^2*x - 4*I*(a^3 + a*b^2)*c*f^2 - 4*(a^2*b + b^3)*
c*f^2 + (-4*I*(a^3 + a*b^2)*d*f^2*x - 4*(a^2*b + b^3)*d*f^2*x - 4*I*(a^3 +
a*b^2)*c*f^2 - 4*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)^2 + (-8*I*(a^3 + a*b^2)
*d*f^2*x - 8*(a^2*b + b^3)*d*f^2*x - 8*I*(a^3 + a*b^2)*c*f^2 - 8*(a^2*b + b
^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (-4*I*(a^3 + a*b^2)*d*f^2*x - 4*(a
^2*b + b^3)*d*f^2*x - 4*I*(a^3 + a*b^2)*c*f^2 - 4*(a^2*b + b^3)*c*f^2)*sinh
(d*x + c)^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) - (4*I*(a^3 + a*b^2
)*d*f^2*x - 4*(a^2*b + b^3)*d*f^2*x + 4*I*(a^3 + a*b^2)*c*f^2 - 4*(a^2*b +
b^3)*c*f^2 + (4*I*(a^3 + a*b^2)*d*f^2*x - 4*(a^2*b + b^3)*d*f^2*x + 4*I*(a^
3 + a*b^2)*c*f^2 - 4*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)^2 + (8*I*(a^3 + a*b
^2)*d*f^2*x - 8*(a^2*b + b^3)*d*f^2*x + 8*I*(a^3 + a*b^2)*c*f^2 - 8*(a^2*b
+ b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (4*I*(a^3 + a*b^2)*d*f^2*x - 4*
(a^2*b + b^3)*d*f^2*x + 4*I*(a^3 + a*b^2)*c*f^2 - 4*(a^2*b + b^3)*c*f^2)*si
nh(d*x + c)^2)*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) + 4*((a^3 + a*b^
2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + (a^3 + a*b^2)*d^2*e^2 - 2*((a^
2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*d^2*e*f*x + 2*(a^2*b + b^3)*c*d*e*
f - (a^2*b + b^3)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2
+ b^4)*d^3*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)*si
nh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*d^3*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^
2 + b^4)*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [F] time = 1.44, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{sech}\left(dx+c\right) \tanh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,bef\left(\frac{2\,(dx+c)}{\left(a^2+b^2\right)d^2}-\frac{\log\left(e^{(2\,dx+2\,c)}+1\right)}{\left(a^2+b^2\right)d^2}\right)+4\,af^2\int\frac{xe^{(dx+c)}}{a^2de^{(2\,dx+2\,c)}+b^2de^{(2\,dx+2\,c)}+a^2d+b^2d}\,dx+4\,bf^2\int\frac{}{a^2de^{(2\,dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] 2*b*e*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2 + b
^2)*d^2)) + 4*a*f^2*integrate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d*
e^(2*d*x + 2*c) + a^2*d + b^2*d), x) + 4*b*f^2*integrate(x/(a^2*d*e^(2*d*x
+ 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - e^2*(a*b*log((b*e^(-d
*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^
2 + b^2)^(3/2)*d) + 2*(a*e^(-d*x - c) - b)/((a^2 + b^2 + (a^2 + b^2)*e^(-2*
d*x - 2*c))*d)) + 4*a*e*f*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) - 2*(b*f^2*
x^2 + 2*b*e*f*x + (a*f^2*x^2*e^c + 2*a*e*f*x*e^c)*e^(d*x))/(a^2*d + b^2*d +
 (a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) - integrate(-2*(a*b*f^2*x^2*e^c
 + 2*a*b*e*f*x*e^c)*e^(d*x)/(a^2*b + b^3 - (a^2*b*e^(2*c) + b^3*e^(2*c))*e^
(2*d*x) - 2*(a^3*e^c + a*b^2*e^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{\cosh\left(c+d\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)*(e + f*x)^2)/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((tanh(c + d*x)*(e + f*x)^2)/(cosh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{2}\tanh\left(c+dx\right)\operatorname{sech}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**2*tanh(c + d*x)*sech(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.355 $\int \frac{(e+fx)\textbf{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=335

$$-\frac{abf\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}+\frac{abf\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}+\frac{af\tan^{-1}(\sinh(c+dx))}{d^2\left(a^2+b^2\right)}+\frac{a^2f\log(\cosh(c+dx))}{bd^2\left(a^2+b^2\right)}-\frac{ab(e+fx)\log\left(\right.}{d\left(a^2+\right.}$$

```
[Out] a*f*arctan(sinh(d*x+c))/(a^2+b^2)/d^2-f*ln(cosh(d*x+c))/b/d^2+a^2*f*ln(cosh
(d*x+c))/b/(a^2+b^2)/d^2-a*b*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))
/(a^2+b^2)^(3/2)/d+a*b*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+
b^2)^(3/2)/d-a*b*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(
3/2)/d^2+a*b*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)
/d^2-a*(f*x+e)*sech(d*x+c)/(a^2+b^2)/d+(f*x+e)*tanh(d*x+c)/b/d-a^2*(f*x+e)*
tanh(d*x+c)/b/(a^2+b^2)/d
```

Rubi [A] time = 0.66, antiderivative size = 335, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 12, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5583, 4184, 3475, 5573, 3322, 2264, 2190, 2279, 2391, 6742, 5451, 3770}

$$-\frac{abf\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}+\frac{abf\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{d^2\left(a^2+b^2\right)^{3/2}}+\frac{af\tan^{-1}(\sinh(c+dx))}{d^2\left(a^2+b^2\right)}+\frac{a^2f\log(\cosh(c+dx))}{bd^2\left(a^2+b^2\right)}-$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*f*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)*d^2) - (a*b*(e + f*x)*Log[1 + (b*E
^(c + d*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) + (a*b*(e + f*x)*
Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) - (f*
Log[Cosh[c + d*x]])/(b*d^2) + (a^2*f*Log[Cosh[c + d*x]])/(b*(a^2 + b^2)*d^2
) - (a*b*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^
2)^(3/2)*d^2) + (a*b*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]
)/((a^2 + b^2)^(3/2)*d^2) - (a*(e + f*x)*Sech[c + d*x])/((a^2 + b^2)*d) + (
(e + f*x)*Tanh[c + d*x])/(b*d) - (a^2*(e + f*x)*Tanh[c + d*x])/(b*(a^2 + b^
2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\text{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{sech}^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)\tanh(c+dx)}{bd} - \frac{a\int (e+fx)\text{sech}^2(c+dx)(a-b\sinh(c+dx))}{b\left(a^2+b^2\right)}$$

$$= -\frac{f\log(\cosh(c+dx))}{bd^2} + \frac{(e+fx)\tanh(c+dx)}{bd} - \frac{a\int \left(a(e+fx)\text{sech}^2\right.}{}$$

$$= -\frac{f\log(\cosh(c+dx))}{bd^2} + \frac{(e+fx)\tanh(c+dx)}{bd} - \frac{\left(2ab^2\right)\int \frac{e^{c+dx}(e+}{2a-2\sqrt{a^2+b^2}}}{\left(a^2+b^2\right)^{3/2}}$$

$$= -\frac{ab(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} + \frac{ab(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{f}{}$$

$$= \frac{af\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} + \frac{ab(e+fx)}{(a}$$

$$= \frac{af\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d^2} - \frac{ab(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} + \frac{ab(e+fx)}{(a}$$

Mathematica [A] time = 2.90, size = 285, normalized size = 0.85

$$\frac{\frac{ab\left(2de\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)-f\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)-f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)-2cf\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)\right)}{\left(a^2+b^2\right)^{3/2}}+}{d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((2*a*f*ArcTan[Tanh[(c + d*x)/2]])/(a^2 + b^2) - (b*f*Log[Cosh[c + d*x]])/(
a^2 + b^2) + (a*b*(2*d*e*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 2*c
*f*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - f*(c + d*x)*Log[1 + (b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2])] - f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
```

```
+ f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(a^2 + b^2)^(3/2
) + (d*(e + f*x)*Sech[c + d*x]*(-a + b*Sinh[c + d*x]))/(a^2 + b^2))/d^2
```

fricas [B] time = 0.54, size = 1338, normalized size = 3.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] (2*(a^2*b + b^3)*d*f*x*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*d*f*x*sinh(d*x + c
)^2 - 2*(a^2*b + b^3)*d*e - (a*b^2*f*cosh(d*x + c)^2 + 2*a*b^2*f*cosh(d*x +
 c)*sinh(d*x + c) + a*b^2*f*sinh(d*x + c)^2 + a*b^2*f)*sqrt((a^2 + b^2)/b^2
)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (a*b^2*f*cosh(d*x + c)^2 + 2*a*b^
2*f*cosh(d*x + c)*sinh(d*x + c) + a*b^2*f*sinh(d*x + c)^2 + a*b^2*f)*sqrt((
a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
 + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (a*b^2*d*e - a*b^2*
c*f + (a*b^2*d*e - a*b^2*c*f)*cosh(d*x + c)^2 + 2*(a*b^2*d*e - a*b^2*c*f)*c
osh(d*x + c)*sinh(d*x + c) + (a*b^2*d*e - a*b^2*c*f)*sinh(d*x + c)^2)*sqrt(
(a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2
+ b^2)/b^2) + 2*a) - (a*b^2*d*e - a*b^2*c*f + (a*b^2*d*e - a*b^2*c*f)*cosh(
d*x + c)^2 + 2*(a*b^2*d*e - a*b^2*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2
*d*e - a*b^2*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x +
 c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (a*b^2*d*f*x +
 a*b^2*c*f + (a*b^2*d*f*x + a*b^2*c*f)*cosh(d*x + c)^2 + 2*(a*b^2*d*f*x + a
*b^2*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d*f*x + a*b^2*c*f)*sinh(d*x
+ c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (a*b^2*d*f
*x + a*b^2*c*f + (a*b^2*d*f*x + a*b^2*c*f)*cosh(d*x + c)^2 + 2*(a*b^2*d*f*x
 + a*b^2*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a*b^2*d*f*x + a*b^2*c*f)*sinh(
d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) -
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*((a^
3 + a*b^2)*f*cosh(d*x + c)^2 + 2*(a^3 + a*b^2)*f*cosh(d*x + c)*sinh(d*x + c
) + (a^3 + a*b^2)*f*sinh(d*x + c)^2 + (a^3 + a*b^2)*f)*arctan(cosh(d*x + c)
 + sinh(d*x + c)) - 2*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e)*cosh(d*x +
c) - ((a^2*b + b^3)*f*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f*cosh(d*x + c)*sin
h(d*x + c) + (a^2*b + b^3)*f*sinh(d*x + c)^2 + (a^2*b + b^3)*f)*log(2*cosh(
d*x + c)/(cosh(d*x + c) - sinh(d*x + c))) + 2*(2*(a^2*b + b^3)*d*f*x*cosh(d
*x + c) - (a^3 + a*b^2)*d*f*x - (a^3 + a*b^2)*d*e)*sinh(d*x + c))/((a^4 + 2
*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*
x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*d^2*sinh(d*x + c)^2 + (a^4 +
 2*a^2*b^2 + b^4)*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] Timed out
```

maple [B] time = 0.25, size = 1858, normalized size = 5.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 2/(a^2+b^2)^(3/2)/d*a*b^3*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+
a)/(a+(a^2+b^2)^(1/2)))*x+2/(a^2+b^2)^(3/2)/d^2*a*b^3*f/(2*a^2+2*b^2)*ln((b
*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-2/(a^2+b^2)^(3/2)/d^2
*a^3*b*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(
1/2)))*c-2/(a^2+b^2)^(3/2)/d^2*a*b^3*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2
+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+2/(a^2+b^2)^(3/2)/d^2*a^3*b*f/(2*a^2
+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-2/(a^2+b
^2)^(3/2)/d*a^3*b*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+
(a^2+b^2)^(1/2)))*x-2/(a^2+b^2)^(3/2)/d*a*b^3*f/(2*a^2+2*b^2)*ln((-b*exp(d*
x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+2/(a^2+b^2)^(3/2)/d*a^3*b*f
/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1
/(a^2+b^2)/d^2*f*b^3/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/
(a^2+b^2)/d^2*f*b^3/(2*a^2+2*b^2)*ln(1+exp(2*d*x+2*c))+4/(a^2+b^2)/d^2*a^3*
f/(2*a^2+2*b^2)*arctan(exp(d*x+c))-1/(a^2+b^2)^2/d^2*f*b*ln(b*exp(2*d*x+2*c
)+2*a*exp(d*x+c)-b)*a^2-2/(a^2+b^2)^(3/2)/d^2*a*b^3*f/(2*a^2+2*b^2)*dilog((
-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-2/(a^2+b^2)^(1/2)/d^
2*a*b*f/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/(
a^2+b^2)^(3/2)/d^2*a^3*b*f/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(
a^2+b^2)^(1/2))+2/(a^2+b^2)^(3/2)/d^2*a^3*b*f/(2*a^2+2*b^2)*dilog((b*exp(d*
x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-2/(a^2+b^2)^(3/2)/d^2*a^3*b*f/
(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))
-2/(a^2+b^2)^(3/2)/d^2*a*b^3*f/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*
a)/(a^2+b^2)^(1/2))+2/(a^2+b^2)/d^2*a^2*b*f/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*
c)+2*a*exp(d*x+c)-b)-2/(a^2+b^2)/d^2*a^2*b*f/(2*a^2+2*b^2)*ln(1+exp(2*d*x+2
*c))+2/(a^2+b^2)^(5/2)/d^2*f*b*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(
1/2))*a^3+2/(a^2+b^2)^(5/2)/d^2*f*b^3*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2
+b^2)^(1/2))*a+4/(a^2+b^2)/d^2*f*b^2/(2*a^2+2*b^2)*a*arctan(exp(d*x+c))-2*(
```

```
f*x+e)*(a*exp(d*x+c)+b)/d/(a^2+b^2)/(1+exp(2*d*x+2*c))+2/(a^2+b^2)/d^2*b*f*
ln(exp(d*x+c))-1/2/(a^2+b^2)^2/d^2*f*b^3*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)
-b)+2/(a^2+b^2)^(3/2)/d^2*a*b^3*f/(2*a^2+2*b^2)*dilog((b*exp(d*x+c)+(a^2+b^
2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+2/d/(a^2+b^2)^(1/2)*a*b*e/(2*a^2+2*b^2)*ar
ctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/d/(a^2+b^2)^(3/2)*a*b^3*e
/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/d/(a^2+b
^2)^(3/2)*a^3*b*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^
(1/2))-2/d^2/(a^2+b^2)^(1/2)*a*b*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x
+c)+2*a)/(a^2+b^2)^(1/2))-2/d^2/(a^2+b^2)^(3/2)*a*b^3*f*c/(2*a^2+2*b^2)*arc
tanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d^2/(a^2+b^2)^(3/2)*a^3*b*
f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(2\,ab\int -\frac{xe^{(dx+c)}}{a^2b+b^3-\left(a^2be^{(2\,c)}+b^3e^{(2\,c)}\right)e^{(2\,dx)}-2\left(a^3e^c+ab^2e^c\right)e^{(dx)}}\,dx+\frac{2\left(axe^{(dx+c)}+bx\right)}{a^2d+b^2d+\left(a^2de^{(2\,c)}+b^2de^{(2\,c)}\right)e^{(2\,d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] -(2*a*b*integrate(-x*e^(d*x + c)/(a^2*b + b^3 - (a^2*b*e^(2*c) + b^3*e^(2*c
))*e^(2*d*x) - 2*(a^3*e^c + a*b^2*e^c)*e^(d*x)), x) + 2*(a*x*e^(d*x + c) +
b*x)/(a^2*d + b^2*d + (a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) - 2*b*x/((
a^2 + b^2)*d) - 2*a*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) + b*log(e^(2*d*x
+ 2*c) + 1)/((a^2 + b^2)*d^2))*f - e*(a*b*log((b*e^(-d*x - c) - a - sqrt(a^
2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^2 + b^2)^(3/2)*d) + 2
*(a*e^(-d*x - c) - b)/((a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh\left(c+d\,x\right)\,\left(e+f\,x\right)}{\cosh\left(c+d\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)*(e + f*x))/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((tanh(c + d*x)*(e + f*x))/(cosh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\tanh\left(c+dx\right)\operatorname{sech}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*tanh(c + d*x)*sech(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.356 $\int \frac{\text{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=78

$$\frac{2ab\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{d\left(a^2+b^2\right)^{3/2}}-\frac{\text{sech}(c+dx)(a-b\sinh(c+dx))}{d\left(a^2+b^2\right)}$$

```
[Out] 2*a*b*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))/(a^2+b^2)^(3/2)/d-
sech(d*x+c)*(a-b*sinh(d*x+c))/(a^2+b^2)/d
```

Rubi [A] time = 0.11, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2866, 12, 2660, 618, 204}

$$\frac{2ab\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{d\left(a^2+b^2\right)^{3/2}}-\frac{\text{sech}(c+dx)(a-b\sinh(c+dx))}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sech[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a*b*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/((a^2 + b^2)^(3/
2)*d) - (Sech[c + d*x]*(a - b*Sinh[c + d*x]))/((a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2866

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((g*C
os[e + f*x])^(p + 1)*(a + b*Sin[e + f*x])^(m + 1)*(b*c - a*d - (a*c - b*d)*
Sin[e + f*x]))/(f*g*(a^2 - b^2)*(p + 1)), x] + Dist[1/(g^2*(a^2 - b^2)*(p +
 1)), Int[(g*Cos[e + f*x])^(p + 2)*(a + b*Sin[e + f*x])^m*Simp[c*(a^2*(p +
2) - b^2*(m + p + 2)) + a*b*d*m + b*(a*c - b*d)*(m + p + 3)*Sin[e + f*x], x
], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[a^2 - b^2, 0] && LtQ
[p, -1] && IntegerQ[2*m]
```

Rubi steps

$$\int \frac{\operatorname{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\operatorname{sech}(c+dx)(a-b\sinh(c+dx))}{\left(a^2+b^2\right)d} - \frac{\int \frac{ab}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= -\frac{\operatorname{sech}(c+dx)(a-b\sinh(c+dx))}{\left(a^2+b^2\right)d} - \frac{(ab)\int \frac{1}{a+b\sinh(c+dx)}\,dx}{a^2+b^2}$$

$$= -\frac{\operatorname{sech}(c+dx)(a-b\sinh(c+dx))}{\left(a^2+b^2\right)d} + \frac{(2iab)\operatorname{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx, x, \tan\left(\frac{1}{2}(i\right.\right.}{\left(a^2+b^2\right)d}$$

$$= -\frac{\operatorname{sech}(c+dx)(a-b\sinh(c+dx))}{\left(a^2+b^2\right)d} - \frac{(4iab)\operatorname{Subst}\left(\int \frac{1}{-4\left(a^2+b^2\right)-x^2}\,dx, x, -2ib+\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2ab\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{\operatorname{sech}(c+dx)(a-b\sinh(c+dx))}{\left(a^2+b^2\right)d}$$

Mathematica [A] time = 0.17, size = 104, normalized size = 1.33

$$-\frac{b\sqrt{-a^2-b^2}\tanh(c+dx)-a\sqrt{-a^2-b^2}\operatorname{sech}(c+dx)-2ab\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{d\left(-a^2-b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sech[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((-2*a*b*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]] - a*Sqrt[-a^2
- b^2]*Sech[c + d*x] + b*Sqrt[-a^2 - b^2]*Tanh[c + d*x])/((-a^2 - b^2)^(3/2
)*d))
```

fricas [B] time = 0.65, size = 350, normalized size = 4.49

$$-\frac{2\,a^2b+2\,b^3-\left(ab\cosh\left(dx+c\right)^2+2\,ab\cosh\left(dx+c\right)\sinh\left(dx+c\right)+ab\sinh\left(dx+c\right)^2+ab\right)\sqrt{a^2+b^2}\,\log\left(\frac{b^2 c\cdots}{\cdots}\right.}{\left(a^4+2\,a^2b^2+b^4\right)d\cosh\left(dx+c\right)^2+2\left(a^4+2\,a\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*a^2*b + 2*b^3 - (a*b*cosh(d*x + c)^2 + 2*a*b*cosh(d*x + c)*sinh(d*x + c
) + a*b*sinh(d*x + c)^2 + a*b)*sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 + b
^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x +
c) + a*b)*sinh(d*x + c) + 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x +
 c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b
*cosh(d*x + c) + a)*sinh(d*x + c) - b)) + 2*(a^3 + a*b^2)*cosh(d*x + c) + 2
*(a^3 + a*b^2)*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^2 +
2*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2
+ b^4)*d*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d)
```

giac [A] time = 1.09, size = 117, normalized size = 1.50

$$\frac{\frac{ab\log\left(\frac{\left|-2\,be^{(dx+2\,c)}-2\,ae^{c}-2\,\sqrt{a^2+b^2}\,e^{c}\right|}{\left|-2\,be^{(dx+2\,c)}-2\,ae^{c}+2\,\sqrt{a^2+b^2}\,e^{c}\right|}\right)}{\left(a^2+b^2\right)^{\frac{3}{2}}}-\frac{2\left(ae^{(dx+c)}+b\right)}{\left(a^2+b^2\right)\left(e^{(2\,dx+2\,c)}+1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (a*b*log(abs(-2*b*e^(d*x + 2*c) - 2*a*e^c - 2*sqrt(a^2 + b^2)*e^c)/abs(-2*b
*e^(d*x + 2*c) - 2*a*e^c + 2*sqrt(a^2 + b^2)*e^c))/(a^2 + b^2)^(3/2) - 2*(a
*e^(d*x + c) + b)/((a^2 + b^2)*(e^(2*d*x + 2*c) + 1)))/d
```

maple [A] time = 0.00, size = 100, normalized size = 1.28

$$\frac{-\frac{4ab\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{\left(2a^2+2b^2\right)\sqrt{a^2+b^2}}-\frac{2\left(-\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b+a\right)}{\left(a^2+b^2\right)\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/d*(-4*a*b/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2
*c)-2*b)/(a^2+b^2)^(1/2))-2/(a^2+b^2)*(-tanh(1/2*d*x+1/2*c)*b+a)/(tanh(1/2*
d*x+1/2*c)^2+1))
```

maxima [A] time = 0.41, size = 117, normalized size = 1.50

$$-\frac{ab\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{\frac{3}{2}}d}-\frac{2\left(ae^{(-dx-c)}-b\right)}{\left(a^2+b^2+\left(a^2+b^2\right)e^{(-2\,dx-2\,c)}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -a*b*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(
a^2 + b^2)))/((a^2 + b^2)^(3/2)*d) - 2*(a*e^(-d*x - c) - b)/((a^2 + b^2 + (
a^2 + b^2)*e^(-2*d*x - 2*c))*d)
```

mupad [B] time = 0.60, size = 170, normalized size = 2.18

$$\frac{a\,b\,\ln\left(\frac{2\,a\,\mathrm{e}^{c+d\,x}}{a^2+b^2}+\frac{2\,a\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{{\left(a^2+b^2\right)}^{3/2}}\right)}{d\,{\left(a^2+b^2\right)}^{3/2}}-\frac{a\,b\,\ln\left(\frac{2\,a\,\mathrm{e}^{c+d\,x}}{a^2+b^2}-\frac{2\,a\,\left(b-a\,\mathrm{e}^{c+d\,x}\right)}{{\left(a^2+b^2\right)}^{3/2}}\right)}{d\,{\left(a^2+b^2\right)}^{3/2}}-\frac{\frac{2\,b}{d\,\left(a^2+b^2\right)}+\frac{2\,a\,\mathrm{e}^{c+d\,x}}{d\,\left(a^2+b^2\right)}}{\mathrm{e}^{2\,c+2\,d\,x}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] (a*b*log((2*a*exp(c + d*x))/(a^2 + b^2) + (2*a*(b - a*exp(c + d*x)))/(a^2 +
 b^2)^(3/2)))/(d*(a^2 + b^2)^(3/2)) - (a*b*log((2*a*exp(c + d*x))/(a^2 + b^
```

```
2) - (2*a*(b - a*exp(c + d*x)))/(a^2 + b^2)^(3/2)))/(d*(a^2 + b^2)^(3/2)) -
 ((2*b)/(d*(a^2 + b^2)) + (2*a*exp(c + d*x))/(d*(a^2 + b^2)))/(exp(2*c + 2*
d*x) + 1)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh(c+dx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(tanh(c + d*x)*sech(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.357 $\int \frac{\operatorname{sech}(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=35

$$\operatorname{Int}\left(\frac{\tanh(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{sech}(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Sech[c + d*x]*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Sech[c + d*x]*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),
 x]
```

Rubi steps

$$\int \frac{\operatorname{sech}(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\operatorname{sech}(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 58.86, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Sech[c + d*x]*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x
]
```

```
[Out] Integrate[(Sech[c + d*x]*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),
x]
```

fricas [A] time = 0.52, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{sech}(dx+c)\tanh(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] integral(sech(d*x + c)*tanh(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x
 + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] sage0*x
```

maple [A] time = 0.79, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)\tanh(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2\,ab\int -\frac{e^{(dx+c)}}{a^2be+b^3e+\left(a^2bf+b^3f\right)x-\left(a^2bee^{(2\,c)}+b^3ee^{(2\,c)}+\left(a^2bfe^{(2\,c)}+b^3fe^{(2\,c)}\right)x\right)e^{(2\,dx)}-2\left(a^3ee^c+ab^2ee^c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] -2*a*b*integrate(-e^(d*x + c)/(a^2*b*e + b^3*e + (a^2*b*f + b^3*f)*x - (a^2
*b*e*e^(2*c) + b^3*e*e^(2*c) + (a^2*b*f*e^(2*c) + b^3*f*e^(2*c))*x)*e^(2*d*
x) - 2*(a^3*e*e^c + a*b^2*e*e^c + (a^3*f*e^c + a*b^2*f*e^c)*x)*e^(d*x)), x)
 - 2*(a*e^(d*x + c) + b)/(a^2*d*e + b^2*d*e + (a^2*d*f + b^2*d*f)*x + (a^2*
d*e*e^(2*c) + b^2*d*e*e^(2*c) + (a^2*d*f*e^(2*c) + b^2*d*f*e^(2*c))*x)*e^(2
*d*x)) - 2*integrate((a*f*e^(d*x + c) + b*f)/(a^2*d*e^2 + b^2*d*e^2 + (a^2*
d*f^2 + b^2*d*f^2)*x^2 + 2*(a^2*d*e*f + b^2*d*e*f)*x + (a^2*d*e^2*e^(2*c) +
```

```
 b^2*d*e^2*e^(2*c) + (a^2*d*f^2*e^(2*c) + b^2*d*f^2*e^(2*c))*x^2 + 2*(a^2*d
*e*f*e^(2*c) + b^2*d*e*f*e^(2*c))*x)*e^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\tanh(c+dx)}{\cosh(c+dx)\left(e+fx\right)(a+b\sinh(c+dx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)/(cosh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(tanh(c + d*x)/(cosh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh(c+dx)\operatorname{sech}(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(tanh(c + d*x)*sech(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.358 $\int \frac{(e+fx)^2\mathbf{sech}^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1176

$$-\frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^2}{b\left(a^2+b^2\right)d}-\frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^2}{\left(a^2+b^2\right)^2d}+\frac{f^2\tan^{-1}(\sinh(c+dx))a^2}{b\left(a^2+b^2\right)d^3}+\frac{if(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)a^2}{b\left(a^2+b^2\right)d^2}$$

```
[Out] 2*a*b^2*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^3+2*
a*b^2*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^3+a*b^
2*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/(a^2+b^2)^2/d-a*b^2*(f*x+e)^2*ln(1+b*exp(d
*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d-a*b^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/
(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d+I*f*(f*x+e)*polylog(2,I*exp(d*x+c))/b/d^
2-1/2*a*b^2*f^2*polylog(3,-exp(2*d*x+2*c))/(a^2+b^2)^2/d^3+a*f*(f*x+e)*tanh
(d*x+c)/(a^2+b^2)/d^2-I*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b/d^2+2*I*a^2*b*
f^2*polylog(3,I*exp(d*x+c))/(a^2+b^2)^2/d^3-2*I*a^2*b*f*(f*x+e)*polylog(2,I
*exp(d*x+c))/(a^2+b^2)^2/d^2-I*a^2*f*(f*x+e)*polylog(2,I*exp(d*x+c))/b/(a^2
+b^2)/d^2+I*a^2*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b/(a^2+b^2)/d^2+a*b^2*f*
(f*x+e)*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2)^2/d^2+I*a^2*f^2*polylog(3,I*ex
p(d*x+c))/b/(a^2+b^2)/d^3-a^2*f*(f*x+e)*sech(d*x+c)/b/(a^2+b^2)/d^2-1/2*a^2
*(f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/b/(a^2+b^2)/d-2*I*a^2*b*f^2*polylog(3,-I
*exp(d*x+c))/(a^2+b^2)^2/d^3-I*a^2*f^2*polylog(3,-I*exp(d*x+c))/b/(a^2+b^2)
/d^3-f^2*arctan(sinh(d*x+c))/b/d^3+(f*x+e)^2*arctan(exp(d*x+c))/b/d+I*f^2*p
olylog(3,-I*exp(d*x+c))/b/d^3+f*(f*x+e)*sech(d*x+c)/b/d^2-1/2*a*(f*x+e)^2*s
ech(d*x+c)^2/(a^2+b^2)/d+1/2*(f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/b/d-I*f^2*po
lylog(3,I*exp(d*x+c))/b/d^3-2*a^2*b*(f*x+e)^2*arctan(exp(d*x+c))/(a^2+b^2)^
2/d+a^2*f^2*arctan(sinh(d*x+c))/b/(a^2+b^2)/d^3-a^2*(f*x+e)^2*arctan(exp(d*
x+c))/b/(a^2+b^2)/d+2*I*a^2*b*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/(a^2+b^2)^
2/d^2-2*a*b^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b
^2)^2/d^2-2*a*b^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a
^2+b^2)^2/d^2-a*f^2*ln(cosh(d*x+c))/(a^2+b^2)/d^3
```

Rubi [A] time = 1.70, antiderivative size = 1176, normalized size of antiderivative = 1.00, number of steps used = 49, number of rules used = 15, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.441, Rules used = {5583, 4186, 3770, 4180, 2531, 2282, 6589, 5573, 5561, 2190, 6742, 3718, 5451, 4184, 3475}

$$-\frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^2}{b\left(a^2+b^2\right)d}-\frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^2}{\left(a^2+b^2\right)^2d}+\frac{f^2\tan^{-1}(\sinh(c+dx))a^2}{b\left(a^2+b^2\right)d^3}+\frac{if(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)a^2}{b\left(a^2+b^2\right)d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sech[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((e + f*x)^2*ArcTan[E^(c + d*x)])/(b*d) - (2*a^2*b*(e + f*x)^2*ArcTan[E^(c
+ d*x)])/((a^2 + b^2)^2*d) - (a^2*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b*(a^2
+ b^2)*d) - (f^2*ArcTan[Sinh[c + d*x]])/(b*d^3) + (a^2*f^2*ArcTan[Sinh[c +
d*x]])/(b*(a^2 + b^2)*d^3) - (a*b^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a
- Sqrt[a^2 + b^2])])/((a^2 + b^2)^2*d) - (a*b^2*(e + f*x)^2*Log[1 + (b*E^(c
 + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^2*d) + (a*b^2*(e + f*x)^2*Log
[1 + E^(2*(c + d*x))])/((a^2 + b^2)^2*d) - (a*f^2*Log[Cosh[c + d*x]])/((a^2
 + b^2)*d^3) - (I*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(b*d^2) + ((2*I
)*a^2*b*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)^2*d^2) + (I*
a^2*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(b*(a^2 + b^2)*d^2) + (I*f*(e
 + f*x)*PolyLog[2, I*E^(c + d*x)])/(b*d^2) - ((2*I)*a^2*b*f*(e + f*x)*PolyL
og[2, I*E^(c + d*x)])/((a^2 + b^2)^2*d^2) - (I*a^2*f*(e + f*x)*PolyLog[2, I
*E^(c + d*x)])/(b*(a^2 + b^2)*d^2) - (2*a*b^2*f*(e + f*x)*PolyLog[2, -((b*E
^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^2) - (2*a*b^2*f*(e +
f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d
^2) + (a*b^2*f*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/((a^2 + b^2)^2*d^2)
+ (I*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(b*d^3) - ((2*I)*a^2*b*f^2*PolyLog[3
, (-I)*E^(c + d*x)])/((a^2 + b^2)^2*d^3) - (I*a^2*f^2*PolyLog[3, (-I)*E^(c
+ d*x)])/(b*(a^2 + b^2)*d^3) - (I*f^2*PolyLog[3, I*E^(c + d*x)])/(b*d^3) +
((2*I)*a^2*b*f^2*PolyLog[3, I*E^(c + d*x)])/((a^2 + b^2)^2*d^3) + (I*a^2*f^
2*PolyLog[3, I*E^(c + d*x)])/(b*(a^2 + b^2)*d^3) + (2*a*b^2*f^2*PolyLog[3,
-((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^3) + (2*a*b^2*f
^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^3
) - (a*b^2*f^2*PolyLog[3, -E^(2*(c + d*x))])/(2*(a^2 + b^2)^2*d^3) + (f*(e
+ f*x)*Sech[c + d*x])/(b*d^2) - (a^2*f*(e + f*x)*Sech[c + d*x])/(b*(a^2 + b
^2)*d^2) - (a*(e + f*x)^2*Sech[c + d*x]^2)/(2*(a^2 + b^2)*d) + (a*f*(e + f*
x)*Tanh[c + d*x])/((a^2 + b^2)*d^2) + ((e + f*x)^2*Sech[c + d*x]*Tanh[c + d
*x])/(2*b*d) - (a^2*(e + f*x)^2*Sech[c + d*x]*Tanh[c + d*x])/(2*b*(a^2 + b^
2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\mathrm{sech}^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\mathrm{sech}^3(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\mathrm{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{f(e+fx)\mathrm{sech}(c+dx)}{bd^2} + \frac{(e+fx)^2\mathrm{sech}(c+dx)\tanh(c+dx)}{2bd} + \frac{\int (e$$

$$= \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{f^2\tan^{-1}(\sinh(c+dx))}{bd^3} + \frac{f(e+fx)\mathrm{sech}(}{bd^2}$$

$$= \frac{ab^2(e+fx)^3}{3\left(a^2+b^2\right)^2 f} + \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{f^2\tan^{-1}(\sinh(c+dx))}{bd^3} -$$

$$= \frac{ab^2(e+fx)^3}{3\left(a^2+b^2\right)^2 f} + \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{f^2\tan^{-1}(\sinh(c+dx))}{bd^3} -$$

$$= \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{a^2(e+fx)^2}{b\left(a^2\right.}$$

$$= \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{a^2(e+fx)^2}{b\left(a^2\right.}$$

$$= \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{a^2(e+fx)^2}{b\left(a^2\right.}$$

$$= \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{a^2(e+fx)^2}{b\left(a^2\right.}$$

$$= \frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{a^2(e+fx)^2}{b\left(a^2\right.}$$

<u>**Mathematica**</u> [**B**] time = 27.02, size = 3124, normalized size = 2.66

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sech[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x])
,x]

[Out] (-12*a*b^2*d^3*e^2*E^(2*c)*x + 12*a^3*d*E^(2*c)*f^2*x + 12*a*b^2*d*E^(2*c)*
f^2*x - 12*a*b^2*d^3*e*E^(2*c)*f*x^2 - 4*a*b^2*d^3*E^(2*c)*f^2*x^3 - 6*a^2*
b*d^2*e^2*ArcTan[E^(c + d*x)] + 6*b^3*d^2*e^2*ArcTan[E^(c + d*x)] - 6*a^2*b
*d^2*e^2*E^(2*c)*ArcTan[E^(c + d*x)] + 6*b^3*d^2*e^2*E^(2*c)*ArcTan[E^(c +
d*x)] - 12*a^2*b*f^2*ArcTan[E^(c + d*x)] - 12*b^3*f^2*ArcTan[E^(c + d*x)] -
 12*a^2*b*E^(2*c)*f^2*ArcTan[E^(c + d*x)] - 12*b^3*E^(2*c)*f^2*ArcTan[E^(c
+ d*x)] - (6*I)*a^2*b*d^2*e*f*x*Log[1 - I*E^(c + d*x)] + (6*I)*b^3*d^2*e*f*
x*Log[1 - I*E^(c + d*x)] - (6*I)*a^2*b*d^2*e*E^(2*c)*f*x*Log[1 - I*E^(c + d
*x)] + (6*I)*b^3*d^2*e*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] - (3*I)*a^2*b*d^2
*f^2*x^2*Log[1 - I*E^(c + d*x)] + (3*I)*b^3*d^2*f^2*x^2*Log[1 - I*E^(c + d*
x)] - (3*I)*a^2*b*d^2*E^(2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] + (3*I)*b^3*d^
2*E^(2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] + (6*I)*a^2*b*d^2*e*f*x*Log[1 + I*
E^(c + d*x)] - (6*I)*b^3*d^2*e*f*x*Log[1 + I*E^(c + d*x)] + (6*I)*a^2*b*d^2
*e*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] - (6*I)*b^3*d^2*e*E^(2*c)*f*x*Log[1 +
 I*E^(c + d*x)] + (3*I)*a^2*b*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] - (3*I)*b^
3*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] + (3*I)*a^2*b*d^2*E^(2*c)*f^2*x^2*Log[
1 + I*E^(c + d*x)] - (3*I)*b^3*d^2*E^(2*c)*f^2*x^2*Log[1 + I*E^(c + d*x)] +
 6*a*b^2*d^2*e^2*Log[1 + E^(2*(c + d*x))] + 6*a*b^2*d^2*e^2*E^(2*c)*Log[1 +
 E^(2*(c + d*x))] - 6*a^3*f^2*Log[1 + E^(2*(c + d*x))] - 6*a*b^2*f^2*Log[1
+ E^(2*(c + d*x))] - 6*a^3*E^(2*c)*f^2*Log[1 + E^(2*(c + d*x))] - 6*a*b^2*E
^(2*c)*f^2*Log[1 + E^(2*(c + d*x))] + 12*a*b^2*d^2*e*f*x*Log[1 + E^(2*(c +
d*x))] + 12*a*b^2*d^2*e*E^(2*c)*f*x*Log[1 + E^(2*(c + d*x))] + 6*a*b^2*d^2*
f^2*x^2*Log[1 + E^(2*(c + d*x))] + 6*a*b^2*d^2*E^(2*c)*f^2*x^2*Log[1 + E^(2
*(c + d*x))] + (6*I)*b*(a^2 - b^2)*d*(1 + E^(2*c))*f*(e + f*x)*PolyLog[2, (
-I)*E^(c + d*x)] + (6*I)*b*(-a^2 + b^2)*d*(1 + E^(2*c))*f*(e + f*x)*PolyLog
[2, I*E^(c + d*x)] + 6*a*b^2*d*e*f*PolyLog[2, -E^(2*(c + d*x))] + 6*a*b^2*d
*e*E^(2*c)*f*PolyLog[2, -E^(2*(c + d*x))] + 6*a*b^2*d*f^2*x*PolyLog[2, -E^(
2*(c + d*x))] + 6*a*b^2*d*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(c + d*x))] - (6*I
)*a^2*b*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (6*I)*b^3*f^2*PolyLog[3, (-I)*E^
(c + d*x)] - (6*I)*a^2*b*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (6*I)*b
^3*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (6*I)*a^2*b*f^2*PolyLog[3, I*
E^(c + d*x)] - (6*I)*b^3*f^2*PolyLog[3, I*E^(c + d*x)] + (6*I)*a^2*b*E^(2*c
)*f^2*PolyLog[3, I*E^(c + d*x)] - (6*I)*b^3*E^(2*c)*f^2*PolyLog[3, I*E^(c +
 d*x)] - 3*a*b^2*f^2*PolyLog[3, -E^(2*(c + d*x))] - 3*a*b^2*E^(2*c)*f^2*Pol
yLog[3, -E^(2*(c + d*x))]])/(6*(a^2 + b^2)^2*d^3*(1 + E^(2*c))) + (a*b^2*(6*
d^3*e^2*E^(2*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*d^2*e
^2*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^(2*c)*Log[b -
 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x
))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^
(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (
b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x
^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2*e
```

```
*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2
*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]
)] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2
*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2
 + b^2)*E^(2*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c
+ d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e + f
*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] -
6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))]
+ 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^
(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*
E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a
^2 + b^2)*E^(2*c)]))]))/(3*(a^2 + b^2)^2*d^3*(-1 + E^(2*c))) + (Csch[c]*Sec
h[c]*Sech[c + d*x]^2*(6*a^3*e*f + 6*a*b^2*e*f - 12*a*b^2*d^2*e^2*x + 6*a^3*
f^2*x + 6*a*b^2*f^2*x - 12*a*b^2*d^2*e*f*x^2 - 4*a*b^2*d^2*f^2*x^3 - 6*a^3*
e*f*Cosh[2*c] - 6*a*b^2*e*f*Cosh[2*c] - 6*a^3*f^2*x*Cosh[2*c] - 6*a*b^2*f^2
*x*Cosh[2*c] - 6*a^3*e*f*Cosh[2*d*x] - 6*a*b^2*e*f*Cosh[2*d*x] - 6*a^3*f^2*
x*Cosh[2*d*x] - 6*a*b^2*f^2*x*Cosh[2*d*x] - 3*a^2*b*d*e^2*Cosh[c - d*x] - 3
*b^3*d*e^2*Cosh[c - d*x] - 6*a^2*b*d*e*f*x*Cosh[c - d*x] - 6*b^3*d*e*f*x*Co
sh[c - d*x] - 3*a^2*b*d*f^2*x^2*Cosh[c - d*x] - 3*b^3*d*f^2*x^2*Cosh[c - d*
x] + 3*a^2*b*d*e^2*Cosh[3*c + d*x] + 3*b^3*d*e^2*Cosh[3*c + d*x] + 6*a^2*b*
d*e*f*x*Cosh[3*c + d*x] + 6*b^3*d*e*f*x*Cosh[3*c + d*x] + 3*a^2*b*d*f^2*x^2
*Cosh[3*c + d*x] + 3*b^3*d*f^2*x^2*Cosh[3*c + d*x] + 6*a^3*e*f*Cosh[2*c + 2
*d*x] + 6*a*b^2*e*f*Cosh[2*c + 2*d*x] - 12*a*b^2*d^2*e^2*x*Cosh[2*c + 2*d*x
] + 6*a^3*f^2*x*Cosh[2*c + 2*d*x] + 6*a*b^2*f^2*x*Cosh[2*c + 2*d*x] - 12*a*
b^2*d^2*e*f*x^2*Cosh[2*c + 2*d*x] - 4*a*b^2*d^2*f^2*x^3*Cosh[2*c + 2*d*x] -
 6*a^3*d*e^2*Sinh[2*c] - 6*a*b^2*d*e^2*Sinh[2*c] - 12*a^3*d*e*f*x*Sinh[2*c]
 - 12*a*b^2*d*e*f*x*Sinh[2*c] - 6*a^3*d*f^2*x^2*Sinh[2*c] - 6*a*b^2*d*f^2*x
^2*Sinh[2*c] + 6*a^2*b*e*f*Sinh[c - d*x] + 6*b^3*e*f*Sinh[c - d*x] + 6*a^2*
b*f^2*x*Sinh[c - d*x] + 6*b^3*f^2*x*Sinh[c - d*x] + 6*a^2*b*e*f*Sinh[3*c +
d*x] + 6*b^3*e*f*Sinh[3*c + d*x] + 6*a^2*b*f^2*x*Sinh[3*c + d*x] + 6*b^3*f^
2*x*Sinh[3*c + d*x]))/(24*(a^2 + b^2)^2*d^2)
```

fricas [C] time = 0.94, size = 11122, normalized size = 9.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/2*(4*((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*c*f^2)*cosh(d*x + c)^4 + 4*((
a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*c*f^2)*sinh(d*x + c)^4 - 4*(a^3 + a*b^
2)*d*e*f + 4*(a^3 + a*b^2)*c*f^2 + 2*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b +
b^3)*d^2*e^2 + 2*(a^2*b + b^3)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f + (a^2*b +
b^3)*d*f^2)*x)*cosh(d*x + c)^3 + 2*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^
```

```
3)*d^2*e^2 + 2*(a^2*b + b^3)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f + (a^2*b + b^
3)*d*f^2)*x + 8*((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*c*f^2)*cosh(d*x + c)
)*sinh(d*x + c)^3 - 4*((a^3 + a*b^2)*d^2*f^2*x^2 + (a^3 + a*b^2)*d^2*e^2 +
(a^3 + a*b^2)*d*e*f - 2*(a^3 + a*b^2)*c*f^2 + (2*(a^3 + a*b^2)*d^2*e*f - (a
^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c)^2 - 2*(2*(a^3 + a*b^2)*d^2*f^2*x^2 + 2*
(a^3 + a*b^2)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f - 4*(a^3 + a*b^2)*c*f^2 - 12*
((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*c*f^2)*cosh(d*x + c)^2 + 2*(2*(a^3 +
 a*b^2)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x - 3*((a^2*b + b^3)*d^2*f^2*x^2 + (
a^2*b + b^3)*d^2*e^2 + 2*(a^2*b + b^3)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f + (
a^2*b + b^3)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^2 - 2*((a^2*b + b^3)*d^
2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 - 2*(a^2*b + b^3)*d*e*f + 2*((a^2*b + b^3
)*d^2*e*f - (a^2*b + b^3)*d*f^2)*x)*cosh(d*x + c) - 4*(a*b^2*d*f^2*x + a*b^
2*d*e*f + (a*b^2*d*f^2*x + a*b^2*d*e*f)*cosh(d*x + c)^4 + 4*(a*b^2*d*f^2*x
+ a*b^2*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a*b^2*d*f^2*x + a*b^2*d*e*f
)*sinh(d*x + c)^4 + 2*(a*b^2*d*f^2*x + a*b^2*d*e*f)*cosh(d*x + c)^2 + 2*(a*
b^2*d*f^2*x + a*b^2*d*e*f + 3*(a*b^2*d*f^2*x + a*b^2*d*e*f)*cosh(d*x + c)^2
)*sinh(d*x + c)^2 + 4*((a*b^2*d*f^2*x + a*b^2*d*e*f)*cosh(d*x + c)^3 + (a*b
^2*d*f^2*x + a*b^2*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x +
 c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2
)/b^2) - b)/b + 1) - 4*(a*b^2*d*f^2*x + a*b^2*d*e*f + (a*b^2*d*f^2*x + a*b^
2*d*e*f)*cosh(d*x + c)^4 + 4*(a*b^2*d*f^2*x + a*b^2*d*e*f)*cosh(d*x + c)*si
nh(d*x + c)^3 + (a*b^2*d*f^2*x + a*b^2*d*e*f)*sinh(d*x + c)^4 + 2*(a*b^2*d*
f^2*x + a*b^2*d*e*f)*cosh(d*x + c)^2 + 2*(a*b^2*d*f^2*x + a*b^2*d*e*f + 3*(
a*b^2*d*f^2*x + a*b^2*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a*b^2*d
*f^2*x + a*b^2*d*e*f)*cosh(d*x + c)^3 + (a*b^2*d*f^2*x + a*b^2*d*e*f)*cosh(
d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (4*a*b^2*d
*f^2*x + 4*a*b^2*d*e*f - 2*I*(a^2*b - b^3)*d*f^2*x + (4*a*b^2*d*f^2*x + 4*a
*b^2*d*e*f - 2*I*(a^2*b - b^3)*d*f^2*x - 2*I*(a^2*b - b^3)*d*e*f)*cosh(d*x
+ c)^4 + (16*a*b^2*d*f^2*x + 16*a*b^2*d*e*f - 8*I*(a^2*b - b^3)*d*f^2*x - 8
*I*(a^2*b - b^3)*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*a*b^2*d*f^2*x +
4*a*b^2*d*e*f - 2*I*(a^2*b - b^3)*d*f^2*x - 2*I*(a^2*b - b^3)*d*e*f)*sinh(d
*x + c)^4 - 2*I*(a^2*b - b^3)*d*e*f + (8*a*b^2*d*f^2*x + 8*a*b^2*d*e*f - 4*
I*(a^2*b - b^3)*d*f^2*x - 4*I*(a^2*b - b^3)*d*e*f)*cosh(d*x + c)^2 + (8*a*b
^2*d*f^2*x + 8*a*b^2*d*e*f - 4*I*(a^2*b - b^3)*d*f^2*x - 4*I*(a^2*b - b^3)*
d*e*f + (24*a*b^2*d*f^2*x + 24*a*b^2*d*e*f - 12*I*(a^2*b - b^3)*d*f^2*x - 1
2*I*(a^2*b - b^3)*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((16*a*b^2*d*f^
2*x + 16*a*b^2*d*e*f - 8*I*(a^2*b - b^3)*d*f^2*x - 8*I*(a^2*b - b^3)*d*e*f)
*cosh(d*x + c)^3 + (16*a*b^2*d*f^2*x + 16*a*b^2*d*e*f - 8*I*(a^2*b - b^3)*d
*f^2*x - 8*I*(a^2*b - b^3)*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(I*cos
h(d*x + c) + I*sinh(d*x + c)) + (4*a*b^2*d*f^2*x + 4*a*b^2*d*e*f + 2*I*(a^2
*b - b^3)*d*f^2*x + (4*a*b^2*d*f^2*x + 4*a*b^2*d*e*f + 2*I*(a^2*b - b^3)*d*
f^2*x + 2*I*(a^2*b - b^3)*d*e*f)*cosh(d*x + c)^4 + (16*a*b^2*d*f^2*x + 16*a
*b^2*d*e*f + 8*I*(a^2*b - b^3)*d*f^2*x + 8*I*(a^2*b - b^3)*d*e*f)*cosh(d*x
+ c)*sinh(d*x + c)^3 + (4*a*b^2*d*f^2*x + 4*a*b^2*d*e*f + 2*I*(a^2*b - b^3)
```

```
*d*f^2*x + 2*I*(a^2*b - b^3)*d*e*f)*sinh(d*x + c)^4 + 2*I*(a^2*b - b^3)*d*e
*f + (8*a*b^2*d*f^2*x + 8*a*b^2*d*e*f + 4*I*(a^2*b - b^3)*d*f^2*x + 4*I*(a^
2*b - b^3)*d*e*f)*cosh(d*x + c)^2 + (8*a*b^2*d*f^2*x + 8*a*b^2*d*e*f + 4*I*
(a^2*b - b^3)*d*f^2*x + 4*I*(a^2*b - b^3)*d*e*f + (24*a*b^2*d*f^2*x + 24*a*
b^2*d*e*f + 12*I*(a^2*b - b^3)*d*f^2*x + 12*I*(a^2*b - b^3)*d*e*f)*cosh(d*x
 + c)^2)*sinh(d*x + c)^2 + ((16*a*b^2*d*f^2*x + 16*a*b^2*d*e*f + 8*I*(a^2*b
 - b^3)*d*f^2*x + 8*I*(a^2*b - b^3)*d*e*f)*cosh(d*x + c)^3 + (16*a*b^2*d*f^
2*x + 16*a*b^2*d*e*f + 8*I*(a^2*b - b^3)*d*f^2*x + 8*I*(a^2*b - b^3)*d*e*f)
*cosh(d*x + c))*sinh(d*x + c))*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) -
2*(a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2 + (a*b^2*d^2*e^2 - 2*a*b
^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c)^4 + 4*(a*b^2*d^2*e^2 - 2*a*b^2*c*
d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a*b^2*d^2*e^2 - 2*a
*b^2*c*d*e*f + a*b^2*c^2*f^2)*sinh(d*x + c)^4 + 2*(a*b^2*d^2*e^2 - 2*a*b^2*
c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c)^2 + 2*(a*b^2*d^2*e^2 - 2*a*b^2*c*d*e
*f + a*b^2*c^2*f^2 + 3*(a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*co
sh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^
2*c^2*f^2)*cosh(d*x + c)^3 + (a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f
^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c)
 + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f +
a*b^2*c^2*f^2 + (a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x
+ c)^4 + 4*(a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c)*
sinh(d*x + c)^3 + (a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*sinh(d*
x + c)^4 + 2*(a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c
)^2 + 2*(a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2 + 3*(a*b^2*d^2*e^2
 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((
a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c)^3 + (a*b^2*d
^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log
(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) -
 2*(a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2
 + (a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2
)*cosh(d*x + c)^4 + 4*(a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*
e*f - a*b^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a*b^2*d^2*f^2*x^2 + 2
*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*sinh(d*x + c)^4 + 2*(a*
b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*cosh
(d*x + c)^2 + 2*(a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f -
a*b^2*c^2*f^2 + 3*(a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f
- a*b^2*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a*b^2*d^2*f^2*x^2 +
 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*cosh(d*x + c)^3 + (a*
b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*cosh
(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(a*b^2*d^2*f
^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2 + (a*b^2*d^2*f
^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*cosh(d*x + c)
^4 + 4*(a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2
*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*
```

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x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*sinh(d*x + c)^4 + 2*(a*b^2*d^2*f^2*x^2
 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*cosh(d*x + c)^2 + 2
*(a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2 +
 3*(a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2
)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*
f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*cosh(d*x + c)^3 + (a*b^2*d^2*f^2*x^2
 + 2*a*b^2*d^2*e*f*x + 2*a*b^2*c*d*e*f - a*b^2*c^2*f^2)*cosh(d*x + c))*sinh
(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*s
inh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (2*a*b^2*d^2*e^2 - 4*a*b^2*c*
d*e*f - I*(a^2*b - b^3)*d^2*e^2 + 2*I*(a^2*b - b^3)*c*d*e*f + (2*a*b^2*d^2*
e^2 - 4*a*b^2*c*d*e*f - I*(a^2*b - b^3)*d^2*e^2 + 2*I*(a^2*b - b^3)*c*d*e*f
 + 2*(a*b^2*c^2 - a^3 - a*b^2)*f^2 - I*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2
)*f^2)*cosh(d*x + c)^4 + (8*a*b^2*d^2*e^2 - 16*a*b^2*c*d*e*f - 4*I*(a^2*b -
 b^3)*d^2*e^2 + 8*I*(a^2*b - b^3)*c*d*e*f + 8*(a*b^2*c^2 - a^3 - a*b^2)*f^2
 - 4*I*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2)*cosh(d*x + c)*sinh(d*x +
c)^3 + (2*a*b^2*d^2*e^2 - 4*a*b^2*c*d*e*f - I*(a^2*b - b^3)*d^2*e^2 + 2*I*(
a^2*b - b^3)*c*d*e*f + 2*(a*b^2*c^2 - a^3 - a*b^2)*f^2 - I*(2*a^2*b + 2*b^3
 + (a^2*b - b^3)*c^2)*f^2)*sinh(d*x + c)^4 + 2*(a*b^2*c^2 - a^3 - a*b^2)*f^
2 - I*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2 + (4*a*b^2*d^2*e^2 - 8*a*b^
2*c*d*e*f - 2*I*(a^2*b - b^3)*d^2*e^2 + 4*I*(a^2*b - b^3)*c*d*e*f + 4*(a*b^
2*c^2 - a^3 - a*b^2)*f^2 - 2*I*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2)*c
osh(d*x + c)^2 + (4*a*b^2*d^2*e^2 - 8*a*b^2*c*d*e*f - 2*I*(a^2*b - b^3)*d^2
*e^2 + 4*I*(a^2*b - b^3)*c*d*e*f + 4*(a*b^2*c^2 - a^3 - a*b^2)*f^2 - 2*I*(2
*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2 + (12*a*b^2*d^2*e^2 - 24*a*b^2*c*d*
e*f - 6*I*(a^2*b - b^3)*d^2*e^2 + 12*I*(a^2*b - b^3)*c*d*e*f + 12*(a*b^2*c^
2 - a^3 - a*b^2)*f^2 - 6*I*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2)*cosh(
d*x + c)^2)*sinh(d*x + c)^2 + ((8*a*b^2*d^2*e^2 - 16*a*b^2*c*d*e*f - 4*I*(a
^2*b - b^3)*d^2*e^2 + 8*I*(a^2*b - b^3)*c*d*e*f + 8*(a*b^2*c^2 - a^3 - a*b^
2)*f^2 - 4*I*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2)*cosh(d*x + c)^3 + (
8*a*b^2*d^2*e^2 - 16*a*b^2*c*d*e*f - 4*I*(a^2*b - b^3)*d^2*e^2 + 8*I*(a^2*b
 - b^3)*c*d*e*f + 8*(a*b^2*c^2 - a^3 - a*b^2)*f^2 - 4*I*(2*a^2*b + 2*b^3 +
(a^2*b - b^3)*c^2)*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + s
inh(d*x + c) + I) + (2*a*b^2*d^2*e^2 - 4*a*b^2*c*d*e*f + I*(a^2*b - b^3)*d^
2*e^2 - 2*I*(a^2*b - b^3)*c*d*e*f + (2*a*b^2*d^2*e^2 - 4*a*b^2*c*d*e*f + I*
(a^2*b - b^3)*d^2*e^2 - 2*I*(a^2*b - b^3)*c*d*e*f + 2*(a*b^2*c^2 - a^3 - a*
b^2)*f^2 + I*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2)*cosh(d*x + c)^4 + (
8*a*b^2*d^2*e^2 - 16*a*b^2*c*d*e*f + 4*I*(a^2*b - b^3)*d^2*e^2 - 8*I*(a^2*b
 - b^3)*c*d*e*f + 8*(a*b^2*c^2 - a^3 - a*b^2)*f^2 + 4*I*(2*a^2*b + 2*b^3 +
(a^2*b - b^3)*c^2)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a*b^2*d^2*e^2 -
4*a*b^2*c*d*e*f + I*(a^2*b - b^3)*d^2*e^2 - 2*I*(a^2*b - b^3)*c*d*e*f + 2*(
a*b^2*c^2 - a^3 - a*b^2)*f^2 + I*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2)
*sinh(d*x + c)^4 + 2*(a*b^2*c^2 - a^3 - a*b^2)*f^2 + I*(2*a^2*b + 2*b^3 + (
a^2*b - b^3)*c^2)*f^2 + (4*a*b^2*d^2*e^2 - 8*a*b^2*c*d*e*f + 2*I*(a^2*b - b
^3)*d^2*e^2 - 4*I*(a^2*b - b^3)*c*d*e*f + 4*(a*b^2*c^2 - a^3 - a*b^2)*f^2 +
 2*I*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2)*cosh(d*x + c)^2 + (4*a*b^2*
```

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d^2*e^2 - 8*a*b^2*c*d*e*f + 2*I*(a^2*b - b^3)*d^2*e^2 - 4*I*(a^2*b - b^3)*c
*d*e*f + 4*(a*b^2*c^2 - a^3 - a*b^2)*f^2 + 2*I*(2*a^2*b + 2*b^3 + (a^2*b -
b^3)*c^2)*f^2 + (12*a*b^2*d^2*e^2 - 24*a*b^2*c*d*e*f + 6*I*(a^2*b - b^3)*d^
2*e^2 - 12*I*(a^2*b - b^3)*c*d*e*f + 12*(a*b^2*c^2 - a^3 - a*b^2)*f^2 + 6*I
*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^
2 + ((8*a*b^2*d^2*e^2 - 16*a*b^2*c*d*e*f + 4*I*(a^2*b - b^3)*d^2*e^2 - 8*I*
(a^2*b - b^3)*c*d*e*f + 8*(a*b^2*c^2 - a^3 - a*b^2)*f^2 + 4*I*(2*a^2*b + 2*
b^3 + (a^2*b - b^3)*c^2)*f^2)*cosh(d*x + c)^3 + (8*a*b^2*d^2*e^2 - 16*a*b^2
*c*d*e*f + 4*I*(a^2*b - b^3)*d^2*e^2 - 8*I*(a^2*b - b^3)*c*d*e*f + 8*(a*b^2
*c^2 - a^3 - a*b^2)*f^2 + 4*I*(2*a^2*b + 2*b^3 + (a^2*b - b^3)*c^2)*f^2)*co
sh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - I) + (2*a*b
^2*d^2*f^2*x^2 + 4*a*b^2*d^2*e*f*x + 4*a*b^2*c*d*e*f - 2*a*b^2*c^2*f^2 + I*
(a^2*b - b^3)*d^2*f^2*x^2 + 2*I*(a^2*b - b^3)*d^2*e*f*x + 2*I*(a^2*b - b^3)
*c*d*e*f - I*(a^2*b - b^3)*c^2*f^2 + (2*a*b^2*d^2*f^2*x^2 + 4*a*b^2*d^2*e*f
*x + 4*a*b^2*c*d*e*f - 2*a*b^2*c^2*f^2 + I*(a^2*b - b^3)*d^2*f^2*x^2 + 2*I*
(a^2*b - b^3)*d^2*e*f*x + 2*I*(a^2*b - b^3)*c*d*e*f - I*(a^2*b - b^3)*c^2*f
^2)*cosh(d*x + c)^4 + (8*a*b^2*d^2*f^2*x^2 + 16*a*b^2*d^2*e*f*x + 16*a*b^2*
c*d*e*f - 8*a*b^2*c^2*f^2 + 4*I*(a^2*b - b^3)*d^2*f^2*x^2 + 8*I*(a^2*b - b^
3)*d^2*e*f*x + 8*I*(a^2*b - b^3)*c*d*e*f - 4*I*(a^2*b - b^3)*c^2*f^2)*cosh(
d*x + c)*sinh(d*x + c)^3 + (2*a*b^2*d^2*f^2*x^2 + 4*a*b^2*d^2*e*f*x + 4*a*b
^2*c*d*e*f - 2*a*b^2*c^2*f^2 + I*(a^2*b - b^3)*d^2*f^2*x^2 + 2*I*(a^2*b - b
^3)*d^2*e*f*x + 2*I*(a^2*b - b^3)*c*d*e*f - I*(a^2*b - b^3)*c^2*f^2)*sinh(d
*x + c)^4 + (4*a*b^2*d^2*f^2*x^2 + 8*a*b^2*d^2*e*f*x + 8*a*b^2*c*d*e*f - 4*
a*b^2*c^2*f^2 + 2*I*(a^2*b - b^3)*d^2*f^2*x^2 + 4*I*(a^2*b - b^3)*d^2*e*f*x
 + 4*I*(a^2*b - b^3)*c*d*e*f - 2*I*(a^2*b - b^3)*c^2*f^2)*cosh(d*x + c)^2 +
 (4*a*b^2*d^2*f^2*x^2 + 8*a*b^2*d^2*e*f*x + 8*a*b^2*c*d*e*f - 4*a*b^2*c^2*f
^2 + 2*I*(a^2*b - b^3)*d^2*f^2*x^2 + 4*I*(a^2*b - b^3)*d^2*e*f*x + 4*I*(a^2
*b - b^3)*c*d*e*f - 2*I*(a^2*b - b^3)*c^2*f^2 + (12*a*b^2*d^2*f^2*x^2 + 24*
a*b^2*d^2*e*f*x + 24*a*b^2*c*d*e*f - 12*a*b^2*c^2*f^2 + 6*I*(a^2*b - b^3)*d
^2*f^2*x^2 + 12*I*(a^2*b - b^3)*d^2*e*f*x + 12*I*(a^2*b - b^3)*c*d*e*f - 6*
I*(a^2*b - b^3)*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a*b^2*d^2*f
^2*x^2 + 16*a*b^2*d^2*e*f*x + 16*a*b^2*c*d*e*f - 8*a*b^2*c^2*f^2 + 4*I*(a^2
*b - b^3)*d^2*f^2*x^2 + 8*I*(a^2*b - b^3)*d^2*e*f*x + 8*I*(a^2*b - b^3)*c*d
*e*f - 4*I*(a^2*b - b^3)*c^2*f^2)*cosh(d*x + c)^3 + (8*a*b^2*d^2*f^2*x^2 +
16*a*b^2*d^2*e*f*x + 16*a*b^2*c*d*e*f - 8*a*b^2*c^2*f^2 + 4*I*(a^2*b - b^3)
*d^2*f^2*x^2 + 8*I*(a^2*b - b^3)*d^2*e*f*x + 8*I*(a^2*b - b^3)*c*d*e*f - 4*
I*(a^2*b - b^3)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(I*cosh(d*x + c)
+ I*sinh(d*x + c) + 1) + (2*a*b^2*d^2*f^2*x^2 + 4*a*b^2*d^2*e*f*x + 4*a*b^2
*c*d*e*f - 2*a*b^2*c^2*f^2 - I*(a^2*b - b^3)*d^2*f^2*x^2 - 2*I*(a^2*b - b^3
)*d^2*e*f*x - 2*I*(a^2*b - b^3)*c*d*e*f + I*(a^2*b - b^3)*c^2*f^2 + (2*a*b^
2*d^2*f^2*x^2 + 4*a*b^2*d^2*e*f*x + 4*a*b^2*c*d*e*f - 2*a*b^2*c^2*f^2 - I*(
a^2*b - b^3)*d^2*f^2*x^2 - 2*I*(a^2*b - b^3)*d^2*e*f*x - 2*I*(a^2*b - b^3)*
c*d*e*f + I*(a^2*b - b^3)*c^2*f^2)*cosh(d*x + c)^4 + (8*a*b^2*d^2*f^2*x^2 +
 16*a*b^2*d^2*e*f*x + 16*a*b^2*c*d*e*f - 8*a*b^2*c^2*f^2 - 4*I*(a^2*b - b^3
)*d^2*f^2*x^2 - 8*I*(a^2*b - b^3)*d^2*e*f*x - 8*I*(a^2*b - b^3)*c*d*e*f + 4
```

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*I*(a^2*b - b^3)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a*b^2*d^2*f^2*
x^2 + 4*a*b^2*d^2*e*f*x + 4*a*b^2*c*d*e*f - 2*a*b^2*c^2*f^2 - I*(a^2*b - b^
3)*d^2*f^2*x^2 - 2*I*(a^2*b - b^3)*d^2*e*f*x - 2*I*(a^2*b - b^3)*c*d*e*f +
I*(a^2*b - b^3)*c^2*f^2)*sinh(d*x + c)^4 + (4*a*b^2*d^2*f^2*x^2 + 8*a*b^2*d
^2*e*f*x + 8*a*b^2*c*d*e*f - 4*a*b^2*c^2*f^2 - 2*I*(a^2*b - b^3)*d^2*f^2*x^
2 - 4*I*(a^2*b - b^3)*d^2*e*f*x - 4*I*(a^2*b - b^3)*c*d*e*f + 2*I*(a^2*b -
b^3)*c^2*f^2)*cosh(d*x + c)^2 + (4*a*b^2*d^2*f^2*x^2 + 8*a*b^2*d^2*e*f*x +
8*a*b^2*c*d*e*f - 4*a*b^2*c^2*f^2 - 2*I*(a^2*b - b^3)*d^2*f^2*x^2 - 4*I*(a^
2*b - b^3)*d^2*e*f*x - 4*I*(a^2*b - b^3)*c*d*e*f + 2*I*(a^2*b - b^3)*c^2*f^
2 + (12*a*b^2*d^2*f^2*x^2 + 24*a*b^2*d^2*e*f*x + 24*a*b^2*c*d*e*f - 12*a*b^
2*c^2*f^2 - 6*I*(a^2*b - b^3)*d^2*f^2*x^2 - 12*I*(a^2*b - b^3)*d^2*e*f*x -
12*I*(a^2*b - b^3)*c*d*e*f + 6*I*(a^2*b - b^3)*c^2*f^2)*cosh(d*x + c)^2)*si
nh(d*x + c)^2 + ((8*a*b^2*d^2*f^2*x^2 + 16*a*b^2*d^2*e*f*x + 16*a*b^2*c*d*e
*f - 8*a*b^2*c^2*f^2 - 4*I*(a^2*b - b^3)*d^2*f^2*x^2 - 8*I*(a^2*b - b^3)*d^
2*e*f*x - 8*I*(a^2*b - b^3)*c*d*e*f + 4*I*(a^2*b - b^3)*c^2*f^2)*cosh(d*x +
 c)^3 + (8*a*b^2*d^2*f^2*x^2 + 16*a*b^2*d^2*e*f*x + 16*a*b^2*c*d*e*f - 8*a*
b^2*c^2*f^2 - 4*I*(a^2*b - b^3)*d^2*f^2*x^2 - 8*I*(a^2*b - b^3)*d^2*e*f*x -
 8*I*(a^2*b - b^3)*c*d*e*f + 4*I*(a^2*b - b^3)*c^2*f^2)*cosh(d*x + c))*sinh
(d*x + c))*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) + 4*(a*b^2*f^2*cosh(
d*x + c)^4 + 4*a*b^2*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + a*b^2*f^2*sinh(d*x
 + c)^4 + 2*a*b^2*f^2*cosh(d*x + c)^2 + a*b^2*f^2 + 2*(3*a*b^2*f^2*cosh(d*x
 + c)^2 + a*b^2*f^2)*sinh(d*x + c)^2 + 4*(a*b^2*f^2*cosh(d*x + c)^3 + a*b^2
*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x
 + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 4*(
a*b^2*f^2*cosh(d*x + c)^4 + 4*a*b^2*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + a*b
^2*f^2*sinh(d*x + c)^4 + 2*a*b^2*f^2*cosh(d*x + c)^2 + a*b^2*f^2 + 2*(3*a*b
^2*f^2*cosh(d*x + c)^2 + a*b^2*f^2)*sinh(d*x + c)^2 + 4*(a*b^2*f^2*cosh(d*x
 + c)^3 + a*b^2*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x +
c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2))/b) - (4*a*b^2*f^2 + (4*a*b^2*f^2 - 2*I*(a^2*b - b^3)*f^2)*cosh(d*x +
 c)^4 + (16*a*b^2*f^2 - 8*I*(a^2*b - b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c)^
3 + (4*a*b^2*f^2 - 2*I*(a^2*b - b^3)*f^2)*sinh(d*x + c)^4 - 2*I*(a^2*b - b^
3)*f^2 + (8*a*b^2*f^2 - 4*I*(a^2*b - b^3)*f^2)*cosh(d*x + c)^2 + (8*a*b^2*f
^2 - 4*I*(a^2*b - b^3)*f^2 + (24*a*b^2*f^2 - 12*I*(a^2*b - b^3)*f^2)*cosh(d
*x + c)^2)*sinh(d*x + c)^2 + ((16*a*b^2*f^2 - 8*I*(a^2*b - b^3)*f^2)*cosh(d
*x + c)^3 + (16*a*b^2*f^2 - 8*I*(a^2*b - b^3)*f^2)*cosh(d*x + c))*sinh(d*x
+ c))*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) - (4*a*b^2*f^2 + (4*a*b
^2*f^2 + 2*I*(a^2*b - b^3)*f^2)*cosh(d*x + c)^4 + (16*a*b^2*f^2 + 8*I*(a^2*
b - b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*a*b^2*f^2 + 2*I*(a^2*b - b
^3)*f^2)*sinh(d*x + c)^4 + 2*I*(a^2*b - b^3)*f^2 + (8*a*b^2*f^2 + 4*I*(a^2*
b - b^3)*f^2)*cosh(d*x + c)^2 + (8*a*b^2*f^2 + 4*I*(a^2*b - b^3)*f^2 + (24*
a*b^2*f^2 + 12*I*(a^2*b - b^3)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((16
*a*b^2*f^2 + 8*I*(a^2*b - b^3)*f^2)*cosh(d*x + c)^3 + (16*a*b^2*f^2 + 8*I*(
a^2*b - b^3)*f^2)*cosh(d*x + c))*sinh(d*x + c))*polylog(3, -I*cosh(d*x + c)
 - I*sinh(d*x + c)) - 2*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2
```

```
- 2*(a^2*b + b^3)*d*e*f - 8*((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*c*f^2)*c
osh(d*x + c)^3 - 3*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 + 2*(
a^2*b + b^3)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f + (a^2*b + b^3)*d*f^2)*x)*cos
h(d*x + c)^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^2*b + b^3)*d*f^2)*x + 4*((a^3
+ a*b^2)*d^2*f^2*x^2 + (a^3 + a*b^2)*d^2*e^2 + (a^3 + a*b^2)*d*e*f - 2*(a^3
 + a*b^2)*c*f^2 + (2*(a^3 + a*b^2)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x)*cosh(d
*x + c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)^4 + 4*(a
^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + 2*a^2*b^2
+ b^4)*d^3*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)^2
+ (a^4 + 2*a^2*b^2 + b^4)*d^3 + 2*(3*(a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x +
 c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^3)*sinh(d*x + c)^2 + 4*((a^4 + 2*a^2*b^2
+ b^4)*d^3*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c))*sin
h(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.02, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{sech}\left(dx+c\right)^{2} \tanh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -a^2*b*d^2*f^2*integrate(x^2*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b
^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2
```

```
+ b^4*d^2), x) + b^3*d^2*f^2*integrate(x^2*e^(d*x + c)/(a^4*d^2*e^(2*d*x +
2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 +
2*a^2*b^2*d^2 + b^4*d^2), x) - 2*a*b^2*d^2*f^2*integrate(x^2/(a^4*d^2*e^(2*
d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*
d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) - 2*a^2*b*d^2*e*f*integrate(x*e^(d*x + c
)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d
*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + 2*b^3*d^2*e*f*integrat
e(x*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) +
b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) - 4*a*b^2*
d^2*e*f*integrate(x/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c
) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + a^3*
f^2*(2*(d*x + c)/((a^4 + 2*a^2*b^2 + b^4)*d^3) - log(e^(2*d*x + 2*c) + 1)/(
(a^4 + 2*a^2*b^2 + b^4)*d^3)) + a*b^2*f^2*(2*(d*x + c)/((a^4 + 2*a^2*b^2 +
b^4)*d^3) - log(e^(2*d*x + 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d^3)) - (a*b^
2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 + b^4)*
d) - a*b^2*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) - (a^2*b -
 b^3)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) - (b*e^(-d*x - c) -
2*a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)*e^(-
2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d))*e^2 - 2*a^2*b*f^2*arctan(e
^(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^3) - 2*b^3*f^2*arctan(e^(d*x + c))/(
(a^4 + 2*a^2*b^2 + b^4)*d^3) - (2*a*f^2*x + 2*a*e*f - (b*d*f^2*x^2*e^(3*c)
+ 2*b*e*f*e^(3*c) + 2*(d*e*f + f^2)*b*x*e^(3*c))*e^(3*d*x) + 2*(a*d*f^2*x^2
*e^(2*c) + a*e*f*e^(2*c) + (2*d*e*f + f^2)*a*x*e^(2*c))*e^(2*d*x) + (b*d*f^
2*x^2*e^c - 2*b*e*f*e^c + 2*(d*e*f - f^2)*b*x*e^c)*e^(d*x))/(a^2*d^2 + b^2*
d^2 + (a^2*d^2*e^(4*c) + b^2*d^2*e^(4*c))*e^(4*d*x) + 2*(a^2*d^2*e^(2*c) +
b^2*d^2*e^(2*c))*e^(2*d*x)) + integrate(2*(a*b^3*f^2*x^2 + 2*a*b^3*e*f*x -
(a^2*b^2*f^2*x^2*e^c + 2*a^2*b^2*e*f*x*e^c)*e^(d*x))/(a^4*b + 2*a^2*b^3 + b
^5 - (a^4*b*e^(2*c) + 2*a^2*b^3*e^(2*c) + b^5*e^(2*c))*e^(2*d*x) - 2*(a^5*e
^c + 2*a^3*b^2*e^c + a*b^4*e^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh(c+d\,x)\,\left(e+f\,x\right)^2}{\cosh(c+d\,x)^2\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)*(e + f*x)^2)/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((tanh(c + d*x)*(e + f*x)^2)/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2\tanh(c+dx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sech(d*x+c)**2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*tanh(c + d*x)*sech(c + d*x)**2/(a + b*sinh(c + d*x)),
 x)
```

3.359 $\int \frac{(e+fx)\textbf{sech}^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=711

$$\frac{ia^2f\text{Li}_2\left(-ie^{c+dx}\right)}{2bd^2\left(a^2+b^2\right)}+\frac{ia^2bf\text{Li}_2\left(-ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)^2}-\frac{ia^2f\text{Li}_2\left(ie^{c+dx}\right)}{2bd^2\left(a^2+b^2\right)}-\frac{ia^2bf\text{Li}_2\left(ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)^2}-\frac{ab^2f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^2}-\frac{ab^2f\text{Li}_2\left(-\frac{}{a+}\right.}{d^2\left(a^2+\right.}$$

```
[Out] (f*x+e)*arctan(exp(d*x+c))/b/d-2*a^2*b*(f*x+e)*arctan(exp(d*x+c))/(a^2+b^2)
^2/d-a^2*(f*x+e)*arctan(exp(d*x+c))/b/(a^2+b^2)/d+a*b^2*(f*x+e)*ln(1+exp(2*
d*x+2*c))/(a^2+b^2)^2/d-a*b^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2))
)/(a^2+b^2)^2/d-a*b^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b
^2)^2/d+I*a^2*b*f*polylog(2,-I*exp(d*x+c))/(a^2+b^2)^2/d^2-1/2*I*a^2*f*poly
log(2,I*exp(d*x+c))/b/(a^2+b^2)/d^2+1/2*I*a^2*f*polylog(2,-I*exp(d*x+c))/b/
(a^2+b^2)/d^2+1/2*I*f*polylog(2,I*exp(d*x+c))/b/d^2-I*a^2*b*f*polylog(2,I*e
xp(d*x+c))/(a^2+b^2)^2/d^2-1/2*I*f*polylog(2,-I*exp(d*x+c))/b/d^2+1/2*a*b^2
*f*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2)^2/d^2-a*b^2*f*polylog(2,-b*exp(d*x+
c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^2-a*b^2*f*polylog(2,-b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^2+1/2*f*sech(d*x+c)/b/d^2-1/2*a^2*f*sech(d*
x+c)/b/(a^2+b^2)/d^2-1/2*a*(f*x+e)*sech(d*x+c)^2/(a^2+b^2)/d+1/2*a*f*tanh(d
*x+c)/(a^2+b^2)/d^2+1/2*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/b/d-1/2*a^2*(f*x+e)
*sech(d*x+c)*tanh(d*x+c)/b/(a^2+b^2)/d
```

Rubi [A] time = 0.99, antiderivative size = 711, normalized size of antiderivative = 1.00, number of steps used = 38, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.406$, Rules used = {5583, 4185, 4180, 2279, 2391, 5573, 5561, 2190, 6742, 3718, 5451, 3767, 8}

$$\frac{ia^2f\text{PolyLog}\left(2,-ie^{c+dx}\right)}{2bd^2\left(a^2+b^2\right)}+\frac{ia^2bf\text{PolyLog}\left(2,-ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)^2}-\frac{ia^2f\text{PolyLog}\left(2,ie^{c+dx}\right)}{2bd^2\left(a^2+b^2\right)}-\frac{ia^2bf\text{PolyLog}\left(2,ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)^2}-\frac{ab^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sech[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((e + f*x)*ArcTan[E^(c + d*x)])/(b*d) - (2*a^2*b*(e + f*x)*ArcTan[E^(c + d*
x)])/((a^2 + b^2)^2*d) - (a^2*(e + f*x)*ArcTan[E^(c + d*x)])/(b*(a^2 + b^2)
*d) - (a*b^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/((a^
2 + b^2)^2*d) - (a*b^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2])])/((a^2 + b^2)^2*d) + (a*b^2*(e + f*x)*Log[1 + E^(2*(c + d*x))])/((a^2
+ b^2)^2*d) - ((I/2)*f*PolyLog[2, (-I)*E^(c + d*x)])/(b*d^2) + (I*a^2*b*f*P
olyLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)^2*d^2) + ((I/2)*a^2*f*PolyLog[2,
```

```
(-I)*E^(c + d*x)])/(b*(a^2 + b^2)*d^2) + ((I/2)*f*PolyLog[2, I*E^(c + d*x)]
)/(b*d^2) - (I*a^2*b*f*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^2)^2*d^2) - ((I
/2)*a^2*f*PolyLog[2, I*E^(c + d*x)])/(b*(a^2 + b^2)*d^2) - (a*b^2*f*PolyLog
[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^2) - (a*b^2
*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^2
) + (a*b^2*f*PolyLog[2, -E^(2*(c + d*x))])/(2*(a^2 + b^2)^2*d^2) + (f*Sech[
c + d*x])/(2*b*d^2) - (a^2*f*Sech[c + d*x])/(2*b*(a^2 + b^2)*d^2) - (a*(e +
 f*x)*Sech[c + d*x]^2)/(2*(a^2 + b^2)*d) + (a*f*Tanh[c + d*x])/(2*(a^2 + b^
2)*d^2) + ((e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(2*b*d) - (a^2*(e + f*x)*
Sech[c + d*x]*Tanh[c + d*x])/(2*b*(a^2 + b^2)*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
```

```
d}, x] && IGtQ[n/2, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\text{sech}^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{sech}^3(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\text{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= \frac{f\text{sech}(c+dx)}{2bd^2} + \frac{(e+fx)\text{sech}(c+dx)\tanh(c+dx)}{2bd} + \frac{\int (e+fx)\text{se}$$

$$= \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} + \frac{f\text{sech}(c+dx)}{2bd^2} + \frac{(e+fx)\text{sech}(c+dx)\tan}{2bd}$$

$$= \frac{ab^2(e+fx)^2}{2\left(a^2+b^2\right)^2 f} + \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} + \frac{f\text{sech}(c+dx)}{2bd^2} + \frac{(e+fx)}{}$$

$$= \frac{ab^2(e+fx)^2}{2\left(a^2+b^2\right)^2 f} + \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{ab^2(e+fx)\log\left(1+\frac{be^{c}}{a-\sqrt{a}}\right.}{\left(a^2+b^2\right)^2 d}$$

$$= \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{a^2(e+fx)\tan}{b\left(a^2+\right.}$$

$$= \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{a^2(e+fx)\tan}{b\left(a^2+\right.}$$

$$= \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{a^2(e+fx)\tan}{b\left(a^2+\right.}$$

$$= \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^2b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{a^2(e+fx)\tan}{b\left(a^2+\right.}$$

Mathematica [A] time = 7.98, size = 587, normalized size = 0.83

$$\frac{b\left(if\left(a^2-b^2\right)\text{Li}_2\left(-ie^{c+dx}\right) - if\left(a^2-b^2\right)\text{Li}_2\left(ie^{c+dx}\right) - 2a^2de\tan^{-1}\left(e^{c+dx}\right) - ia^2f(c+dx)\log\left(1-ie^{c+dx}\right) + ia^2 f}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sech[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (-2*a*b^2*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a -
Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
])] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c + d*x]] + f*PolyL
og[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2]))]) + b*(-2*a*b*d*e*(c + d*x) + 2*a*b*c*f*(c + d*x
) - a*b*f*(c + d*x)^2 - 2*a^2*d*e*ArcTan[E^(c + d*x)] + 2*b^2*d*e*ArcTan[E^
(c + d*x)] + 2*a^2*c*f*ArcTan[E^(c + d*x)] - 2*b^2*c*f*ArcTan[E^(c + d*x)]
- I*a^2*f*(c + d*x)*Log[1 - I*E^(c + d*x)] + I*b^2*f*(c + d*x)*Log[1 - I*E^
(c + d*x)] + I*a^2*f*(c + d*x)*Log[1 + I*E^(c + d*x)] - I*b^2*f*(c + d*x)*L
og[1 + I*E^(c + d*x)] + 2*a*b*d*e*Log[1 + E^(2*(c + d*x))] - 2*a*b*c*f*Log[
1 + E^(2*(c + d*x))] + 2*a*b*f*(c + d*x)*Log[1 + E^(2*(c + d*x))] + I*(a^2
- b^2)*f*PolyLog[2, (-I)*E^(c + d*x)] - I*(a^2 - b^2)*f*PolyLog[2, I*E^(c +
 d*x)] + a*b*f*PolyLog[2, -E^(2*(c + d*x))]) + (a^2 + b^2)*f*Sech[c + d*x]*
(b + a*Sinh[c + d*x]) + (a^2 + b^2)*d*(e + f*x)*Sech[c + d*x]^2*(-a + b*Sin
h[c + d*x]))/(2*(a^2 + b^2)^2*d^2)
```

<u>**fricas**</u> **[B]** time = 0.71, size = 4963, normalized size = 6.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] 1/2*(2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^2*b + b^3)*f)*cosh(d*x
 + c)^3 + 2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^2*b + b^3)*f)*sin
h(d*x + c)^3 - 2*(2*(a^3 + a*b^2)*d*f*x + 2*(a^3 + a*b^2)*d*e + (a^3 + a*b^
2)*f)*cosh(d*x + c)^2 - 2*(2*(a^3 + a*b^2)*d*f*x + 2*(a^3 + a*b^2)*d*e + (a
^3 + a*b^2)*f - 3*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^2*b + b^3)*
f)*cosh(d*x + c))*sinh(d*x + c)^2 - 2*(a^3 + a*b^2)*f - 2*((a^2*b + b^3)*d*
f*x + (a^2*b + b^3)*d*e - (a^2*b + b^3)*f)*cosh(d*x + c) - 2*(a*b^2*f*cosh(
d*x + c)^4 + 4*a*b^2*f*cosh(d*x + c)*sinh(d*x + c)^3 + a*b^2*f*sinh(d*x + c
)^4 + 2*a*b^2*f*cosh(d*x + c)^2 + a*b^2*f + 2*(3*a*b^2*f*cosh(d*x + c)^2 +
a*b^2*f)*sinh(d*x + c)^2 + 4*(a*b^2*f*cosh(d*x + c)^3 + a*b^2*f*cosh(d*x +
c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(a*b^2*f*cosh(
d*x + c)^4 + 4*a*b^2*f*cosh(d*x + c)*sinh(d*x + c)^3 + a*b^2*f*sinh(d*x + c
)^4 + 2*a*b^2*f*cosh(d*x + c)^2 + a*b^2*f + 2*(3*a*b^2*f*cosh(d*x + c)^2 +
a*b^2*f)*sinh(d*x + c)^2 + 4*(a*b^2*f*cosh(d*x + c)^3 + a*b^2*f*cosh(d*x +
c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + ((2*a*b^2*f - I*
(a^2*b - b^3)*f)*cosh(d*x + c)^4 + (8*a*b^2*f - 4*I*(a^2*b - b^3)*f)*cosh(d
```

```
*x + c)*sinh(d*x + c)^3 + (2*a*b^2*f - I*(a^2*b - b^3)*f)*sinh(d*x + c)^4 +
 2*a*b^2*f + (4*a*b^2*f - 2*I*(a^2*b - b^3)*f)*cosh(d*x + c)^2 + (4*a*b^2*f
 + (12*a*b^2*f - 6*I*(a^2*b - b^3)*f)*cosh(d*x + c)^2 - 2*I*(a^2*b - b^3)*f
)*sinh(d*x + c)^2 - I*(a^2*b - b^3)*f + ((8*a*b^2*f - 4*I*(a^2*b - b^3)*f)*
cosh(d*x + c)^3 + (8*a*b^2*f - 4*I*(a^2*b - b^3)*f)*cosh(d*x + c))*sinh(d*x
 + c))*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + ((2*a*b^2*f + I*(a^2*b -
b^3)*f)*cosh(d*x + c)^4 + (8*a*b^2*f + 4*I*(a^2*b - b^3)*f)*cosh(d*x + c)*s
inh(d*x + c)^3 + (2*a*b^2*f + I*(a^2*b - b^3)*f)*sinh(d*x + c)^4 + 2*a*b^2*
f + (4*a*b^2*f + 2*I*(a^2*b - b^3)*f)*cosh(d*x + c)^2 + (4*a*b^2*f + (12*a*
b^2*f + 6*I*(a^2*b - b^3)*f)*cosh(d*x + c)^2 + 2*I*(a^2*b - b^3)*f)*sinh(d*
x + c)^2 + I*(a^2*b - b^3)*f + ((8*a*b^2*f + 4*I*(a^2*b - b^3)*f)*cosh(d*x
+ c)^3 + (8*a*b^2*f + 4*I*(a^2*b - b^3)*f)*cosh(d*x + c))*sinh(d*x + c))*di
log(-I*cosh(d*x + c) - I*sinh(d*x + c)) - 2*(a*b^2*d*e - a*b^2*c*f + (a*b^2
*d*e - a*b^2*c*f)*cosh(d*x + c)^4 + 4*(a*b^2*d*e - a*b^2*c*f)*cosh(d*x + c)
*sinh(d*x + c)^3 + (a*b^2*d*e - a*b^2*c*f)*sinh(d*x + c)^4 + 2*(a*b^2*d*e -
 a*b^2*c*f)*cosh(d*x + c)^2 + 2*(a*b^2*d*e - a*b^2*c*f + 3*(a*b^2*d*e - a*b
^2*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a*b^2*d*e - a*b^2*c*f)*cosh(
d*x + c)^3 + (a*b^2*d*e - a*b^2*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*
cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(a
*b^2*d*e - a*b^2*c*f + (a*b^2*d*e - a*b^2*c*f)*cosh(d*x + c)^4 + 4*(a*b^2*d
*e - a*b^2*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a*b^2*d*e - a*b^2*c*f)*sin
h(d*x + c)^4 + 2*(a*b^2*d*e - a*b^2*c*f)*cosh(d*x + c)^2 + 2*(a*b^2*d*e - a
*b^2*c*f + 3*(a*b^2*d*e - a*b^2*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(
(a*b^2*d*e - a*b^2*c*f)*cosh(d*x + c)^3 + (a*b^2*d*e - a*b^2*c*f)*cosh(d*x
+ c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((
a^2 + b^2)/b^2) + 2*a) - 2*(a*b^2*d*f*x + a*b^2*c*f + (a*b^2*d*f*x + a*b^2*
c*f)*cosh(d*x + c)^4 + 4*(a*b^2*d*f*x + a*b^2*c*f)*cosh(d*x + c)*sinh(d*x +
 c)^3 + (a*b^2*d*f*x + a*b^2*c*f)*sinh(d*x + c)^4 + 2*(a*b^2*d*f*x + a*b^2*
c*f)*cosh(d*x + c)^2 + 2*(a*b^2*d*f*x + a*b^2*c*f + 3*(a*b^2*d*f*x + a*b^2*
c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a*b^2*d*f*x + a*b^2*c*f)*cosh(d
*x + c)^3 + (a*b^2*d*f*x + a*b^2*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-(a
*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b) - 2*(a*b^2*d*f*x + a*b^2*c*f + (a*b^2*d*f*x + a*b
^2*c*f)*cosh(d*x + c)^4 + 4*(a*b^2*d*f*x + a*b^2*c*f)*cosh(d*x + c)*sinh(d*
x + c)^3 + (a*b^2*d*f*x + a*b^2*c*f)*sinh(d*x + c)^4 + 2*(a*b^2*d*f*x + a*b
^2*c*f)*cosh(d*x + c)^2 + 2*(a*b^2*d*f*x + a*b^2*c*f + 3*(a*b^2*d*f*x + a*b
^2*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a*b^2*d*f*x + a*b^2*c*f)*cos
h(d*x + c)^3 + (a*b^2*d*f*x + a*b^2*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(
-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*s
qrt((a^2 + b^2)/b^2) - b)/b) + (2*a*b^2*d*e - 2*a*b^2*c*f + (2*a*b^2*d*e -
2*a*b^2*c*f - I*(a^2*b - b^3)*d*e + I*(a^2*b - b^3)*c*f)*cosh(d*x + c)^4 +
(8*a*b^2*d*e - 8*a*b^2*c*f - 4*I*(a^2*b - b^3)*d*e + 4*I*(a^2*b - b^3)*c*f)
*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a*b^2*d*e - 2*a*b^2*c*f - I*(a^2*b - b^
3)*d*e + I*(a^2*b - b^3)*c*f)*sinh(d*x + c)^4 - I*(a^2*b - b^3)*d*e + I*(a^
2*b - b^3)*c*f + (4*a*b^2*d*e - 4*a*b^2*c*f - 2*I*(a^2*b - b^3)*d*e + 2*I*(
```

```
a^2*b - b^3)*c*f)*cosh(d*x + c)^2 + (4*a*b^2*d*e - 4*a*b^2*c*f - 2*I*(a^2*b
 - b^3)*d*e + 2*I*(a^2*b - b^3)*c*f + (12*a*b^2*d*e - 12*a*b^2*c*f - 6*I*(a
^2*b - b^3)*d*e + 6*I*(a^2*b - b^3)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 +
 ((8*a*b^2*d*e - 8*a*b^2*c*f - 4*I*(a^2*b - b^3)*d*e + 4*I*(a^2*b - b^3)*c*
f)*cosh(d*x + c)^3 + (8*a*b^2*d*e - 8*a*b^2*c*f - 4*I*(a^2*b - b^3)*d*e + 4
*I*(a^2*b - b^3)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sin
h(d*x + c) + I) + (2*a*b^2*d*e - 2*a*b^2*c*f + (2*a*b^2*d*e - 2*a*b^2*c*f +
 I*(a^2*b - b^3)*d*e - I*(a^2*b - b^3)*c*f)*cosh(d*x + c)^4 + (8*a*b^2*d*e
- 8*a*b^2*c*f + 4*I*(a^2*b - b^3)*d*e - 4*I*(a^2*b - b^3)*c*f)*cosh(d*x + c
)*sinh(d*x + c)^3 + (2*a*b^2*d*e - 2*a*b^2*c*f + I*(a^2*b - b^3)*d*e - I*(a
^2*b - b^3)*c*f)*sinh(d*x + c)^4 + I*(a^2*b - b^3)*d*e - I*(a^2*b - b^3)*c*
f + (4*a*b^2*d*e - 4*a*b^2*c*f + 2*I*(a^2*b - b^3)*d*e - 2*I*(a^2*b - b^3)*
c*f)*cosh(d*x + c)^2 + (4*a*b^2*d*e - 4*a*b^2*c*f + 2*I*(a^2*b - b^3)*d*e -
 2*I*(a^2*b - b^3)*c*f + (12*a*b^2*d*e - 12*a*b^2*c*f + 6*I*(a^2*b - b^3)*d
*e - 6*I*(a^2*b - b^3)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a*b^2*d*
e - 8*a*b^2*c*f + 4*I*(a^2*b - b^3)*d*e - 4*I*(a^2*b - b^3)*c*f)*cosh(d*x +
 c)^3 + (8*a*b^2*d*e - 8*a*b^2*c*f + 4*I*(a^2*b - b^3)*d*e - 4*I*(a^2*b - b
^3)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) -
I) + (2*a*b^2*d*f*x + 2*a*b^2*c*f + (2*a*b^2*d*f*x + 2*a*b^2*c*f + I*(a^2*b
 - b^3)*d*f*x + I*(a^2*b - b^3)*c*f)*cosh(d*x + c)^4 + (8*a*b^2*d*f*x + 8*a
*b^2*c*f + 4*I*(a^2*b - b^3)*d*f*x + 4*I*(a^2*b - b^3)*c*f)*cosh(d*x + c)*s
inh(d*x + c)^3 + (2*a*b^2*d*f*x + 2*a*b^2*c*f + I*(a^2*b - b^3)*d*f*x + I*(
a^2*b - b^3)*c*f)*sinh(d*x + c)^4 + I*(a^2*b - b^3)*d*f*x + I*(a^2*b - b^3)
*c*f + (4*a*b^2*d*f*x + 4*a*b^2*c*f + 2*I*(a^2*b - b^3)*d*f*x + 2*I*(a^2*b
- b^3)*c*f)*cosh(d*x + c)^2 + (4*a*b^2*d*f*x + 4*a*b^2*c*f + 2*I*(a^2*b - b
^3)*d*f*x + 2*I*(a^2*b - b^3)*c*f + (12*a*b^2*d*f*x + 12*a*b^2*c*f + 6*I*(a
^2*b - b^3)*d*f*x + 6*I*(a^2*b - b^3)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2
 + ((8*a*b^2*d*f*x + 8*a*b^2*c*f + 4*I*(a^2*b - b^3)*d*f*x + 4*I*(a^2*b - b
^3)*c*f)*cosh(d*x + c)^3 + (8*a*b^2*d*f*x + 8*a*b^2*c*f + 4*I*(a^2*b - b^3)
*d*f*x + 4*I*(a^2*b - b^3)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(I*cosh(d*
x + c) + I*sinh(d*x + c) + 1) + (2*a*b^2*d*f*x + 2*a*b^2*c*f + (2*a*b^2*d*f
*x + 2*a*b^2*c*f - I*(a^2*b - b^3)*d*f*x - I*(a^2*b - b^3)*c*f)*cosh(d*x +
c)^4 + (8*a*b^2*d*f*x + 8*a*b^2*c*f - 4*I*(a^2*b - b^3)*d*f*x - 4*I*(a^2*b
- b^3)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a*b^2*d*f*x + 2*a*b^2*c*f -
I*(a^2*b - b^3)*d*f*x - I*(a^2*b - b^3)*c*f)*sinh(d*x + c)^4 - I*(a^2*b - b
^3)*d*f*x - I*(a^2*b - b^3)*c*f + (4*a*b^2*d*f*x + 4*a*b^2*c*f - 2*I*(a^2*b
 - b^3)*d*f*x - 2*I*(a^2*b - b^3)*c*f)*cosh(d*x + c)^2 + (4*a*b^2*d*f*x + 4
*a*b^2*c*f - 2*I*(a^2*b - b^3)*d*f*x - 2*I*(a^2*b - b^3)*c*f + (12*a*b^2*d*
f*x + 12*a*b^2*c*f - 6*I*(a^2*b - b^3)*d*f*x - 6*I*(a^2*b - b^3)*c*f)*cosh(
d*x + c)^2)*sinh(d*x + c)^2 + ((8*a*b^2*d*f*x + 8*a*b^2*c*f - 4*I*(a^2*b -
b^3)*d*f*x - 4*I*(a^2*b - b^3)*c*f)*cosh(d*x + c)^3 + (8*a*b^2*d*f*x + 8*a*
b^2*c*f - 4*I*(a^2*b - b^3)*d*f*x - 4*I*(a^2*b - b^3)*c*f)*cosh(d*x + c))*s
inh(d*x + c))*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) - 2*((a^2*b + b^3
)*d*f*x + (a^2*b + b^3)*d*e - 3*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e +
(a^2*b + b^3)*f)*cosh(d*x + c)^2 - (a^2*b + b^3)*f + 2*(2*(a^3 + a*b^2)*d*f
```

```
*x + 2*(a^3 + a*b^2)*d*e + (a^3 + a*b^2)*f)*cosh(d*x + c))*sinh(d*x + c))/(
(a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*d^2
*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d^2*sinh(d*x + c)^
4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)
*d^2 + 2*(3*(a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2
+ b^4)*d^2)*sinh(d*x + c)^2 + 4*((a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^
3 + (a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c))*sinh(d*x + c))
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.28, size = 2074, normalized size = 2.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/(a^2+b^2)^(3/2)/d*b^4*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(
a^2+b^2)^(1/2))+1/(a^2+b^2)^(1/2)/d*b^2*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*ex
p(d*x+c)+2*a)/(a^2+b^2)^(1/2))+I/d*b/(a^2+b^2)*a^2*f/(2*a^2+2*b^2)*ln(1+I*e
xp(d*x+c))*x+I/d^2*b/(a^2+b^2)*a^2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c+1/(
a^2+b^2)^(3/2)/d^2*b^2*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(
a^2+b^2)^(1/2))*a^2-2/d*b/(a^2+b^2)*a^2*e/(2*a^2+2*b^2)*arctan(exp(d*x+c))-
I/d^2*b^3/(a^2+b^2)*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))+2/d*b^3/(a^2+b^2)
*e/(2*a^2+2*b^2)*arctan(exp(d*x+c))-I/d*b/(a^2+b^2)*a^2*f/(2*a^2+2*b^2)*ln(
1-I*exp(d*x+c))*x-I/d^2*b/(a^2+b^2)*a^2*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*
c-(-b*d*f*x*exp(3*d*x+3*c)+2*a*d*f*x*exp(2*d*x+2*c)-b*d*e*exp(3*d*x+3*c)+2*
a*d*e*exp(2*d*x+2*c)+b*d*f*x*exp(d*x+c)-b*f*exp(3*d*x+3*c)+a*f*exp(2*d*x+2*
c)+b*d*e*exp(d*x+c)-f*b*exp(d*x+c)+a*f)/d^2/(a^2+b^2)/(1+exp(2*d*x+2*c))^2+
1/(a^2+b^2)^(3/2)/d^2*b^4*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a
)/(a^2+b^2)^(1/2))-1/(a^2+b^2)^(3/2)/d*b^2*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b
*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2-1/(a^2+b^2)^(1/2)/d^2*b^2*f*c/(2*a^2+
2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/d*b^2/(a^2+b^2)*
f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*a*x+2/d^2*b^2/(a^2+b^2)*f/(2*a^2+2*b^2)*
ln(1-I*exp(d*x+c))*a*c+I/d^2*b^3/(a^2+b^2)*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c
))*c+2/d*b^2/(a^2+b^2)*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*a*x-2/d*b^2/(a^2+
```

```
b^2)*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/
2)))*a*x-2/d^2*b^2/(a^2+b^2)*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1
/2)-a)/(-a+(a^2+b^2)^(1/2)))*a*c-2/d*b^2/(a^2+b^2)*f/(2*a^2+2*b^2)*ln((b*ex
p(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a*x-2/d^2*b^2/(a^2+b^2)*f/
(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a*c+
2/d^2*b^2/(a^2+b^2)*f*c/(2*a^2+2*b^2)*a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-
b)-2/d^2*b^2/(a^2+b^2)*f*c/(2*a^2+2*b^2)*a*ln(1+exp(2*d*x+2*c))-I/d*b^3/(a^
2+b^2)*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*x-I/d^2*b^3/(a^2+b^2)*f/(2*a^2+2*
b^2)*ln(1+I*exp(d*x+c))*c-I/d^2*b/(a^2+b^2)*a^2*f/(2*a^2+2*b^2)*dilog(1-I*e
xp(d*x+c))+2/d^2*b^2/(a^2+b^2)*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*a*c+I/d^2
*b/(a^2+b^2)*a^2*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))+2/d^2*b/(a^2+b^2)*a^
2*f*c/(2*a^2+2*b^2)*arctan(exp(d*x+c))+I/d*b^3/(a^2+b^2)*f/(2*a^2+2*b^2)*ln
(1-I*exp(d*x+c))*x-2/d^2*b^3/(a^2+b^2)*f*c/(2*a^2+2*b^2)*arctan(exp(d*x+c))
-2/d^2*b^2/(a^2+b^2)*f/(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a
)/(-a+(a^2+b^2)^(1/2)))*a-2/d^2*b^2/(a^2+b^2)*f/(2*a^2+2*b^2)*dilog((b*exp(
d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a+2/d^2*b^2/(a^2+b^2)*f/(2*a
^2+2*b^2)*dilog(1+I*exp(d*x+c))*a+2/d^2*b^2/(a^2+b^2)*f/(2*a^2+2*b^2)*dilog
(1-I*exp(d*x+c))*a+I/d^2*b^3/(a^2+b^2)*f/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+c)
)-2/d*b^2/(a^2+b^2)*e/(2*a^2+2*b^2)*a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)
+2/d*b^2/(a^2+b^2)*e/(2*a^2+2*b^2)*a*ln(1+exp(2*d*x+2*c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(\frac{ab^2\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{ab^2\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{\left(a^2b-b^3\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{be^{(-}}{\left(a^2+b^2+2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -(a*b^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 +
 b^4)*d) - a*b^2*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) - (a
^2*b - b^3)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) - (b*e^(-d*x -
 c) - 2*a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2
)*e^(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d))*e + f*(((b*d*x*e^(3*
c) + b*e^(3*c))*e^(3*d*x) - (2*a*d*x*e^(2*c) + a*e^(2*c))*e^(2*d*x) - (b*d*
x*e^c - b*e^c)*e^(d*x) - a)/(a^2*d^2 + b^2*d^2 + (a^2*d^2*e^(4*c) + b^2*d^2
*e^(4*c))*e^(4*d*x) + 2*(a^2*d^2*e^(2*c) + b^2*d^2*e^(2*c))*e^(2*d*x)) + 4*
integrate(-1/2*(a^2*b^2*x*e^(d*x + c) - a*b^3*x)/(a^4*b + 2*a^2*b^3 + b^5 -
 (a^4*b*e^(2*c) + 2*a^2*b^3*e^(2*c) + b^5*e^(2*c))*e^(2*d*x) - 2*(a^5*e^c +
 2*a^3*b^2*e^c + a*b^4*e^c)*e^(d*x)), x) - 4*integrate(1/4*(2*a*b^2*x + (a^
2*b*e^c - b^3*e^c)*x*e^(d*x))/(a^4 + 2*a^2*b^2 + b^4 + (a^4*e^(2*c) + 2*a^2
*b^2*e^(2*c) + b^4*e^(2*c))*e^(2*d*x)), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh (c+d\,x)\,\left(e+f\,x\right)}{\cosh (c+d\,x)^2\,\left(a+b\sinh (c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)*(e + f*x))/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((tanh(c + d*x)*(e + f*x))/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\tanh (c+dx)\,\mathrm{sech}^2 (c+dx)}{a+b\sinh (c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)**2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)*tanh(c + d*x)*sech(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.360 $\int \frac{\operatorname{sech}^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=122

$$-\frac{ab^2\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{b\left(a^2-b^2\right)\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)^2}+\frac{ab^2\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{\operatorname{sech}^2(c+dx)(a-b\sinh(}{2d\left(a^2+b^2\right)}$$

```
[Out] -1/2*b*(a^2-b^2)*arctan(sinh(d*x+c))/(a^2+b^2)^2/d+a*b^2*ln(cosh(d*x+c))/(a
^2+b^2)^2/d-a*b^2*ln(a+b*sinh(d*x+c))/(a^2+b^2)^2/d-1/2*sech(d*x+c)^2*(a-b*
sinh(d*x+c))/(a^2+b^2)/d
```

Rubi [A] time = 0.20, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {2837, 12, 823, 801, 635, 203, 260}

$$-\frac{ab^2\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{b\left(a^2-b^2\right)\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)^2}+\frac{ab^2\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{\operatorname{sech}^2(c+dx)(a-b\sinh(}{2d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sech[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(b*(a^2 - b^2)*ArcTan[Sinh[c + d*x]])/(2*(a^2 + b^2)^2*d) + (a*b^2*Log[Cos
h[c + d*x]])/((a^2 + b^2)^2*d) - (a*b^2*Log[a + b*Sinh[c + d*x]])/((a^2 + b
^2)^2*d) - (Sech[c + d*x]^2*(a - b*Sinh[c + d*x]))/(2*(a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\text{sech}^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{b^3\,\text{Subst}\left(\int \frac{x}{b(a+x)\left(-b^2-x^2\right)^2}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= \frac{b^2\,\text{Subst}\left(\int \frac{x}{(a+x)\left(-b^2-x^2\right)^2}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{\text{sech}^2(c+dx)(a-b\sinh(c+dx))}{2\left(a^2+b^2\right)d} + \frac{\text{Subst}\left(\int \frac{ab^2-b^2x}{(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+\right.}{2\left(a^2+b^2\right)d}$$

$$= -\frac{\text{sech}^2(c+dx)(a-b\sinh(c+dx))}{2\left(a^2+b^2\right)d} + \frac{\text{Subst}\left(\int\left(-\frac{2ab^2}{\left(a^2+b^2\right)(a+x)} + \frac{b^2\left(-a^2+b^2+2ax\right.}{\left(a^2+b^2\right)\left(b^2+x^2\right.}\right.\right.}{2\left(a^2+b^2\right)d}$$

$$= -\frac{ab^2\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{\text{sech}^2(c+dx)(a-b\sinh(c+dx))}{2\left(a^2+b^2\right)d} + \frac{b^2\,\text{Subs}}{}$$

$$= -\frac{ab^2\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{\text{sech}^2(c+dx)(a-b\sinh(c+dx))}{2\left(a^2+b^2\right)d} + \frac{\left(ab^2\right)\text{Su}}{}$$

$$= -\frac{b\left(a^2-b^2\right)\tan^{-1}(\sinh(c+dx))}{2\left(a^2+b^2\right)^2 d} + \frac{ab^2\log(\cosh(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{ab^2\log(a+b\,\text{si}}{\left(a^2+b^2\right.}$$

Mathematica [A] time = 0.20, size = 105, normalized size = 0.86

$$\frac{-a\left(a^2+b^2\right)\text{sech}^2(c+dx) + b\left(a^2+b^2\right)\tanh(c+dx)\text{sech}(c+dx) + 2b\left(\left(b^2-a^2\right)\tan^{-1}\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right) + ab\right.}{2d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sech[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*b*((-a^2 + b^2)*ArcTan[Tanh[(c + d*x)/2]] + a*b*(Log[Cosh[c + d*x]] - Lo
g[a + b*Sinh[c + d*x]])) - a*(a^2 + b^2)*Sech[c + d*x]^2 + b*(a^2 + b^2)*Se
ch[c + d*x]*Tanh[c + d*x])/(2*(a^2 + b^2)^2*d)
```

fricas [B] time = 0.53, size = 926, normalized size = 7.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] ((a^2*b + b^3)*cosh(d*x + c)^3 + (a^2*b + b^3)*sinh(d*x + c)^3 - 2*(a^3 + a
*b^2)*cosh(d*x + c)^2 - (2*a^3 + 2*a*b^2 - 3*(a^2*b + b^3)*cosh(d*x + c))*s
inh(d*x + c)^2 - ((a^2*b - b^3)*cosh(d*x + c)^4 + 4*(a^2*b - b^3)*cosh(d*x
+ c)*sinh(d*x + c)^3 + (a^2*b - b^3)*sinh(d*x + c)^4 + a^2*b - b^3 + 2*(a^2
*b - b^3)*cosh(d*x + c)^2 + 2*(a^2*b - b^3 + 3*(a^2*b - b^3)*cosh(d*x + c)^
2)*sinh(d*x + c)^2 + 4*((a^2*b - b^3)*cosh(d*x + c)^3 + (a^2*b - b^3)*cosh(
d*x + c))*sinh(d*x + c))*arctan(cosh(d*x + c) + sinh(d*x + c)) - (a^2*b + b
^3)*cosh(d*x + c) - (a*b^2*cosh(d*x + c)^4 + 4*a*b^2*cosh(d*x + c)*sinh(d*x
 + c)^3 + a*b^2*sinh(d*x + c)^4 + 2*a*b^2*cosh(d*x + c)^2 + a*b^2 + 2*(3*a*
b^2*cosh(d*x + c)^2 + a*b^2)*sinh(d*x + c)^2 + 4*(a*b^2*cosh(d*x + c)^3 + a
*b^2*cosh(d*x + c))*sinh(d*x + c))*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x +
c) - sinh(d*x + c))) + (a*b^2*cosh(d*x + c)^4 + 4*a*b^2*cosh(d*x + c)*sinh(
d*x + c)^3 + a*b^2*sinh(d*x + c)^4 + 2*a*b^2*cosh(d*x + c)^2 + a*b^2 + 2*(3
*a*b^2*cosh(d*x + c)^2 + a*b^2)*sinh(d*x + c)^2 + 4*(a*b^2*cosh(d*x + c)^3
+ a*b^2*cosh(d*x + c))*sinh(d*x + c))*log(2*cosh(d*x + c)/(cosh(d*x + c) -
sinh(d*x + c))) - (a^2*b + b^3 - 3*(a^2*b + b^3)*cosh(d*x + c)^2 + 4*(a^3 +
 a*b^2)*cosh(d*x + c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x +
 c)^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 +
2*a^2*b^2 + b^4)*d*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x +
 c)^2 + 2*(3*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 +
 b^4)*d)*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d + 4*((a^4 + 2*a^2*b^2
+ b^4)*d*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c))*sinh(d*
x + c))
```

giac [A] time = 3.03, size = 225, normalized size = 1.84

$$\frac{\frac{ab^2 \log\left(e^{(2\,dx+2\,c)}+1\right)}{a^4+2\,a^2b^2+b^4} - \frac{ab^2 \log\left(\left|-be^{(2\,dx+2\,c)}-2\,ae^{(dx+c)}+b\right|\right)}{a^4+2\,a^2b^2+b^4} - \frac{\left(a^2be^{c}-b^3e^{c}\right)\arctan\left(e^{(dx+c)}\right)e^{(-c)}}{a^4+2\,a^2b^2+b^4} + \frac{\left(a^2be^{(3\,c)}+b^3e^{(3\,c)}\right)e^{(3\,dx)}-2\,\left(a^3e^{(2\,c)}+ab^2e^{(2\,c)}\right)e}{\left(a^2+b^2\right)^2\left(e^{(2\,dx+2\,c)}+1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (a*b^2*log(e^(2*d*x + 2*c) + 1)/(a^4 + 2*a^2*b^2 + b^4) - a*b^2*log(abs(-b*
e^(2*d*x + 2*c) - 2*a*e^(d*x + c) + b))/(a^4 + 2*a^2*b^2 + b^4) - (a^2*b*e^
c - b^3*e^c)*arctan(e^(d*x + c))*e^(-c)/(a^4 + 2*a^2*b^2 + b^4) + ((a^2*b*e
^(3*c) + b^3*e^(3*c))*e^(3*d*x) - 2*(a^3*e^(2*c) + a*b^2*e^(2*c))*e^(2*d*x)
 - (a^2*b*e^c + b^3*e^c)*e^(d*x))/((a^2 + b^2)^2*(e^(2*d*x + 2*c) + 1)^2))/
d
```

maple [B] time = 0.00, size = 474, normalized size = 3.89

$$-\frac{2a\,b^2\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\left(2a^4+4a^2b^2+2b^4\right)}-\frac{\left(\tanh^3\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a^2b}{d\left(a^4+2a^2b^2+b^4\right)\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2}-\frac{(\mathrm{t}}{d\left(a^4+2a^2b^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -2/d*a*b^2/(2*a^4+4*a^2*b^2+2*b^4)*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*
x+1/2*c)*b-a)-1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*
d*x+1/2*c)^3*a^2*b-1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh
(1/2*d*x+1/2*c)^3*b^3+2/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*t
anh(1/2*d*x+1/2*c)^2*a^3+2/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^
2*tanh(1/2*d*x+1/2*c)^2*a*b^2+1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^
2+1)^2*tanh(1/2*d*x+1/2*c)*a^2*b+1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*
c)^2+1)^2*tanh(1/2*d*x+1/2*c)*b^3-1/d/(a^4+2*a^2*b^2+b^4)*arctan(tanh(1/2*d
*x+1/2*c))*a^2*b+1/d/(a^4+2*a^2*b^2+b^4)*arctan(tanh(1/2*d*x+1/2*c))*b^3+1/
d/(a^4+2*a^2*b^2+b^4)*ln(tanh(1/2*d*x+1/2*c)^2+1)*a*b^2
```

maxima [A] time = 0.41, size = 218, normalized size = 1.79

$$-\frac{ab^2\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{ab^2\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{\left(a^2b-b^3\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{be^{(-dx-c}}{\left(a^2+b^2+2\left(a^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -a*b^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 +
b^4)*d) + a*b^2*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) + (a^
2*b - b^3)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) + (b*e^(-d*x -
c) - 2*a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)
*e^(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d)
```

mupad [B] time = 1.93, size = 337, normalized size = 2.76

$$\frac{\frac{2\,a}{d\left(a^2+b^2\right)}-\frac{2\,b\,e^{c+d\,x}}{d\left(a^2+b^2\right)}}{2\,e^{2\,c+2\,d\,x}+e^{4\,c+4\,d\,x}+1}-\frac{\frac{2\left(a^3+a\,b^2\right)}{d\left(a^2+b^2\right)^2}-\frac{e^{c+d\,x}\left(a^2\,b+b^3\right)}{d\left(a^2+b^2\right)^2}}{e^{2\,c+2\,d\,x}+1}+\frac{b\,\ln\left(1+e^{c+d\,x}\,1\mathrm{i}\right)}{2\left(-1\mathrm{i}\,d\,a^2+2\,d\,a\,b+1\mathrm{i}\,d\,b^2\right)}-\frac{a\,b^2\,\ln\left(b^6\,e^{2\,c}\,e^{2\,d\,x}-14\,a^2\,b^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)/(cosh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] ((2*a)/(d*(a^2 + b^2)) - (2*b*exp(c + d*x))/(d*(a^2 + b^2)))/(2*exp(2*c + 2
*d*x) + exp(4*c + 4*d*x) + 1) - ((2*(a*b^2 + a^3))/(d*(a^2 + b^2)^2) - (exp
(c + d*x)*(a^2*b + b^3))/(d*(a^2 + b^2)^2))/(exp(2*c + 2*d*x) + 1) + (b*log
(exp(c + d*x) + 1i)*1i)/(2*(b^2*d - a^2*d + a*b*d*2i)) + (b*log(exp(c + d*x
)*1i + 1))/(2*(b^2*d*1i - a^2*d*1i + 2*a*b*d)) - (a*b^2*log(b^6*exp(2*c)*ex
p(2*d*x) - 14*a^2*b^4 - a^4*b^2 - b^6 + 28*a^3*b^3*exp(d*x)*exp(c) + 14*a^2
*b^4*exp(2*c)*exp(2*d*x) + a^4*b^2*exp(2*c)*exp(2*d*x) + 2*a*b^5*exp(d*x)*e
xp(c) + 2*a^5*b*exp(d*x)*exp(c)))/(a^4*d + b^4*d + 2*a^2*b^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh(c+dx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(tanh(c + d*x)*sech(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.361 $\int \frac{\operatorname{sech}^2(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\operatorname{Int}\left(\frac{\tanh(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sech(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{sech}^2(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Sech[c + d*x]^2*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Sech[c + d*x]^2*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\operatorname{sech}^2(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\operatorname{sech}^2(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 140.79, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}^2(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Sech[c + d*x]^2*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] Integrate[(Sech[c + d*x]^2*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
, x]
```

fricas [A] time = 9.08, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{sech}(dx+c)^2\tanh(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(sech(d*x + c)^2*tanh(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 1.39, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}\left(dx+c\right)^{2} \tanh\left(dx+c\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] (a*f + (b*d*f*x*e^(3*c) + (d*e - f)*b*e^(3*c))*e^(3*d*x) - (2*a*d*f*x*e^(2*
c) + (2*d*e - f)*a*e^(2*c))*e^(2*d*x) - (b*d*f*x*e^c + (d*e + f)*b*e^c)*e^(
d*x))/(a^2*d^2*e^2 + b^2*d^2*e^2 + (a^2*d^2*f^2 + b^2*d^2*f^2)*x^2 + 2*(a^2
*d^2*e*f + b^2*d^2*e*f)*x + (a^2*d^2*e^2*e^(4*c) + b^2*d^2*e^2*e^(4*c) + (a
^2*d^2*f^2*e^(4*c) + b^2*d^2*f^2*e^(4*c))*x^2 + 2*(a^2*d^2*e*f*e^(4*c) + b^
2*d^2*e*f*e^(4*c))*x)*e^(4*d*x) + 2*(a^2*d^2*e^2*e^(2*c) + b^2*d^2*e^2*e^(2
*c) + (a^2*d^2*f^2*e^(2*c) + b^2*d^2*f^2*e^(2*c))*x^2 + 2*(a^2*d^2*e*f*e^(2
*c) + b^2*d^2*e*f*e^(2*c))*x)*e^(2*d*x)) - 4*integrate(1/4*(2*a*b^2*d^2*f^2
```

```
*x^2 + 4*a*b^2*d^2*e*f*x - 2*a^3*f^2 + 2*(d^2*e^2 - f^2)*a*b^2 + ((d^2*e^2
+ 2*f^2)*a^2*b*e^c - (d^2*e^2 - 2*f^2)*b^3*e^c + (a^2*b*d^2*f^2*e^c - b^3*d
^2*f^2*e^c)*x^2 + 2*(a^2*b*d^2*e*f*e^c - b^3*d^2*e*f*e^c)*x)*e^(d*x))/(a^4*
d^2*e^3 + 2*a^2*b^2*d^2*e^3 + b^4*d^2*e^3 + (a^4*d^2*f^3 + 2*a^2*b^2*d^2*f^
3 + b^4*d^2*f^3)*x^3 + 3*(a^4*d^2*e*f^2 + 2*a^2*b^2*d^2*e*f^2 + b^4*d^2*e*f
^2)*x^2 + 3*(a^4*d^2*e^2*f + 2*a^2*b^2*d^2*e^2*f + b^4*d^2*e^2*f)*x + (a^4*
d^2*e^3*e^(2*c) + 2*a^2*b^2*d^2*e^3*e^(2*c) + b^4*d^2*e^3*e^(2*c) + (a^4*d^
2*f^3*e^(2*c) + 2*a^2*b^2*d^2*f^3*e^(2*c) + b^4*d^2*f^3*e^(2*c))*x^3 + 3*(a
^4*d^2*e*f^2*e^(2*c) + 2*a^2*b^2*d^2*e*f^2*e^(2*c) + b^4*d^2*e*f^2*e^(2*c))
*x^2 + 3*(a^4*d^2*e^2*f*e^(2*c) + 2*a^2*b^2*d^2*e^2*f*e^(2*c) + b^4*d^2*e^2
*f*e^(2*c))*x)*e^(2*d*x)), x) + 4*integrate(-1/2*(a^2*b^2*e^(d*x + c) - a*b
^3)/(a^4*b*e + 2*a^2*b^3*e + b^5*e + (a^4*b*f + 2*a^2*b^3*f + b^5*f)*x - (a
^4*b*e*e^(2*c) + 2*a^2*b^3*e*e^(2*c) + b^5*e*e^(2*c) + (a^4*b*f*e^(2*c) + 2
*a^2*b^3*f*e^(2*c) + b^5*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^5*e*e^c + 2*a^3*b^2
*e*e^c + a*b^4*e*e^c + (a^5*f*e^c + 2*a^3*b^2*f*e^c + a*b^4*f*e^c)*x)*e^(d*
x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\tanh(c+dx)}{\cosh(c+dx)^2\,\left(e+fx\right)\,\left(a+b\sinh(c+dx)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)/(cosh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(tanh(c + d*x)/(cosh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh(c+dx)\operatorname{sech}^2(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)**2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(tanh(c + d*x)*sech(c + d*x)**2/((a + b*sinh(c + d*x))*(e + f*x)),
x)
```

3.362 $\int \frac{(e+fx)^3 \cosh(c+dx) \sinh^2(c+dx)}{a+b \sinh(c+dx)} \, dx$

Optimal. Leaf size=606

$$-\frac{a^2(e+fx)^4}{4b^3f}+\frac{6a^2f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^4}+\frac{6a^2f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^4}-\frac{6a^2f^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3}-\frac{6a^2f^2(e+fx)\text{L}}{b^3d}$$

```
[Out] 3/8*f^3*x/b/d^3+1/4*(f*x+e)^3/b/d-1/4*a^2*(f*x+e)^4/b^3/f+6*a*f^3*cosh(d*x+
c)/b^2/d^4+3*a*f*(f*x+e)^2*cosh(d*x+c)/b^2/d^2+a^2*(f*x+e)^3*ln(1+b*exp(d*x
+c)/(a-(a^2+b^2)^(1/2)))/b^3/d+a^2*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)
^(1/2)))/b^3/d+3*a^2*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)
))/b^3/d^2+3*a^2*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b
^3/d^2-6*a^2*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d
^3-6*a^2*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^3+6
*a^2*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^4+6*a^2*f^3*pol
ylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^4-6*a*f^2*(f*x+e)*sinh(d*x+
c)/b^2/d^3-a*(f*x+e)^3*sinh(d*x+c)/b^2/d-3/8*f^3*cosh(d*x+c)*sinh(d*x+c)/b/
d^4-3/4*f*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/b/d^2+3/4*f^2*(f*x+e)*sinh(d*x+
c)^2/b/d^3+1/2*(f*x+e)^3*sinh(d*x+c)^2/b/d
```

Rubi [A] time = 0.88, antiderivative size = 606, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 14, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.412$, Rules used = {5579, 5446, 3311, 32, 2635, 8, 3296, 2638, 5561, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6a^2f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3}-\frac{6a^2f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^3}+\frac{3a^2f(e+fx)^2\text{PolyLog}\left(2,-\right.}{b^3d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (3*f^3*x)/(8*b*d^3) + (e + f*x)^3/(4*b*d) - (a^2*(e + f*x)^4)/(4*b^3*f) + (
6*a*f^3*Cosh[c + d*x])/(b^2*d^4) + (3*a*f*(e + f*x)^2*Cosh[c + d*x])/(b^2*d
^2) + (a^2*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^3
*d) + (a^2*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^3
*d) + (3*a^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
]))])/(b^3*d^2) + (3*a^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sq
rt[a^2 + b^2]))])/(b^3*d^2) - (6*a^2*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d
*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^3) - (6*a^2*f^2*(e + f*x)*PolyLog[3, -
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^3) + (6*a^2*f^3*PolyLog[4,
 -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^4) + (6*a^2*f^3*PolyLog[
```

```
4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^4) - (6*a*f^2*(e + f*x
)*Sinh[c + d*x])/(b^2*d^3) - (a*(e + f*x)^3*Sinh[c + d*x])/(b^2*d) - (3*f^3
*Cosh[c + d*x]*Sinh[c + d*x])/(8*b*d^4) - (3*f*(e + f*x)^2*Cosh[c + d*x]*Si
nh[c + d*x])/(4*b*d^2) + (3*f^2*(e + f*x)*Sinh[c + d*x]^2)/(4*b*d^3) + ((e
+ f*x)^3*Sinh[c + d*x]^2)/(2*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\cosh(c+dx)\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\cosh(c+dx)\sinh(}{a+b\sinh(c+dx)}}{b}$$

$$= \frac{(e+fx)^3\sinh^2(c+dx)}{2bd} - \frac{a\int (e+fx)^3\cosh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+f}{a+}}{}$$

$$= -\frac{a^2(e+fx)^4}{4b^3f} - \frac{a(e+fx)^3\sinh(c+dx)}{b^2d} - \frac{3f(e+fx)^2\cosh(c+dx}{4bd^2}$$

$$= \frac{(e+fx)^3}{4bd} - \frac{a^2(e+fx)^4}{4b^3f} + \frac{3af(e+fx)^2\cosh(c+dx)}{b^2d^2} + \frac{a^2(e+fx)}{}$$

$$= \frac{3f^3x}{8bd^3} + \frac{(e+fx)^3}{4bd} - \frac{a^2(e+fx)^4}{4b^3f} + \frac{3af(e+fx)^2\cosh(c+dx)}{b^2d^2} + \frac{a^2}{}$$

$$= \frac{3f^3x}{8bd^3} + \frac{(e+fx)^3}{4bd} - \frac{a^2(e+fx)^4}{4b^3f} + \frac{6af^3\cosh(c+dx)}{b^2d^4} + \frac{3af(e+f}{}$$

$$= \frac{3f^3x}{8bd^3} + \frac{(e+fx)^3}{4bd} - \frac{a^2(e+fx)^4}{4b^3f} + \frac{6af^3\cosh(c+dx)}{b^2d^4} + \frac{3af(e+f}{}$$

$$= \frac{3f^3x}{8bd^3} + \frac{(e+fx)^3}{4bd} - \frac{a^2(e+fx)^4}{4b^3f} + \frac{6af^3\cosh(c+dx)}{b^2d^4} + \frac{3af(e+f}{}$$

Mathematica [B] time = 26.47, size = 2858, normalized size = 4.72

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/4*(e^3*Log[a + b*Sinh[c + d*x]])/(b*d) - (3*e^2*f*(-1/2*x^2/b + (x*Log[1
 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*d) + (x*Log[1 + (b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2])])/(b*d) + PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^
2 + b^2])]/(b*d^2) + PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]/(
b*d^2)))/4 - (3*e*f^2*(-1/3*x^3/b + (x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[
a^2 + b^2])])/(b*d) + (x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/
(b*d) + (2*x*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*d^2)
+ (2*x*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*d^2) - (2*P
olyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])])/(b*d^3) - (2*PolyLog[3,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*d^3)))/4 - (f^3*(-1/4*x^4/b +
 (x^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*d) + (x^3*Log[1 +
(b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b*d) + (3*x^2*PolyLog[2, -((b*E^(c
 + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*d^2) + (3*x^2*PolyLog[2, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))])/(b*d^2) - (6*x*PolyLog[3, -((b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2]))])/(b*d^3) - (6*x*PolyLog[3, -((b*E^(c + d*x))/(a + Sq
rt[a^2 + b^2]))])/(b*d^3) + (6*PolyLog[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 +
b^2])])/(b*d^4) + (6*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/
(b*d^4)))/4 + (f^3*(((4*a^2 + b^2)*x^4*Cosh[c]*Csch[c/2]*Sech[c/2])/(8*b^3)
 - (4*a*Cosh[d*x]*(-6*Cosh[c] - 3*d^2*x^2*Cosh[c] + 6*d*x*Sinh[c] + d^3*x^3
*Sinh[c]))/(b^2*d^4) + (Cosh[2*d*x]*(6*d*x*Cosh[2*c] + 4*d^3*x^3*Cosh[2*c]
- 3*Sinh[2*c] - 6*d^2*x^2*Sinh[2*c]))/(4*b*d^4) - ((4*a^2 + b^2)*(-1 + Coth
[c])*(x^4 + (4*a*(d^3*x^3*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a -
Sqrt[a^2 + b^2])] + 3*d^2*x^2*PolyLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x])
)/(-a + Sqrt[a^2 + b^2])] - 6*d*x*PolyLog[3, (b*(Cosh[c + d*x] + Sinh[c + d
*x]))/(-a + Sqrt[a^2 + b^2])] + 6*PolyLog[4, (b*(Cosh[c + d*x] + Sinh[c + d
*x]))/(-a + Sqrt[a^2 + b^2])])*Sinh[c]*(Cosh[c] + Sinh[c]))/(Sqrt[a^2 + b^2
]*d^4) - (2*b^2*(d^3*x^3*Log[1 + ((a - Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Si
nh[c + d*x]))/b] - 3*d^2*x^2*PolyLog[2, ((-a + Sqrt[a^2 + b^2])*(Cosh[c + d
*x] - Sinh[c + d*x]))/b] - 6*d*x*PolyLog[3, ((-a + Sqrt[a^2 + b^2])*(Cosh[c
 + d*x] - Sinh[c + d*x]))/b] - 6*PolyLog[4, ((-a + Sqrt[a^2 + b^2])*(Cosh[c
 + d*x] - Sinh[c + d*x]))/b])*(-1 + Cosh[2*c] + Sinh[2*c]))/(Sqrt[a^2 + b^2
]*(-a + Sqrt[a^2 + b^2])*d^4) - (2*b^2*(d^3*x^3*Log[1 + ((a + Sqrt[a^2 + b^
2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 3*d^2*x^2*PolyLog[2, ((a + Sqrt[a
^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b] - 6*d*x*PolyLog[3, ((a + Sq
rt[a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b] - 6*PolyLog[4, ((a + Sq
rt[a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b])*(-1 + Cosh[2*c] + Sinh
```

```
[2*c]))/(Sqrt[a^2 + b^2]*(a + Sqrt[a^2 + b^2])*d^4) - (2*a*(d^3*x^3*Log[1 +
 (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 3*d^2*x^2*Pol
yLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))] - 6*d
*x*PolyLog[3, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))]
 + 6*PolyLog[4, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])
)])*(-1 + Cosh[2*c] + Sinh[2*c]))/(Sqrt[a^2 + b^2]*d^4)))/(4*b^3) - (4*a*(6
*d*x*Cosh[c] + d^3*x^3*Cosh[c] - 6*Sinh[c] - 3*d^2*x^2*Sinh[c])*Sinh[d*x])/
(b^2*d^4) + ((-3*Cosh[2*c] - 6*d^2*x^2*Cosh[2*c] + 6*d*x*Sinh[2*c] + 4*d^3*
x^3*Sinh[2*c])*Sinh[2*d*x])/(4*b*d^4)))/4 + (e*f^2*(2*(4*a^2 + b^2)*x^3*Cot
h[c] - (24*a*b*Cosh[d*x]*(-2*d*x*Cosh[c] + (2 + d^2*x^2)*Sinh[c]))/d^3 + (3
*b^2*Cosh[2*d*x]*((1 + 2*d^2*x^2)*Cosh[2*c] - 2*d*x*Sinh[2*c]))/d^3 - (4*a^
2 + b^2)*(-1 + Coth[c])*(2*x^3 + (6*a*(d^2*x^2*Log[1 + (b*(Cosh[c + d*x] +
Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] + 2*d*x*PolyLog[2, (b*(Cosh[c + d*x]
 + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - 2*PolyLog[3, (b*(Cosh[c + d*x]
 + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])])*Sinh[c]*(Cosh[c] + Sinh[c]))/(S
qrt[a^2 + b^2]*d^3) - (3*b^2*(d^2*x^2*Log[1 + ((a - Sqrt[a^2 + b^2])*(Cosh[
c + d*x] - Sinh[c + d*x]))/b] - 2*d*x*PolyLog[2, ((-a + Sqrt[a^2 + b^2])*(C
osh[c + d*x] - Sinh[c + d*x]))/b] - 2*PolyLog[3, ((-a + Sqrt[a^2 + b^2])*(C
osh[c + d*x] - Sinh[c + d*x]))/b])*(-1 + Cosh[2*c] + Sinh[2*c]))/(Sqrt[a^2
+ b^2]*(-a + Sqrt[a^2 + b^2])*d^3) - (3*b^2*(d^2*x^2*Log[1 + ((a + Sqrt[a^2
 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 2*d*x*PolyLog[2, ((a + Sqrt[
a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b] - 2*PolyLog[3, ((a + Sqrt[
a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b])*(-1 + Cosh[2*c] + Sinh[2*
c]))/(Sqrt[a^2 + b^2]*(a + Sqrt[a^2 + b^2])*d^3) - (3*a*(d^2*x^2*Log[1 + (b
*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 2*d*x*PolyLog[2,
 -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))] - 2*PolyLog[
3, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))])*(-1 + Cos
h[2*c] + Sinh[2*c]))/(Sqrt[a^2 + b^2]*d^3)) - (24*a*b*((2 + d^2*x^2)*Cosh[c
] - 2*d*x*Sinh[c])*Sinh[d*x])/d^3 + (3*b^2*(-2*d*x*Cosh[2*c] + (1 + 2*d^2*x
^2)*Sinh[2*c])*Sinh[2*d*x])/d^3))/(8*b^3) + (e^3*((4*a^2 + b^2)*Log[a + b*S
inh[c + d*x]] - 4*a*b*Sinh[c + d*x] + 2*b^2*Sinh[c + d*x]^2))/(4*b^3*d) + (
3*e^2*f*(8*a*b*Cosh[c + d*x] + 2*b^2*d*x*Cosh[2*(c + d*x)] + 2*(4*a^2 + b^2
)*(-1/2*(c + d*x)^2 + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
])] + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - c*Log[a +
b*Sinh[c + d*x]] + PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + Pol
yLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) - 8*a*b*d*x*Sinh[c + d*x
] - b^2*Sinh[2*(c + d*x)]))/(8*b^3*d^2)
```

fricas [C] time = 0.73, size = 3891, normalized size = 6.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/32*(4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 + 6*b^2*d^2*e^2*f + 6*b^2*d*e*f^2 +
 3*b^2*f^3 + (4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f + 6*b^2*d
*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2*b^2*d^3*e
^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c)^4 + (4*b^2*d^3*f^3*x^3
 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f + 6*b^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d
^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2*b^2*d^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*
f^3)*x)*sinh(d*x + c)^4 - 16*(a*b*d^3*f^3*x^3 + a*b*d^3*e^3 - 3*a*b*d^2*e^2
*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(a
*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c)^3 - 4*(4*a*b
*d^3*f^3*x^3 + 4*a*b*d^3*e^3 - 12*a*b*d^2*e^2*f + 24*a*b*d*e*f^2 - 24*a*b*f
^3 + 12*(a*b*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 12*(a*b*d^3*e^2*f - 2*a*b*d^2*e
*f^2 + 2*a*b*d*f^3)*x - (4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*
f + 6*b^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(
2*b^2*d^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c))*sinh(d*x +
 c)^3 + 6*(2*b^2*d^3*e*f^2 + b^2*d^2*f^3)*x^2 - 8*(a^2*d^4*f^3*x^4 + 4*a^2*
d^4*e*f^2*x^3 + 6*a^2*d^4*e^2*f*x^2 + 4*a^2*d^4*e^3*x + 8*a^2*c*d^3*e^3 - 1
2*a^2*c^2*d^2*e^2*f + 8*a^2*c^3*d*e*f^2 - 2*a^2*c^4*f^3)*cosh(d*x + c)^2 -
2*(4*a^2*d^4*f^3*x^4 + 16*a^2*d^4*e*f^2*x^3 + 24*a^2*d^4*e^2*f*x^2 + 16*a^2
*d^4*e^3*x + 32*a^2*c*d^3*e^3 - 48*a^2*c^2*d^2*e^2*f + 32*a^2*c^3*d*e*f^2 -
 8*a^2*c^4*f^3 - 3*(4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e^2*f + 6
*b^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 + 6*(2*b^2
*d^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c)^2 + 24*(a*b*d^3*
f^3*x^3 + a*b*d^3*e^3 - 3*a*b*d^2*e^2*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*
b*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(a*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b
*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 6*(2*b^2*d^3*e^2*f + 2*b^2*d^2*
e*f^2 + b^2*d*f^3)*x + 16*(a*b*d^3*f^3*x^3 + a*b*d^3*e^3 + 3*a*b*d^2*e^2*f
+ 6*a*b*d*e*f^2 + 6*a*b*f^3 + 3*(a*b*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(a*b*
d^3*e^2*f + 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c) + 96*((a^2*d^2*
f^3*x^2 + 2*a^2*d^2*e*f^2*x + a^2*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(a^2*d^2*f
^3*x^2 + 2*a^2*d^2*e*f^2*x + a^2*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (
a^2*d^2*f^3*x^2 + 2*a^2*d^2*e*f^2*x + a^2*d^2*e^2*f)*sinh(d*x + c)^2)*dilog
((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*s
qrt((a^2 + b^2)/b^2) - b)/b + 1) + 96*((a^2*d^2*f^3*x^2 + 2*a^2*d^2*e*f^2*x
 + a^2*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(a^2*d^2*f^3*x^2 + 2*a^2*d^2*e*f^2*x
+ a^2*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d^2*f^3*x^2 + 2*a^2*d^2
*e*f^2*x + a^2*d^2*e^2*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sinh(
d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b
 + 1) + 32*((a^2*d^3*e^3 - 3*a^2*c*d^2*e^2*f + 3*a^2*c^2*d*e*f^2 - a^2*c^3*
f^3)*cosh(d*x + c)^2 + 2*(a^2*d^3*e^3 - 3*a^2*c*d^2*e^2*f + 3*a^2*c^2*d*e*f
^2 - a^2*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d^3*e^3 - 3*a^2*c*d^2*
e^2*f + 3*a^2*c^2*d*e*f^2 - a^2*c^3*f^3)*sinh(d*x + c)^2)*log(2*b*cosh(d*x
+ c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 32*((a^2*d^3*
e^3 - 3*a^2*c*d^2*e^2*f + 3*a^2*c^2*d*e*f^2 - a^2*c^3*f^3)*cosh(d*x + c)^2
+ 2*(a^2*d^3*e^3 - 3*a^2*c*d^2*e^2*f + 3*a^2*c^2*d*e*f^2 - a^2*c^3*f^3)*cos
h(d*x + c)*sinh(d*x + c) + (a^2*d^3*e^3 - 3*a^2*c*d^2*e^2*f + 3*a^2*c^2*d*e
```

```
*f^2 - a^2*c^3*f^3)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x +
 c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 32*((a^2*d^3*f^3*x^3 + 3*a^2*d^3*e
*f^2*x^2 + 3*a^2*d^3*e^2*f*x + 3*a^2*c*d^2*e^2*f - 3*a^2*c^2*d*e*f^2 + a^2*
c^3*f^3)*cosh(d*x + c)^2 + 2*(a^2*d^3*f^3*x^3 + 3*a^2*d^3*e*f^2*x^2 + 3*a^2
*d^3*e^2*f*x + 3*a^2*c*d^2*e^2*f - 3*a^2*c^2*d*e*f^2 + a^2*c^3*f^3)*cosh(d*
x + c)*sinh(d*x + c) + (a^2*d^3*f^3*x^3 + 3*a^2*d^3*e*f^2*x^2 + 3*a^2*d^3*e
^2*f*x + 3*a^2*c*d^2*e^2*f - 3*a^2*c^2*d*e*f^2 + a^2*c^3*f^3)*sinh(d*x + c)
^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 32*((a^2*d^3*f^3*x^3 + 3*a^2*d^3*e*f
^2*x^2 + 3*a^2*d^3*e^2*f*x + 3*a^2*c*d^2*e^2*f - 3*a^2*c^2*d*e*f^2 + a^2*c^
3*f^3)*cosh(d*x + c)^2 + 2*(a^2*d^3*f^3*x^3 + 3*a^2*d^3*e*f^2*x^2 + 3*a^2*d
^3*e^2*f*x + 3*a^2*c*d^2*e^2*f - 3*a^2*c^2*d*e*f^2 + a^2*c^3*f^3)*cosh(d*x
+ c)*sinh(d*x + c) + (a^2*d^3*f^3*x^3 + 3*a^2*d^3*e*f^2*x^2 + 3*a^2*d^3*e^2
*f*x + 3*a^2*c*d^2*e^2*f - 3*a^2*c^2*d*e*f^2 + a^2*c^3*f^3)*sinh(d*x + c)^2
)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x +
 c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 192*(a^2*f^3*cosh(d*x + c)^2 + 2*a^2*f
^3*cosh(d*x + c)*sinh(d*x + c) + a^2*f^3*sinh(d*x + c)^2)*polylog(4, (a*cos
h(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2))/b) + 192*(a^2*f^3*cosh(d*x + c)^2 + 2*a^2*f^3*cosh(d*x + c)*
sinh(d*x + c) + a^2*f^3*sinh(d*x + c)^2)*polylog(4, (a*cosh(d*x + c) + a*si
nh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b)
 - 192*((a^2*d*f^3*x + a^2*d*e*f^2)*cosh(d*x + c)^2 + 2*(a^2*d*f^3*x + a^2*
d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d*f^3*x + a^2*d*e*f^2)*sinh(d*x
 + c)^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
 b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 192*((a^2*d*f^3*x + a^2*d*e*f
^2)*cosh(d*x + c)^2 + 2*(a^2*d*f^3*x + a^2*d*e*f^2)*cosh(d*x + c)*sinh(d*x
+ c) + (a^2*d*f^3*x + a^2*d*e*f^2)*sinh(d*x + c)^2)*polylog(3, (a*cosh(d*x
+ c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^
2)/b^2))/b) + 4*(4*a*b*d^3*f^3*x^3 + 4*a*b*d^3*e^3 + 12*a*b*d^2*e^2*f + 24*
a*b*d*e*f^2 + 24*a*b*f^3 + (4*b^2*d^3*f^3*x^3 + 4*b^2*d^3*e^3 - 6*b^2*d^2*e
^2*f + 6*b^2*d*e*f^2 - 3*b^2*f^3 + 6*(2*b^2*d^3*e*f^2 - b^2*d^2*f^3)*x^2 +
6*(2*b^2*d^3*e^2*f - 2*b^2*d^2*e*f^2 + b^2*d*f^3)*x)*cosh(d*x + c)^3 + 12*(
a*b*d^3*e*f^2 + a*b*d^2*f^3)*x^2 - 12*(a*b*d^3*f^3*x^3 + a*b*d^3*e^3 - 3*a*
b*d^2*e^2*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*d^3*e*f^2 - a*b*d^2*f^3)*x
^2 + 3*(a*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c)^2 +
 12*(a*b*d^3*e^2*f + 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x - 4*(a^2*d^4*f^3*x^4
+ 4*a^2*d^4*e*f^2*x^3 + 6*a^2*d^4*e^2*f*x^2 + 4*a^2*d^4*e^3*x + 8*a^2*c*d^3
*e^3 - 12*a^2*c^2*d^2*e^2*f + 8*a^2*c^3*d*e*f^2 - 2*a^2*c^4*f^3)*cosh(d*x +
 c))*sinh(d*x + c))/(b^3*d^4*cosh(d*x + c)^2 + 2*b^3*d^4*cosh(d*x + c)*sinh
(d*x + c) + b^3*d^4*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \cosh\left(dx+c\right) \sinh\left(dx+c\right)^{2}}{b \sinh\left(dx+c\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)*sinh(d*x + c)^2/(b*sinh(d*x + c) + a),
x)
```

maple [F] time = 0.60, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \cosh \left(dx+c\right) \left(\sinh^{2}\left(dx+c\right)\right)}{a+b\sinh \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8} e^{3}\left(\frac{8\,(dx+c)a^{2}}{b^{3}d} - \frac{\left(4\,ae^{(-dx-c)}-b\right)e^{(2\,dx+2\,c)}}{b^{2}d} + \frac{8\,a^{2}\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{b^{3}d} + \frac{4\,ae^{(-dx-c)}+be^{(-2\,dx-2}}{b^{2}d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] 1/8*e^3*(8*(d*x + c)*a^2/(b^3*d) - (4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(
b^2*d) + 8*a^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^3*d) + (4
*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c))/(b^2*d)) + 1/32*(8*a^2*d^4*f^3*x^4*e^
(2*c) + 32*a^2*d^4*e*f^2*x^3*e^(2*c) + 48*a^2*d^4*e^2*f*x^2*e^(2*c) + (4*b^
2*d^3*f^3*x^3*e^(4*c) + 6*(2*d^3*e*f^2 - d^2*f^3)*b^2*x^2*e^(4*c) + 6*(2*d^
3*e^2*f - 2*d^2*e*f^2 + d*f^3)*b^2*x*e^(4*c) - 3*(2*d^2*e^2*f - 2*d*e*f^2 +
 f^3)*b^2*e^(4*c))*e^(2*d*x) - 16*(a*b*d^3*f^3*x^3*e^(3*c) + 3*(d^3*e*f^2 -
 d^2*f^3)*a*b*x^2*e^(3*c) + 3*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*a*b*x*e^(
3*c) - 3*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a*b*e^(3*c))*e^(d*x) + 16*(a*b*d^3
*f^3*x^3*e^c + 3*(d^3*e*f^2 + d^2*f^3)*a*b*x^2*e^c + 3*(d^3*e^2*f + 2*d^2*e
*f^2 + 2*d*f^3)*a*b*x*e^c + 3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a*b*e^c)*e^(-
d*x) + (4*b^2*d^3*f^3*x^3 + 6*(2*d^3*e*f^2 + d^2*f^3)*b^2*x^2 + 6*(2*d^3*e^
2*f + 2*d^2*e*f^2 + d*f^3)*b^2*x + 3*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)*b^2)*e
^(-2*d*x))*e^(-2*c)/(b^3*d^4) - integrate(-2*(a^2*b*f^3*x^3 + 3*a^2*b*e*f^2
*x^2 + 3*a^2*b*e^2*f*x - (a^3*f^3*x^3*e^c + 3*a^3*e*f^2*x^2*e^c + 3*a^3*e^2
*f*x*e^c)*e^(d*x))/(b^4*e^(2*d*x + 2*c) + 2*a*b^3*e^(d*x + c) - b^4), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)\,\sinh(c+d\,x)^2\,{\left(e+f\,x\right)}^3}{a+b\,\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)*sinh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.363 $\int \frac{(e+fx)^2 \cosh(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=449

$$-\frac{a^2(e+fx)^3}{3b^3f}-\frac{2a^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3}-\frac{2a^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^3}+\frac{2a^2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{2a^2f(e+fx)\text{Li}_2}{b^3d^2}$$

```
[Out] 1/2*e*f*x/b/d+1/4*f^2*x^2/b/d-1/3*a^2*(f*x+e)^3/b^3/f+2*a*f*(f*x+e)*cosh(d*
x+c)/b^2/d^2+a^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d+a^2
*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d+2*a^2*f*(f*x+e)*pol
ylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d^2+2*a^2*f*(f*x+e)*polylog(2
,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^2-2*a^2*f^2*polylog(3,-b*exp(d*x+
c)/(a-(a^2+b^2)^(1/2)))/b^3/d^3-2*a^2*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b
^2)^(1/2)))/b^3/d^3-2*a*f^2*sinh(d*x+c)/b^2/d^3-a*(f*x+e)^2*sinh(d*x+c)/b^2
/d-1/2*f*(f*x+e)*cosh(d*x+c)*sinh(d*x+c)/b/d^2+1/4*f^2*sinh(d*x+c)^2/b/d^3+
1/2*(f*x+e)^2*sinh(d*x+c)^2/b/d
```

Rubi [A] time = 0.72, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.294, Rules used = {5579, 5446, 3310, 3296, 2637, 5561, 2190, 2531, 2282, 6589}

$$\frac{2a^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{2a^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^2}-\frac{2a^2f^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^3}-$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e*f*x)/(2*b*d) + (f^2*x^2)/(4*b*d) - (a^2*(e + f*x)^3)/(3*b^3*f) + (2*a*f*
(e + f*x)*Cosh[c + d*x])/(b^2*d^2) + (a^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x
))/(a - Sqrt[a^2 + b^2])])/(b^3*d) + (a^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2])])/(b^3*d) + (2*a^2*f*(e + f*x)*PolyLog[2, -((b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^2) + (2*a^2*f*(e + f*x)*PolyLog[2
, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^2) - (2*a^2*f^2*PolyLog
[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^3) - (2*a^2*f^2*PolyL
og[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^3) - (2*a*f^2*Sinh[
c + d*x])/(b^2*d^3) - (a*(e + f*x)^2*Sinh[c + d*x])/(b^2*d) - (f*(e + f*x)*
Cosh[c + d*x]*Sinh[c + d*x])/(2*b*d^2) + (f^2*Sinh[c + d*x]^2)/(4*b*d^3) +
((e + f*x)^2*Sinh[c + d*x]^2)/(2*b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
```

```
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh(c+dx)\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\cosh(c+dx)\sinh(}{a+b\sinh(c+dx)}}{b}$$

$$= \frac{(e+fx)^2\sinh^2(c+dx)}{2bd} - \frac{a\int (e+fx)^2\cosh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+f}{a+}}{}$$

$$= -\frac{a^2(e+fx)^3}{3b^3f} - \frac{a(e+fx)^2\sinh(c+dx)}{b^2d} - \frac{f(e+fx)\cosh(c+dx)\,\mathrm{s}}{2bd^2}$$

$$= \frac{efx}{2bd} + \frac{f^2x^2}{4bd} - \frac{a^2(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cosh(c+dx)}{b^2d^2} + \frac{a^2(e+f}{}$$

$$= \frac{efx}{2bd} + \frac{f^2x^2}{4bd} - \frac{a^2(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cosh(c+dx)}{b^2d^2} + \frac{a^2(e+f}{}$$

$$= \frac{efx}{2bd} + \frac{f^2x^2}{4bd} - \frac{a^2(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cosh(c+dx)}{b^2d^2} + \frac{a^2(e+f}{}$$

$$= \frac{efx}{2bd} + \frac{f^2x^2}{4bd} - \frac{a^2(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cosh(c+dx)}{b^2d^2} + \frac{a^2(e+f}{}$$

Mathematica [B] time = 11.18, size = 1496, normalized size = 3.33

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/4*(e^2*Log[a + b*Sinh[c + d*x]])/(b*d) - (e*f*(-1/2*x^2/b + (x*Log[1 + (
b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*d) + (x*Log[1 + (b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2])])/(b*d) + PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 +
b^2])]/(b*d^2) + PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]/(b*d^
2)))/2 - (f^2*(-1/3*x^3/b + (x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^
2])])/(b*d) + (x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b*d) +
(2*x*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*d^2) + (2*x*P
olyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*d^2) - (2*PolyLog[3
, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])])/(b*d^3) - (2*PolyLog[3, -((b*E^(
c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*d^3)))/4 + (f^2*(2*(4*a^2 + b^2)*x^3*
```

```
Coth[c] - (24*a*b*Cosh[d*x]*(-2*d*x*Cosh[c] + (2 + d^2*x^2)*Sinh[c]))/d^3 +
 (3*b^2*Cosh[2*d*x]*((1 + 2*d^2*x^2)*Cosh[2*c] - 2*d*x*Sinh[2*c]))/d^3 - (4
*a^2 + b^2)*(-1 + Coth[c])*(2*x^3 + (6*a*(d^2*x^2*Log[1 + (b*(Cosh[c + d*x]
 + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] + 2*d*x*PolyLog[2, (b*(Cosh[c + d
*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - 2*PolyLog[3, (b*(Cosh[c + d
*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])])*Sinh[c]*(Cosh[c] + Sinh[c]))
/(Sqrt[a^2 + b^2]*d^3) - (3*b^2*(d^2*x^2*Log[1 + ((a - Sqrt[a^2 + b^2])*(Co
sh[c + d*x] - Sinh[c + d*x]))/b] - 2*d*x*PolyLog[2, ((-a + Sqrt[a^2 + b^2])
*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 2*PolyLog[3, ((-a + Sqrt[a^2 + b^2])
*(Cosh[c + d*x] - Sinh[c + d*x]))/b])*(-1 + Cosh[2*c] + Sinh[2*c]))/(Sqrt[a
^2 + b^2]*(-a + Sqrt[a^2 + b^2])*d^3) - (3*b^2*(d^2*x^2*Log[1 + ((a + Sqrt[
a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 2*d*x*PolyLog[2, ((a + Sq
rt[a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b] - 2*PolyLog[3, ((a + Sq
rt[a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b])*(-1 + Cosh[2*c] + Sinh
[2*c]))/(Sqrt[a^2 + b^2]*(a + Sqrt[a^2 + b^2])*d^3) - (3*a*(d^2*x^2*Log[1 +
 (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 2*d*x*PolyLog
[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))] - 2*PolyL
og[3, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))])*(-1 +
Cosh[2*c] + Sinh[2*c]))/(Sqrt[a^2 + b^2]*d^3)) - (24*a*b*((2 + d^2*x^2)*Cos
h[c] - 2*d*x*Sinh[c])*Sinh[d*x])/d^3 + (3*b^2*(-2*d*x*Cosh[2*c] + (1 + 2*d^
2*x^2)*Sinh[2*c])*Sinh[2*d*x])/d^3))/(24*b^3) + (e^2*((4*a^2 + b^2)*Log[a +
 b*Sinh[c + d*x]] - 4*a*b*Sinh[c + d*x] + 2*b^2*Sinh[c + d*x]^2))/(4*b^3*d)
 + (e*f*(8*a*b*Cosh[c + d*x] + 2*b^2*d*x*Cosh[2*(c + d*x)] + 2*(4*a^2 + b^2
)*(-1/2*(c + d*x)^2 + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
])] + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - c*Log[a +
b*Sinh[c + d*x]] + PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + Pol
yLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) - 8*a*b*d*x*Sinh[c + d*x
] - b^2*Sinh[2*(c + d*x)]))/(4*b^3*d^2)
```

fricas [C] time = 0.63, size = 2414, normalized size = 5.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/48*(6*b^2*d^2*f^2*x^2 + 6*b^2*d^2*e^2 + 6*b^2*d*e*f + 3*(2*b^2*d^2*f^2*x^
2 + 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x
)*cosh(d*x + c)^4 + 3*(2*b^2*d^2*f^2*x^2 + 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^
2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x)*sinh(d*x + c)^4 + 3*b^2*f^2 - 24*(
a*b*d^2*f^2*x^2 + a*b*d^2*e^2 - 2*a*b*d*e*f + 2*a*b*f^2 + 2*(a*b*d^2*e*f -
a*b*d*f^2)*x)*cosh(d*x + c)^3 - 12*(2*a*b*d^2*f^2*x^2 + 2*a*b*d^2*e^2 - 4*a
*b*d*e*f + 4*a*b*f^2 + 4*(a*b*d^2*e*f - a*b*d*f^2)*x - (2*b^2*d^2*f^2*x^2 +
 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x)*c
```

```
osh(d*x + c))*sinh(d*x + c)^3 - 16*(a^2*d^3*f^2*x^3 + 3*a^2*d^3*e*f*x^2 + 3
*a^2*d^3*e^2*x + 6*a^2*c*d^2*e^2 - 6*a^2*c^2*d*e*f + 2*a^2*c^3*f^2)*cosh(d*
x + c)^2 - 2*(8*a^2*d^3*f^2*x^3 + 24*a^2*d^3*e*f*x^2 + 24*a^2*d^3*e^2*x + 4
8*a^2*c*d^2*e^2 - 48*a^2*c^2*d*e*f + 16*a^2*c^3*f^2 - 9*(2*b^2*d^2*f^2*x^2
+ 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2*e*f - b^2*d*f^2)*x)*
cosh(d*x + c)^2 + 36*(a*b*d^2*f^2*x^2 + a*b*d^2*e^2 - 2*a*b*d*e*f + 2*a*b*f
^2 + 2*(a*b*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 6*(2*b
^2*d^2*e*f + b^2*d*f^2)*x + 24*(a*b*d^2*f^2*x^2 + a*b*d^2*e^2 + 2*a*b*d*e*f
 + 2*a*b*f^2 + 2*(a*b*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c) + 96*((a^2*d*f^
2*x + a^2*d*e*f)*cosh(d*x + c)^2 + 2*(a^2*d*f^2*x + a^2*d*e*f)*cosh(d*x + c
)*sinh(d*x + c) + (a^2*d*f^2*x + a^2*d*e*f)*sinh(d*x + c)^2)*dilog((a*cosh(
d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2) - b)/b + 1) + 96*((a^2*d*f^2*x + a^2*d*e*f)*cosh(d*x + c)^2 + 2
*(a^2*d*f^2*x + a^2*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d*f^2*x + a^2
*d*e*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 48*((a^2*d
^2*e^2 - 2*a^2*c*d*e*f + a^2*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^2*d^2*e^2 - 2*
a^2*c*d*e*f + a^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d^2*e^2 - 2*a
^2*c*d*e*f + a^2*c^2*f^2)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh
(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 48*((a^2*d^2*e^2 - 2*a^2*c*d
*e*f + a^2*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^2*d^2*e^2 - 2*a^2*c*d*e*f + a^2*
c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d^2*e^2 - 2*a^2*c*d*e*f + a^2*c
^2*f^2)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sq
rt((a^2 + b^2)/b^2) + 2*a) + 48*((a^2*d^2*f^2*x^2 + 2*a^2*d^2*e*f*x + 2*a^2
*c*d*e*f - a^2*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^2*d^2*f^2*x^2 + 2*a^2*d^2*e*
f*x + 2*a^2*c*d*e*f - a^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d^2*f
^2*x^2 + 2*a^2*d^2*e*f*x + 2*a^2*c*d*e*f - a^2*c^2*f^2)*sinh(d*x + c)^2)*lo
g(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))
*sqrt((a^2 + b^2)/b^2) - b)/b) + 48*((a^2*d^2*f^2*x^2 + 2*a^2*d^2*e*f*x + 2
*a^2*c*d*e*f - a^2*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^2*d^2*f^2*x^2 + 2*a^2*d^
2*e*f*x + 2*a^2*c*d*e*f - a^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d
^2*f^2*x^2 + 2*a^2*d^2*e*f*x + 2*a^2*c*d*e*f - a^2*c^2*f^2)*sinh(d*x + c)^2
)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x +
 c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 96*(a^2*f^2*cosh(d*x + c)^2 + 2*a^2*f^
2*cosh(d*x + c)*sinh(d*x + c) + a^2*f^2*sinh(d*x + c)^2)*polylog(3, (a*cosh
(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2))/b) - 96*(a^2*f^2*cosh(d*x + c)^2 + 2*a^2*f^2*cosh(d*x + c)*si
nh(d*x + c) + a^2*f^2*sinh(d*x + c)^2)*polylog(3, (a*cosh(d*x + c) + a*sinh
(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) +
 4*(6*a*b*d^2*f^2*x^2 + 6*a*b*d^2*e^2 + 12*a*b*d*e*f + 12*a*b*f^2 + 3*(2*b^
2*d^2*f^2*x^2 + 2*b^2*d^2*e^2 - 2*b^2*d*e*f + b^2*f^2 + 2*(2*b^2*d^2*e*f -
b^2*d*f^2)*x)*cosh(d*x + c)^3 - 18*(a*b*d^2*f^2*x^2 + a*b*d^2*e^2 - 2*a*b*d
*e*f + 2*a*b*f^2 + 2*(a*b*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c)^2 + 12*(a*b
*d^2*e*f + a*b*d*f^2)*x - 8*(a^2*d^3*f^2*x^3 + 3*a^2*d^3*e*f*x^2 + 3*a^2*d^
3*e^2*x + 6*a^2*c*d^2*e^2 - 6*a^2*c^2*d*e*f + 2*a^2*c^3*f^2)*cosh(d*x + c))
```

```
*sinh(d*x + c))/(b^3*d^3*cosh(d*x + c)^2 + 2*b^3*d^3*cosh(d*x + c)*sinh(d*x
 + c) + b^3*d^3*sinh(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \cosh(dx+c)\sinh(dx+c)^2}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)*sinh(d*x + c)^2/(b*sinh(d*x + c) + a),
x)
```

maple [F] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \cosh(dx+c)\left(\sinh^2(dx+c)\right)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8}e^2\left(\frac{8(dx+c)a^2}{b^3d} - \frac{\left(4ae^{(-dx-c)}-b\right)e^{(2dx+2c)}}{b^2d} + \frac{8a^2\log\left(-2ae^{(-dx-c)}+be^{(-2dx-2c)}-b\right)}{b^3d} + \frac{4ae^{(-dx-c)}+be^{(-2dx-2}}{b^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] 1/8*e^2*(8*(d*x + c)*a^2/(b^3*d) - (4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(
b^2*d) + 8*a^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^3*d) + (4
*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c))/(b^2*d)) + 1/48*(16*a^2*d^3*f^2*x^3*e
^(2*c) + 48*a^2*d^3*e*f*x^2*e^(2*c) + 3*(2*b^2*d^2*f^2*x^2*e^(4*c) + 2*(2*d
^2*e*f - d*f^2)*b^2*x*e^(4*c) - (2*d*e*f - f^2)*b^2*e^(4*c))*e^(2*d*x) - 24
*(a*b*d^2*f^2*x^2*e^(3*c) + 2*(d^2*e*f - d*f^2)*a*b*x*e^(3*c) - 2*(d*e*f -
f^2)*a*b*e^(3*c))*e^(d*x) + 24*(a*b*d^2*f^2*x^2*e^c + 2*(d^2*e*f + d*f^2)*a
*b*x*e^c + 2*(d*e*f + f^2)*a*b*e^c)*e^(-d*x) + 3*(2*b^2*d^2*f^2*x^2 + 2*(2*
```

```
d^2*e*f + d*f^2)*b^2*x + (2*d*e*f + f^2)*b^2)*e^(-2*d*x))*e^(-2*c)/(b^3*d^3
) - integrate(-2*(a^2*b*f^2*x^2 + 2*a^2*b*e*f*x - (a^3*f^2*x^2*e^c + 2*a^3*
e*f*x*e^c)*e^(d*x))/(b^4*e^(2*d*x + 2*c) + 2*a*b^3*e^(d*x + c) - b^4), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)\,\sinh\left(c+d\,x\right)^2\,\left(e+f\,x\right)^2}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)*sinh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.364 $\int \frac{(e+fx)\cosh(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=278

$$-\frac{a^2(e+fx)^2}{2b^3f}+\frac{a^2f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{a^2f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{a^2(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^3d}+\frac{a^2(e+fx)\log\left(\frac{be^{c+}}{\sqrt{a^2+}}\right.}{b^3d}$$

```
[Out] 1/4*f*x/b/d-1/2*a^2*(f*x+e)^2/b^3/f+a*f*cosh(d*x+c)/b^2/d^2+a^2*(f*x+e)*ln(
1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^3/d+a^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))/b^3/d+a^2*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/
b^3/d^2+a^2*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^3/d^2-a*(f*x+e
)*sinh(d*x+c)/b^2/d-1/4*f*cosh(d*x+c)*sinh(d*x+c)/b/d^2+1/2*(f*x+e)*sinh(d*
x+c)^2/b/d
```

Rubi [A] time = 0.42, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {5579, 5446, 2635, 8, 3296, 2638, 5561, 2190, 2279, 2391}

$$\frac{a^2f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^3d^2}+\frac{a^2f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^3d^2}+\frac{a^2(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^3d}+\frac{a^2(e+fx)\log\left(\frac{be}{\sqrt{a^2}}\right.}{b^3d}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (f*x)/(4*b*d) - (a^2*(e + f*x)^2)/(2*b^3*f) + (a*f*Cosh[c + d*x])/(b^2*d^2)
 + (a^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^3*d) +
 (a^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^3*d) + (
a^2*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^3*d^2) + (a^
2*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*d^2) - (a*(e
 + f*x)*Sinh[c + d*x])/(b^2*d) - (f*Cosh[c + d*x]*Sinh[c + d*x])/(4*b*d^2)
+ ((e + f*x)*Sinh[c + d*x]^2)/(2*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
```

```
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int(e+fx)\cosh(c+dx)\sinh(c+dx)\,dx}{b} - \frac{a\int\frac{(e+fx)\cosh(c+dx)\sinh(c+}{a+b\sinh(c+dx)}}{b}$$

$$= \frac{(e+fx)\sinh^2(c+dx)}{2bd} - \frac{a\int(e+fx)\cosh(c+dx)\,dx}{b^2} + \frac{a^2\int\frac{(e+fx)}{a+b\,s}}{}$$

$$= -\frac{a^2(e+fx)^2}{2b^3f} - \frac{a(e+fx)\sinh(c+dx)}{b^2d} - \frac{f\cosh(c+dx)\sinh(c+}{4bd^2}$$

$$= \frac{fx}{4bd} - \frac{a^2(e+fx)^2}{2b^3f} + \frac{af\cosh(c+dx)}{b^2d^2} + \frac{a^2(e+fx)\log\left(1+\frac{be^{c+d}}{a-\sqrt{a^2+}}\right.}{b^3d}$$

$$= \frac{fx}{4bd} - \frac{a^2(e+fx)^2}{2b^3f} + \frac{af\cosh(c+dx)}{b^2d^2} + \frac{a^2(e+fx)\log\left(1+\frac{be^{c+d}}{a-\sqrt{a^2+}}\right.}{b^3d}$$

$$= \frac{fx}{4bd} - \frac{a^2(e+fx)^2}{2b^3f} + \frac{af\cosh(c+dx)}{b^2d^2} + \frac{a^2(e+fx)\log\left(1+\frac{be^{c+d}}{a-\sqrt{a^2+}}\right.}{b^3d}$$

Mathematica [A] time = 0.97, size = 423, normalized size = 1.52

$$\frac{2de\left(\left(4a^2+b^2\right)\log(a+b\sinh(c+dx))-4ab\sinh(c+dx)+2b^2\sinh^2(c+dx)\right)+b^2f\left(-2\mathrm{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)-2\mathrm{Li}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (-2*b^2*d*e*Log[a + b*Sinh[c + d*x]] + b^2*f*(d*x*(d*x - 2*Log[1 + (b*E^(c
+ d*x))/(a - Sqrt[a^2 + b^2])] - 2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2])]) - 2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*PolyLog[
2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) + 2*d*e*((4*a^2 + b^2)*Log[a
+ b*Sinh[c + d*x]] - 4*a*b*Sinh[c + d*x] + 2*b^2*Sinh[c + d*x]^2) + f*(8*a*
b*Cosh[c + d*x] + 2*b^2*d*x*Cosh[2*(c + d*x)] + 2*(4*a^2 + b^2)*(-1/2*(c +
d*x)^2 + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + (c + d*
x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - c*Log[a + b*Sinh[c + d*
x]] + PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + PolyLog[2, -((b*
E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) - 8*a*b*d*x*Sinh[c + d*x] - b^2*Sinh[
2*(c + d*x)]))/(8*b^3*d^2)
```

<u>**fricas**</u> **[B]** time = 0.50, size = 1248, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] 1/16*(2*b^2*d*f*x + (2*b^2*d*f*x + 2*b^2*d*e - b^2*f)*cosh(d*x + c)^4 + (2*
b^2*d*f*x + 2*b^2*d*e - b^2*f)*sinh(d*x + c)^4 + 2*b^2*d*e - 8*(a*b*d*f*x +
 a*b*d*e - a*b*f)*cosh(d*x + c)^3 - 4*(2*a*b*d*f*x + 2*a*b*d*e - 2*a*b*f -
(2*b^2*d*f*x + 2*b^2*d*e - b^2*f)*cosh(d*x + c))*sinh(d*x + c)^3 + b^2*f -
8*(a^2*d^2*f*x^2 + 2*a^2*d^2*e*x + 4*a^2*c*d*e - 2*a^2*c^2*f)*cosh(d*x + c)
^2 - 2*(4*a^2*d^2*f*x^2 + 8*a^2*d^2*e*x + 16*a^2*c*d*e - 8*a^2*c^2*f - 3*(2
*b^2*d*f*x + 2*b^2*d*e - b^2*f)*cosh(d*x + c)^2 + 12*(a*b*d*f*x + a*b*d*e -
 a*b*f)*cosh(d*x + c))*sinh(d*x + c)^2 + 8*(a*b*d*f*x + a*b*d*e + a*b*f)*co
sh(d*x + c) + 16*(a^2*f*cosh(d*x + c)^2 + 2*a^2*f*cosh(d*x + c)*sinh(d*x +
c) + a^2*f*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*c
osh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 16*(a^2
*f*cosh(d*x + c)^2 + 2*a^2*f*cosh(d*x + c)*sinh(d*x + c) + a^2*f*sinh(d*x +
 c)^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 16*((a^2*d*e - a^2*c*f)*cosh
(d*x + c)^2 + 2*(a^2*d*e - a^2*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d*e
- a^2*c*f)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b
*sqrt((a^2 + b^2)/b^2) + 2*a) + 16*((a^2*d*e - a^2*c*f)*cosh(d*x + c)^2 + 2
*(a^2*d*e - a^2*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d*e - a^2*c*f)*sinh
(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^
2)/b^2) + 2*a) + 16*((a^2*d*f*x + a^2*c*f)*cosh(d*x + c)^2 + 2*(a^2*d*f*x +
 a^2*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d*f*x + a^2*c*f)*sinh(d*x + c)
^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 16*((a^2*d*f*x + a^2*c*f)*cosh(d*x +
 c)^2 + 2*(a^2*d*f*x + a^2*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*d*f*x +
a^2*c*f)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
```

```
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 4*(2*a*b*d*f*x
 + 2*a*b*d*e + (2*b^2*d*f*x + 2*b^2*d*e - b^2*f)*cosh(d*x + c)^3 + 2*a*b*f
- 6*(a*b*d*f*x + a*b*d*e - a*b*f)*cosh(d*x + c)^2 - 4*(a^2*d^2*f*x^2 + 2*a^
2*d^2*e*x + 4*a^2*c*d*e - 2*a^2*c^2*f)*cosh(d*x + c))*sinh(d*x + c))/(b^3*d
^2*cosh(d*x + c)^2 + 2*b^3*d^2*cosh(d*x + c)*sinh(d*x + c) + b^3*d^2*sinh(d
*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cosh(dx+c)\sinh(dx+c)^2}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)*sinh(d*x + c)^2/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.17, size = 565, normalized size = 2.03

$$-\frac{a^2 f x^2}{2b^3}+\frac{a^2 e x}{b^3}+\frac{\left(2dfx+2de-f\right)\mathrm{e}^{2dx+2c}}{16d^2 b}-\frac{a\left(dfx+de-f\right)\mathrm{e}^{dx+c}}{2b^2d^2}+\frac{a\left(dfx+de+f\right)\mathrm{e}^{-dx-c}}{2b^2d^2}+\frac{\left(2dfx+2de+f\right)\mathrm{e}}{16d^2 b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/2*a^2*f*x^2/b^3+a^2*e*x/b^3+1/16*(2*d*f*x+2*d*e-f)/d^2/b*exp(2*d*x+2*c)-
1/2*a*(d*f*x+d*e-f)/b^2/d^2*exp(d*x+c)+1/2*a*(d*f*x+d*e+f)/b^2/d^2*exp(-d*x
-c)+1/16*(2*d*f*x+2*d*e+f)/d^2/b*exp(-2*d*x-2*c)-1/d^2/b^3*a^2*f*c*ln(b*exp
(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d^2/b^3*a^2*f*c*ln(exp(d*x+c))+1/d/b^3*a^2*
e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/d/b^3*a^2*e*ln(exp(d*x+c))+1/d/b^
3*a^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d^2/
b^3*a^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d/
b^3*a^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2/
b^3*a^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/d^2/
b^3*a^2*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/d^2
/b^3*a^2*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-2/
d/b^3*f*a^2*c*x-1/d^2/b^3*f*a^2*c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8}e\left(\frac{8(dx+c)a^2}{b^3d}-\frac{\left(4ae^{(-dx-c)}-b\right)e^{(2dx+2c)}}{b^2d}+\frac{8a^2\log\left(-2ae^{(-dx-c)}+be^{(-2dx-2c)}-b\right)}{b^3d}+\frac{4ae^{(-dx-c)}+be^{(-2dx-2c}}{b^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] 1/8*e*(8*(d*x + c)*a^2/(b^3*d) - (4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(b^
2*d) + 8*a^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^3*d) + (4*a
*e^(-d*x - c) + b*e^(-2*d*x - 2*c))/(b^2*d)) + 1/16*f*((8*a^2*d^2*x^2*e^(2*
c) + (2*b^2*d*x*e^(4*c) - b^2*e^(4*c))*e^(2*d*x) - 8*(a*b*d*x*e^(3*c) - a*b
*e^(3*c))*e^(d*x) + 8*(a*b*d*x*e^c + a*b*e^c)*e^(-d*x) + (2*b^2*d*x + b^2)*
e^(-2*d*x))*e^(-2*c)/(b^3*d^2) - 2*integrate(16*(a^3*x*e^(d*x + c) - a^2*b*
x)/(b^4*e^(2*d*x + 2*c) + 2*a*b^3*e^(d*x + c) - b^4), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)\,{\sinh\left(c+d\,x\right)}^2\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*sinh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.365 $\int \frac{\cosh(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=55

$$\frac{a^2\log(a+b\sinh(c+dx))}{b^3d}-\frac{a\sinh(c+dx)}{b^2d}+\frac{\sinh^2(c+dx)}{2bd}$$

```
[Out] a^2*ln(a+b*sinh(d*x+c))/b^3/d-a*sinh(d*x+c)/b^2/d+1/2*sinh(d*x+c)^2/b/d
```

Rubi [A] time = 0.08, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2833, 12, 43}

$$\frac{a^2\log(a+b\sinh(c+dx))}{b^3d}-\frac{a\sinh(c+dx)}{b^2d}+\frac{\sinh^2(c+dx)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*Log[a + b*Sinh[c + d*x]])/(b^3*d) - (a*Sinh[c + d*x])/(b^2*d) + Sinh[c
 + d*x]^2/(2*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2833

```
Int[cos[(e_.) + (f_.)*(x_)]*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((
c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b*f), Sub
st[Int[(a + x)^m*(c + (d*x)/b)^n, x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b
, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{x^2}{b^2(a+x)}\,dx, x, b\sinh(c+dx)\right)}{bd}$$
$$= \frac{\text{Subst}\left(\int \frac{x^2}{a+x}\,dx, x, b\sinh(c+dx)\right)}{b^3d}$$
$$= \frac{\text{Subst}\left(\int \left(-a+x+\frac{a^2}{a+x}\right)dx, x, b\sinh(c+dx)\right)}{b^3d}$$
$$= \frac{a^2\log(a+b\sinh(c+dx))}{b^3d} - \frac{a\sinh(c+dx)}{b^2d} + \frac{\sinh^2(c+dx)}{2bd}$$

Mathematica [A] time = 0.07, size = 49, normalized size = 0.89

$$\frac{2a^2\log(a+b\sinh(c+dx)) - 2ab\sinh(c+dx) + b^2\sinh^2(c+dx)}{2b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a^2*Log[a + b*Sinh[c + d*x]] - 2*a*b*Sinh[c + d*x] + b^2*Sinh[c + d*x]^2
)/(2*b^3*d)
```

fricas [B] time = 0.46, size = 309, normalized size = 5.62

$$-\frac{8\,a^2dx\cosh(dx+c)^2 - b^2\cosh(dx+c)^4 - b^2\sinh(dx+c)^4 + 4\,ab\cosh(dx+c)^3 - 4\left(b^2\cosh(dx+c) - ab\right)\mathrm{si}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -1/8*(8*a^2*d*x*cosh(d*x + c)^2 - b^2*cosh(d*x + c)^4 - b^2*sinh(d*x + c)^4
 + 4*a*b*cosh(d*x + c)^3 - 4*(b^2*cosh(d*x + c) - a*b)*sinh(d*x + c)^3 - 4*
a*b*cosh(d*x + c) + 2*(4*a^2*d*x - 3*b^2*cosh(d*x + c)^2 + 6*a*b*cosh(d*x +
 c))*sinh(d*x + c)^2 - b^2 - 8*(a^2*cosh(d*x + c)^2 + 2*a^2*cosh(d*x + c)*s
inh(d*x + c) + a^2*sinh(d*x + c)^2)*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x +
 c) - sinh(d*x + c))) + 4*(4*a^2*d*x*cosh(d*x + c) - b^2*cosh(d*x + c)^3 +
3*a*b*cosh(d*x + c)^2 - a*b)*sinh(d*x + c))/(b^3*d*cosh(d*x + c)^2 + 2*b^3*
d*cosh(d*x + c)*sinh(d*x + c) + b^3*d*sinh(d*x + c)^2)
```

giac [A] time = 0.26, size = 88, normalized size = 1.60

$$\frac{\frac{8 a^2 \log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2 a\right|\right)}{b^3}+\frac{b\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2-4 a\left(e^{(dx+c)}-e^{(-dx-c)}\right)}{b^2}}{8 d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/8*(8*a^2*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/b^3 + (b*(e^(d*x
+ c) - e^(-d*x - c))^2 - 4*a*(e^(d*x + c) - e^(-d*x - c)))/b^2)/d
```

maple [A] time = 0.03, size = 54, normalized size = 0.98

$$\frac{a^2 \ln (a+b \sinh (dx+c))}{b^3 d}-\frac{a \sinh (dx+c)}{b^2 d}+\frac{\sinh^2 (dx+c)}{2bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] a^2*ln(a+b*sinh(d*x+c))/b^3/d-a*sinh(d*x+c)/b^2/d+1/2*sinh(d*x+c)^2/b/d
```

maxima [B] time = 0.33, size = 119, normalized size = 2.16

$$\frac{(dx+c)a^2}{b^3 d}-\frac{\left(4 a e^{(-dx-c)}-b\right)e^{(2 dx+2 c)}}{8 b^2 d}+\frac{a^2 \log\left(-2 a e^{(-dx-c)}+b e^{(-2 dx-2 c)}-b\right)}{b^3 d}+\frac{4 a e^{(-dx-c)}+b e^{(-2 dx-2 c)}}{8 b^2 d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] (d*x + c)*a^2/(b^3*d) - 1/8*(4*a*e^(-d*x - c) - b)*e^(2*d*x + 2*c)/(b^2*d)
+ a^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^3*d) + 1/8*(4*a*e^
(-d*x - c) + b*e^(-2*d*x - 2*c))/(b^2*d)
```

mupad [B] time = 0.11, size = 46, normalized size = 0.84

$$\frac{a^2 \ln (a+b \sinh (c+d x))+\frac{b^2 \sinh(c+d x)^2}{2}-a b \sinh (c+d x)}{b^3 d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] (a^2*log(a + b*sinh(c + d*x)) + (b^2*sinh(c + d*x)^2)/2 - a*b*sinh(c + d*x)
)/(b^3*d)
```

sympy [A] time = 1.34, size = 87, normalized size = 1.58

$$\begin{cases} \frac{x\sinh^2(c)\cosh(c)}{a} & \text{for } b = 0 \wedge d = 0 \\ \frac{\sinh^3(c+dx)}{3ad} & \text{for } b = 0 \\ \frac{x\sinh^2(c)\cosh(c)}{a+b\sinh(c)} & \text{for } d = 0 \\ \frac{a^2\log\left(\frac{a}{b}+\sinh(c+dx)\right)}{b^3d} - \frac{a\sinh(c+dx)}{b^2d} + \frac{\cosh^2(c+dx)}{2bd} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Piecewise((x*sinh(c)**2*cosh(c)/a, Eq(b, 0) & Eq(d, 0)), (sinh(c + d*x)**3/
(3*a*d), Eq(b, 0)), (x*sinh(c)**2*cosh(c)/(a + b*sinh(c)), Eq(d, 0)), (a**2
*log(a/b + sinh(c + d*x))/(b**3*d) - a*sinh(c + d*x)/(b**2*d) + cosh(c + d*
x)**2/(2*b*d), True))
```

3.366 $\int \frac{\cosh(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{\sinh^2(c+dx)\cosh(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} =$ 0.000, Rules used = {}

$$\int \frac{\cosh(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]*Sinh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]*Sinh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\cosh(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]*Sinh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)\sinh(dx+c)^2}{afx+ae+(bfx+be)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(cosh(d*x + c)*sinh(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh\left(dx+c\right)\sinh\left(dx+c\right)^{2}}{\left(fx+e\right)\left(b\sinh\left(dx+c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate(cosh(d*x + c)*sinh(d*x + c)^2/((f*x + e)*(b*sinh(d*x + c) + a)),
x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\cosh\left(dx+c\right)\left(\sinh^{2}\left(dx+c\right)\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{e^{\left(-2\,c+\frac{2\,de}{f}\right)}E_{1}\left(\frac{2\left(fx+e\right)d}{f}\right)}{4\,bf}+\frac{ae^{\left(-c+\frac{de}{f}\right)}E_{1}\left(\frac{\left(fx+e\right)d}{f}\right)}{2\,b^{2}f}+\frac{ae^{\left(c-\frac{de}{f}\right)}E_{1}\left(-\frac{\left(fx+e\right)d}{f}\right)}{2\,b^{2}f}-\frac{e^{\left(2\,c-\frac{2\,de}{f}\right)}E_{1}\left(-\frac{2\left(fx+e\right)d}{f}\right)}{4\,bf}+\frac{a^{2}\log\left(fx+e\right)}{b^{3}f}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] 1/4*e^(-2*c + 2*d*e/f)*exp_integral_e(1, 2*(f*x + e)*d/f)/(b*f) + 1/2*a*e^(
-c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b^2*f) + 1/2*a*e^(c - d*e/f)*
exp_integral_e(1, -(f*x + e)*d/f)/(b^2*f) - 1/4*e^(2*c - 2*d*e/f)*exp_integ
```

```
ral_e(1, -2*(f*x + e)*d/f)/(b*f) + a^2*log(f*x + e)/(b^3*f) - 1/8*integrate
(-16*(a^3*e^(d*x + c) - a^2*b)/(b^4*f*x + b^4*e - (b^4*f*x*e^(2*c) + b^4*e*
e^(2*c))*e^(2*d*x) - 2*(a*b^3*f*x*e^c + a*b^3*e*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh (c+d\,x)\,\sinh (c+d\,x)^2}{\left(e+f\,x\right)\,\left(a+b\sinh (c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)^2)/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)*sinh(c + d*x)^2)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.367 $\int \frac{(e+fx)^3 \cosh^2(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=897

$$-\frac{a(e+fx)^4}{8b^2f}-\frac{a^3(e+fx)^4}{4b^4f}+\frac{\cosh^3(c+dx)(e+fx)^3}{3bd}+\frac{a^2\cosh(c+dx)(e+fx)^3}{b^3d}+\frac{a^2\sqrt{a^2+b^2}\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)(e}{b^4d}$$

```
[Out] a^2*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^4/d-
a^2*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^4/d+
6*a^2*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^4/
d^4-6*a^2*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/
b^4/d^4-3/4*a*e*f^2*x/b^2/d^2+6*a^2*f^2*(f*x+e)*cosh(d*x+c)/b^3/d^3+3/4*a*f
*(f*x+e)^2*cosh(d*x+c)^2/b^2/d^2-3*a^2*f*(f*x+e)^2*sinh(d*x+c)/b^3/d^2-1/2*
a*(f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)/b^2/d-1/3*f*(f*x+e)^2*cosh(d*x+c)^2*sin
h(d*x+c)/b/d^2-3/4*a*f^2*(f*x+e)*cosh(d*x+c)*sinh(d*x+c)/b^2/d^3-1/4*a^3*(f
*x+e)^4/b^4/f+1/3*(f*x+e)^3*cosh(d*x+c)^3/b/d-2/27*f^3*sinh(d*x+c)^3/b/d^4-
3/8*a*f^3*x^2/b^2/d^2+3/8*a*f^3*cosh(d*x+c)^2/b^2/d^4+2/9*f^2*(f*x+e)*cosh(
d*x+c)^3/b/d^3-6*a^2*f^3*sinh(d*x+c)/b^3/d^4+4/3*f^2*(f*x+e)*cosh(d*x+c)/b/
d^3-2/3*f*(f*x+e)^2*sinh(d*x+c)/b/d^2-1/8*a*(f*x+e)^4/b^2/f-14/9*f^3*sinh(d
*x+c)/b/d^4+3*a^2*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*
(a^2+b^2)^(1/2)/b^4/d^2-3*a^2*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b
^2)^(1/2)))*(a^2+b^2)^(1/2)/b^4/d^2-6*a^2*f^2*(f*x+e)*polylog(3,-b*exp(d*x+
c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^4/d^3+6*a^2*f^2*(f*x+e)*polylog(3
,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^4/d^3+a^2*(f*x+e)^3*c
osh(d*x+c)/b^3/d
```

Rubi [A] time = 1.47, antiderivative size = 897, normalized size of antiderivative = 1.00, number of steps used = 31, number of rules used = 16, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {5579, 5447, 3311, 3296, 2637, 2633, 32, 3310, 5565, 3322, 2264, 2190, 2531, 6609, 2282, 6589}

$$-\frac{a(e+fx)^4}{8b^2f}-\frac{a^3(e+fx)^4}{4b^4f}+\frac{\cosh^3(c+dx)(e+fx)^3}{3bd}+\frac{a^2\cosh(c+dx)(e+fx)^3}{b^3d}+\frac{a^2\sqrt{a^2+b^2}\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)(e}{b^4d}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]^2*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-3*a*e*f^2*x)/(4*b^2*d^2) - (3*a*f^3*x^2)/(8*b^2*d^2) - (a^3*(e + f*x)^4)/
(4*b^4*f) - (a*(e + f*x)^4)/(8*b^2*f) + (6*a^2*f^2*(e + f*x)*Cosh[c + d*x])
/(b^3*d^3) + (4*f^2*(e + f*x)*Cosh[c + d*x])/(3*b*d^3) + (a^2*(e + f*x)^3*C
osh[c + d*x])/(b^3*d) + (3*a*f^3*Cosh[c + d*x]^2)/(8*b^2*d^4) + (3*a*f*(e +
```

```
 f*x)^2*Cosh[c + d*x]^2)/(4*b^2*d^2) + (2*f^2*(e + f*x)*Cosh[c + d*x]^3)/(9
*b*d^3) + ((e + f*x)^3*Cosh[c + d*x]^3)/(3*b*d) + (a^2*Sqrt[a^2 + b^2]*(e +
 f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^4*d) - (a^2*Sqrt
[a^2 + b^2]*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^
4*d) + (3*a^2*Sqrt[a^2 + b^2]*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a
 - Sqrt[a^2 + b^2]))])/(b^4*d^2) - (3*a^2*Sqrt[a^2 + b^2]*f*(e + f*x)^2*Pol
yLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^4*d^2) - (6*a^2*Sqrt[
a^2 + b^2]*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])
)])/(b^4*d^3) + (6*a^2*Sqrt[a^2 + b^2]*f^2*(e + f*x)*PolyLog[3, -((b*E^(c +
 d*x))/(a + Sqrt[a^2 + b^2]))])/(b^4*d^3) + (6*a^2*Sqrt[a^2 + b^2]*f^3*Poly
Log[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^4*d^4) - (6*a^2*Sqrt[a
^2 + b^2]*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^4*d^
4) - (6*a^2*f^3*Sinh[c + d*x])/(b^3*d^4) - (14*f^3*Sinh[c + d*x])/(9*b*d^4)
 - (3*a^2*f*(e + f*x)^2*Sinh[c + d*x])/(b^3*d^2) - (2*f*(e + f*x)^2*Sinh[c
+ d*x])/(3*b*d^2) - (3*a*f^2*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(4*b^2*
d^3) - (a*(e + f*x)^3*Cosh[c + d*x]*Sinh[c + d*x])/(2*b^2*d) - (f*(e + f*x)
^2*Cosh[c + d*x]^2*Sinh[c + d*x])/(3*b*d^2) - (2*f^3*Sinh[c + d*x]^3)/(27*b
*d^4)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
```

```
d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh^2(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\cosh^2(c+dx)\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\cosh^2(c+dx)\sin}{a+b\sinh(c+dx}}{b}$$

$$= \frac{(e+fx)^3\cosh^3(c+dx)}{3bd} - \frac{a\int (e+fx)^3\cosh^2(c+dx)\,dx}{b^2} + \frac{a^2\int}{}$$

$$= \frac{3af(e+fx)^2\cosh^2(c+dx)}{4b^2d^2} + \frac{2f^2(e+fx)\cosh^3(c+dx)}{9bd^3} + \frac{(e+f}{}$$

$$= -\frac{a^3(e+fx)^4}{4b^4f} - \frac{a(e+fx)^4}{8b^2f} + \frac{a^2(e+fx)^3\cosh(c+dx)}{b^3d} + \frac{3af^3\cos}{8}$$

$$= -\frac{3aef^2x}{4b^2d^2} - \frac{3af^3x^2}{8b^2d^2} - \frac{a^3(e+fx)^4}{4b^4f} - \frac{a(e+fx)^4}{8b^2f} + \frac{4f^2(e+fx)\cos}{3bd^3}$$

$$= -\frac{3aef^2x}{4b^2d^2} - \frac{3af^3x^2}{8b^2d^2} - \frac{a^3(e+fx)^4}{4b^4f} - \frac{a(e+fx)^4}{8b^2f} + \frac{6a^2f^2(e+fx)\,c}{b^3d^3}$$

$$= -\frac{3aef^2x}{4b^2d^2} - \frac{3af^3x^2}{8b^2d^2} - \frac{a^3(e+fx)^4}{4b^4f} - \frac{a(e+fx)^4}{8b^2f} + \frac{6a^2f^2(e+fx)\,c}{b^3d^3}$$

$$= -\frac{3aef^2x}{4b^2d^2} - \frac{3af^3x^2}{8b^2d^2} - \frac{a^3(e+fx)^4}{4b^4f} - \frac{a(e+fx)^4}{8b^2f} + \frac{6a^2f^2(e+fx)\,c}{b^3d^3}$$

$$= -\frac{3aef^2x}{4b^2d^2} - \frac{3af^3x^2}{8b^2d^2} - \frac{a^3(e+fx)^4}{4b^4f} - \frac{a(e+fx)^4}{8b^2f} + \frac{6a^2f^2(e+fx)\,c}{b^3d^3}$$

$$= -\frac{3aef^2x}{4b^2d^2} - \frac{3af^3x^2}{8b^2d^2} - \frac{a^3(e+fx)^4}{4b^4f} - \frac{a(e+fx)^4}{8b^2f} + \frac{6a^2f^2(e+fx)\,c}{b^3d^3}$$

Mathematica [A] time = 7.37, size = 1667, normalized size = 1.86

$$-\frac{108a^3f^3x^4d^4 + 54ab^2f^3x^4d^4 + 432a^3ef^2x^3d^4 + 216ab^2ef^2x^3d^4 + 648a^3e^2fx^2d^4 + 324ab^2e^2fx^2d^4 + 432a^3e^3xd^4}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^2*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x
]),x]
```

```
[Out] -1/432*(432*a^3*d^4*e^3*x + 216*a*b^2*d^4*e^3*x + 648*a^3*d^4*e^2*f*x^2 + 3
24*a*b^2*d^4*e^2*f*x^2 + 432*a^3*d^4*e*f^2*x^3 + 216*a*b^2*d^4*e*f^2*x^3 +
108*a^3*d^4*f^3*x^4 + 54*a*b^2*d^4*f^3*x^4 + 864*a^2*Sqrt[a^2 + b^2]*d^3*e^
3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 432*a^2*b*d^3*e^3*Cosh[c +
 d*x] - 108*b^3*d^3*e^3*Cosh[c + d*x] - 2592*a^2*b*d*e*f^2*Cosh[c + d*x] -
648*b^3*d*e*f^2*Cosh[c + d*x] - 1296*a^2*b*d^3*e^2*f*x*Cosh[c + d*x] - 324*
b^3*d^3*e^2*f*x*Cosh[c + d*x] - 2592*a^2*b*d*f^3*x*Cosh[c + d*x] - 648*b^3*
d*f^3*x*Cosh[c + d*x] - 1296*a^2*b*d^3*e*f^2*x^2*Cosh[c + d*x] - 324*b^3*d^
3*e*f^2*x^2*Cosh[c + d*x] - 432*a^2*b*d^3*f^3*x^3*Cosh[c + d*x] - 108*b^3*d
^3*f^3*x^3*Cosh[c + d*x] - 162*a*b^2*d^2*e^2*f*Cosh[2*(c + d*x)] - 81*a*b^2
*f^3*Cosh[2*(c + d*x)] - 324*a*b^2*d^2*e*f^2*x*Cosh[2*(c + d*x)] - 162*a*b^
2*d^2*f^3*x^2*Cosh[2*(c + d*x)] - 36*b^3*d^3*e^3*Cosh[3*(c + d*x)] - 24*b^3
*d*e*f^2*Cosh[3*(c + d*x)] - 108*b^3*d^3*e^2*f*x*Cosh[3*(c + d*x)] - 24*b^3
*d*f^3*x*Cosh[3*(c + d*x)] - 108*b^3*d^3*e*f^2*x^2*Cosh[3*(c + d*x)] - 36*b
^3*d^3*f^3*x^3*Cosh[3*(c + d*x)] - 1296*a^2*Sqrt[a^2 + b^2]*d^3*e^2*f*x*Log
[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 1296*a^2*Sqrt[a^2 + b^2]*d^3*
e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 432*a^2*Sqrt[a^2
 + b^2]*d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 1296*a
^2*Sqrt[a^2 + b^2]*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
)] + 1296*a^2*Sqrt[a^2 + b^2]*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sq
rt[a^2 + b^2])] + 432*a^2*Sqrt[a^2 + b^2]*d^3*f^3*x^3*Log[1 + (b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2])] - 1296*a^2*Sqrt[a^2 + b^2]*d^2*f*(e + f*x)^2*Poly
Log[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 1296*a^2*Sqrt[a^2 + b^2]*d
^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 259
2*a^2*Sqrt[a^2 + b^2]*d*e*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b
^2])] + 2592*a^2*Sqrt[a^2 + b^2]*d*f^3*x*PolyLog[3, (b*E^(c + d*x))/(-a + S
qrt[a^2 + b^2])] - 2592*a^2*Sqrt[a^2 + b^2]*d*e*f^2*PolyLog[3, -((b*E^(c +
d*x))/(a + Sqrt[a^2 + b^2]))] - 2592*a^2*Sqrt[a^2 + b^2]*d*f^3*x*PolyLog[3,
 -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2592*a^2*Sqrt[a^2 + b^2]*f^3*P
olyLog[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2592*a^2*Sqrt[a^2 + b^2
]*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 1296*a^2*b*d^2
*e^2*f*Sinh[c + d*x] + 324*b^3*d^2*e^2*f*Sinh[c + d*x] + 2592*a^2*b*f^3*Sin
h[c + d*x] + 648*b^3*f^3*Sinh[c + d*x] + 2592*a^2*b*d^2*e*f^2*x*Sinh[c + d*
x] + 648*b^3*d^2*e*f^2*x*Sinh[c + d*x] + 1296*a^2*b*d^2*f^3*x^2*Sinh[c + d*
x] + 324*b^3*d^2*f^3*x^2*Sinh[c + d*x] + 108*a*b^2*d^3*e^3*Sinh[2*(c + d*x)
] + 162*a*b^2*d*e*f^2*Sinh[2*(c + d*x)] + 324*a*b^2*d^3*e^2*f*x*Sinh[2*(c +
 d*x)] + 162*a*b^2*d*f^3*x*Sinh[2*(c + d*x)] + 324*a*b^2*d^3*e*f^2*x^2*Sinh
[2*(c + d*x)] + 108*a*b^2*d^3*f^3*x^3*Sinh[2*(c + d*x)] + 36*b^3*d^2*e^2*f*
Sinh[3*(c + d*x)] + 8*b^3*f^3*Sinh[3*(c + d*x)] + 72*b^3*d^2*e*f^2*x*Sinh[3
*(c + d*x)] + 36*b^3*d^2*f^3*x^2*Sinh[3*(c + d*x)])/(b^4*d^4)
```

fricas [C] time = 0.68, size = 7042, normalized size = 7.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="fricas")
```

```
[Out] 1/864*(36*b^3*d^3*f^3*x^3 + 36*b^3*d^3*e^3 + 36*b^3*d^2*e^2*f + 24*b^3*d*e*
f^2 + 4*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f^
2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f
- 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^6 + 4*(9*b^3*d^3*f^3*x^3
+ 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^
3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d
*f^3)*x)*sinh(d*x + c)^6 + 8*b^3*f^3 - 27*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^
3*e^3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*
e*f^2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b
^2*d*f^3)*x)*cosh(d*x + c)^5 - 3*(36*a*b^2*d^3*f^3*x^3 + 36*a*b^2*d^3*e^3 -
 54*a*b^2*d^2*e^2*f + 54*a*b^2*d*e*f^2 - 27*a*b^2*f^3 + 54*(2*a*b^2*d^3*e*f
^2 - a*b^2*d^2*f^3)*x^2 + 54*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2
*d*f^3)*x - 8*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*
d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*
e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^5 +
108*((4*a^2*b + b^3)*d^3*f^3*x^3 + (4*a^2*b + b^3)*d^3*e^3 - 3*(4*a^2*b + b
^3)*d^2*e^2*f + 6*(4*a^2*b + b^3)*d*e*f^2 - 6*(4*a^2*b + b^3)*f^3 + 3*((4*a
^2*b + b^3)*d^3*e*f^2 - (4*a^2*b + b^3)*d^2*f^3)*x^2 + 3*((4*a^2*b + b^3)*d
^3*e^2*f - 2*(4*a^2*b + b^3)*d^2*e*f^2 + 2*(4*a^2*b + b^3)*d*f^3)*x)*cosh(d
*x + c)^4 + 3*(36*(4*a^2*b + b^3)*d^3*f^3*x^3 + 36*(4*a^2*b + b^3)*d^3*e^3
- 108*(4*a^2*b + b^3)*d^2*e^2*f + 216*(4*a^2*b + b^3)*d*e*f^2 - 216*(4*a^2*
b + b^3)*f^3 + 108*((4*a^2*b + b^3)*d^3*e*f^2 - (4*a^2*b + b^3)*d^2*f^3)*x^
2 + 20*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f^2
 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f -
 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^2 + 108*((4*a^2*b + b^3)*d
^3*e^2*f - 2*(4*a^2*b + b^3)*d^2*e*f^2 + 2*(4*a^2*b + b^3)*d*f^3)*x - 45*(4
*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2
- 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*
e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^4
- 108*((2*a^3 + a*b^2)*d^4*f^3*x^4 + 4*(2*a^3 + a*b^2)*d^4*e*f^2*x^3 + 6*(2
*a^3 + a*b^2)*d^4*e^2*f*x^2 + 4*(2*a^3 + a*b^2)*d^4*e^3*x)*cosh(d*x + c)^3
- 2*(54*(2*a^3 + a*b^2)*d^4*f^3*x^4 + 216*(2*a^3 + a*b^2)*d^4*e*f^2*x^3 + 3
24*(2*a^3 + a*b^2)*d^4*e^2*f*x^2 + 216*(2*a^3 + a*b^2)*d^4*e^3*x - 40*(9*b^
3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f^2 - 2*b^3*f^3
 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e
*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^3 + 135*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2
```

```
*d^3*e^3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d
^3*e*f^2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 +
a*b^2*d*f^3)*x)*cosh(d*x + c)^2 - 216*((4*a^2*b + b^3)*d^3*f^3*x^3 + (4*a^2
*b + b^3)*d^3*e^3 - 3*(4*a^2*b + b^3)*d^2*e^2*f + 6*(4*a^2*b + b^3)*d*e*f^2
 - 6*(4*a^2*b + b^3)*f^3 + 3*((4*a^2*b + b^3)*d^3*e*f^2 - (4*a^2*b + b^3)*d
^2*f^3)*x^2 + 3*((4*a^2*b + b^3)*d^3*e^2*f - 2*(4*a^2*b + b^3)*d^2*e*f^2 +
2*(4*a^2*b + b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^3 + 36*(3*b^3*d^3*
e*f^2 + b^3*d^2*f^3)*x^2 + 108*((4*a^2*b + b^3)*d^3*f^3*x^3 + (4*a^2*b + b^
3)*d^3*e^3 + 3*(4*a^2*b + b^3)*d^2*e^2*f + 6*(4*a^2*b + b^3)*d*e*f^2 + 6*(4
*a^2*b + b^3)*f^3 + 3*((4*a^2*b + b^3)*d^3*e*f^2 + (4*a^2*b + b^3)*d^2*f^3)
*x^2 + 3*((4*a^2*b + b^3)*d^3*e^2*f + 2*(4*a^2*b + b^3)*d^2*e*f^2 + 2*(4*a^
2*b + b^3)*d*f^3)*x)*cosh(d*x + c)^2 + 6*(18*(4*a^2*b + b^3)*d^3*f^3*x^3 +
18*(4*a^2*b + b^3)*d^3*e^3 + 54*(4*a^2*b + b^3)*d^2*e^2*f + 108*(4*a^2*b +
b^3)*d*e*f^2 + 10*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*
b^3*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*
d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^4 + 108*(4*a^2*
b + b^3)*f^3 - 45*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^3 - 6*a*b^2*d^2*e^2*
f + 6*a*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^2 - a*b^2*d^2*f^3)*x
^2 + 6*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x)*cosh(d*x +
c)^3 + 54*((4*a^2*b + b^3)*d^3*e*f^2 + (4*a^2*b + b^3)*d^2*f^3)*x^2 + 108*(
(4*a^2*b + b^3)*d^3*f^3*x^3 + (4*a^2*b + b^3)*d^3*e^3 - 3*(4*a^2*b + b^3)*d
^2*e^2*f + 6*(4*a^2*b + b^3)*d*e*f^2 - 6*(4*a^2*b + b^3)*f^3 + 3*((4*a^2*b
+ b^3)*d^3*e*f^2 - (4*a^2*b + b^3)*d^2*f^3)*x^2 + 3*((4*a^2*b + b^3)*d^3*e^
2*f - 2*(4*a^2*b + b^3)*d^2*e*f^2 + 2*(4*a^2*b + b^3)*d*f^3)*x)*cosh(d*x +
c)^2 + 54*((4*a^2*b + b^3)*d^3*e^2*f + 2*(4*a^2*b + b^3)*d^2*e*f^2 + 2*(4*a
^2*b + b^3)*d*f^3)*x - 54*((2*a^3 + a*b^2)*d^4*f^3*x^4 + 4*(2*a^3 + a*b^2)*
d^4*e*f^2*x^3 + 6*(2*a^3 + a*b^2)*d^4*e^2*f*x^2 + 4*(2*a^3 + a*b^2)*d^4*e^3
*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 2592*((a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2
*e*f^2*x + a^2*b*d^2*e^2*f)*cosh(d*x + c)^3 + 3*(a^2*b*d^2*f^3*x^2 + 2*a^2*
b*d^2*e*f^2*x + a^2*b*d^2*e^2*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^2*b*d
^2*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x + a^2*b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x
+ c)^2 + (a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x + a^2*b*d^2*e^2*f)*sinh(d
*x + c)^3)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) +
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 25
92*((a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x + a^2*b*d^2*e^2*f)*cosh(d*x +
c)^3 + 3*(a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x + a^2*b*d^2*e^2*f)*cosh(d
*x + c)^2*sinh(d*x + c) + 3*(a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x + a^2*
b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d^2*f^3*x^2 + 2*a^2*b*d
^2*e*f^2*x + a^2*b*d^2*e^2*f)*sinh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*dilog(
(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sq
rt((a^2 + b^2)/b^2) - b)/b + 1) - 864*((a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f
 + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*cosh(d*x + c)^3 + 3*(a^2*b*d^3*e^3
- 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*cosh(d*x + c)^
2*sinh(d*x + c) + 3*(a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*
f^2 - a^2*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d^3*e^3 - 3*a^2
```

```
*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*sinh(d*x + c)^3)*sqrt
((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2
 + b^2)/b^2) + 2*a) + 864*((a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c
^2*d*e*f^2 - a^2*b*c^3*f^3)*cosh(d*x + c)^3 + 3*(a^2*b*d^3*e^3 - 3*a^2*b*c*
d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*cosh(d*x + c)^2*sinh(d*x +
 c) + 3*(a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*
c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2
*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*sinh(d*x + c)^3)*sqrt((a^2 + b^2)
/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2)
 + 2*a) + 864*((a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2
*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*cosh(d*x
+ c)^3 + 3*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x
 + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*cosh(d*x + c)
^2*sinh(d*x + c) + 3*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d
^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*cos
h(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3
*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*
f^3)*sinh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(
d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b
) - 864*((a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x +
 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*cosh(d*x + c)^3
 + 3*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a
^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*cosh(d*x + c)^2*sin
h(d*x + c) + 3*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2
*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*cosh(d*x
+ c)*sinh(d*x + c)^2 + (a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b
*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*s
inh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x +
c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 51
84*(a^2*b*f^3*cosh(d*x + c)^3 + 3*a^2*b*f^3*cosh(d*x + c)^2*sinh(d*x + c) +
 3*a^2*b*f^3*cosh(d*x + c)*sinh(d*x + c)^2 + a^2*b*f^3*sinh(d*x + c)^3)*sqr
t((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(
d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 5184*(a^2*b*f^3*cos
h(d*x + c)^3 + 3*a^2*b*f^3*cosh(d*x + c)^2*sinh(d*x + c) + 3*a^2*b*f^3*cosh
(d*x + c)*sinh(d*x + c)^2 + a^2*b*f^3*sinh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2
)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 5184*((a^2*b*d*f^3*x + a^2*b*d*e*f^2
)*cosh(d*x + c)^3 + 3*(a^2*b*d*f^3*x + a^2*b*d*e*f^2)*cosh(d*x + c)^2*sinh(
d*x + c) + 3*(a^2*b*d*f^3*x + a^2*b*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)^2
+ (a^2*b*d*f^3*x + a^2*b*d*e*f^2)*sinh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*po
lylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2))/b) + 5184*((a^2*b*d*f^3*x + a^2*b*d*e*f^2)*co
sh(d*x + c)^3 + 3*(a^2*b*d*f^3*x + a^2*b*d*e*f^2)*cosh(d*x + c)^2*sinh(d*x
+ c) + 3*(a^2*b*d*f^3*x + a^2*b*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 + (a
^2*b*d*f^3*x + a^2*b*d*e*f^2)*sinh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*polylo
```

```
g(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2))/b) + 12*(9*b^3*d^3*e^2*f + 6*b^3*d^2*e*f^2 + 2*b^
3*d*f^3)*x + 27*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^3 + 6*a*b^2*d^2*e^2*f
+ 6*a*b^2*d*e*f^2 + 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^2 + a*b^2*d^2*f^3)*x^2
 + 6*(2*a*b^2*d^3*e^2*f + 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x)*cosh(d*x + c)
 + 3*(36*a*b^2*d^3*f^3*x^3 + 36*a*b^2*d^3*e^3 + 54*a*b^2*d^2*e^2*f + 54*a*b
^2*d*e*f^2 + 27*a*b^2*f^3 + 8*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^
2*e^2*f + 6*b^3*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2
 + 3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^5 -
 45*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*
e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^
2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x)*cosh(d*x + c)^4 + 144*((4
*a^2*b + b^3)*d^3*f^3*x^3 + (4*a^2*b + b^3)*d^3*e^3 - 3*(4*a^2*b + b^3)*d^2
*e^2*f + 6*(4*a^2*b + b^3)*d*e*f^2 - 6*(4*a^2*b + b^3)*f^3 + 3*((4*a^2*b +
b^3)*d^3*e*f^2 - (4*a^2*b + b^3)*d^2*f^3)*x^2 + 3*((4*a^2*b + b^3)*d^3*e^2*
f - 2*(4*a^2*b + b^3)*d^2*e*f^2 + 2*(4*a^2*b + b^3)*d*f^3)*x)*cosh(d*x + c)
^3 + 54*(2*a*b^2*d^3*e*f^2 + a*b^2*d^2*f^3)*x^2 - 108*((2*a^3 + a*b^2)*d^4*
f^3*x^4 + 4*(2*a^3 + a*b^2)*d^4*e*f^2*x^3 + 6*(2*a^3 + a*b^2)*d^4*e^2*f*x^2
 + 4*(2*a^3 + a*b^2)*d^4*e^3*x)*cosh(d*x + c)^2 + 54*(2*a*b^2*d^3*e^2*f + 2
*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x + 72*((4*a^2*b + b^3)*d^3*f^3*x^3 + (4*a^
2*b + b^3)*d^3*e^3 + 3*(4*a^2*b + b^3)*d^2*e^2*f + 6*(4*a^2*b + b^3)*d*e*f^
2 + 6*(4*a^2*b + b^3)*f^3 + 3*((4*a^2*b + b^3)*d^3*e*f^2 + (4*a^2*b + b^3)*
d^2*f^3)*x^2 + 3*((4*a^2*b + b^3)*d^3*e^2*f + 2*(4*a^2*b + b^3)*d^2*e*f^2 +
 2*(4*a^2*b + b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^4*d^4*cosh(d*
x + c)^3 + 3*b^4*d^4*cosh(d*x + c)^2*sinh(d*x + c) + 3*b^4*d^4*cosh(d*x + c
)*sinh(d*x + c)^2 + b^4*d^4*sinh(d*x + c)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)^{2}\sinh\left(dx+c\right)^{2}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)^2*sinh(d*x + c)^2/(b*sinh(d*x + c) + a)
, x)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\left(\cosh^{2}\left(dx+c\right)\right)\left(\sinh^{2}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="maxima")
```

```
[Out] 1/24*e^3*(24*sqrt(a^2 + b^2)*a^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))
/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(b^4*d) - (3*a*b*e^(-d*x - c) - b^
2 - 3*(4*a^2 + b^2)*e^(-2*d*x - 2*c))*e^(3*d*x + 3*c)/(b^3*d) - 12*(2*a^3 +
 a*b^2)*(d*x + c)/(b^4*d) + (3*a*b*e^(-2*d*x - 2*c) + b^2*e^(-3*d*x - 3*c)
+ 3*(4*a^2 + b^2)*e^(-d*x - c))/(b^3*d)) - 1/864*(108*(2*a^3*d^4*f^3*e^(3*c
) + a*b^2*d^4*f^3*e^(3*c))*x^4 + 432*(2*a^3*d^4*e*f^2*e^(3*c) + a*b^2*d^4*e
*f^2*e^(3*c))*x^3 + 648*(2*a^3*d^4*e^2*f*e^(3*c) + a*b^2*d^4*e^2*f*e^(3*c))
*x^2 - 4*(9*b^3*d^3*f^3*x^3*e^(6*c) + 9*(3*d^3*e*f^2 - d^2*f^3)*b^3*x^2*e^(
6*c) + 3*(9*d^3*e^2*f - 6*d^2*e*f^2 + 2*d*f^3)*b^3*x*e^(6*c) - (9*d^2*e^2*f
 - 6*d*e*f^2 + 2*f^3)*b^3*e^(6*c))*e^(3*d*x) + 27*(4*a*b^2*d^3*f^3*x^3*e^(5
*c) + 6*(2*d^3*e*f^2 - d^2*f^3)*a*b^2*x^2*e^(5*c) + 6*(2*d^3*e^2*f - 2*d^2*
e*f^2 + d*f^3)*a*b^2*x*e^(5*c) - 3*(2*d^2*e^2*f - 2*d*e*f^2 + f^3)*a*b^2*e^
(5*c))*e^(2*d*x) + 108*(12*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a^2*b*e^(4*c) +
3*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*b^3*e^(4*c) - (4*a^2*b*d^3*f^3*e^(4*c) +
b^3*d^3*f^3*e^(4*c))*x^3 - 3*(4*(d^3*e*f^2 - d^2*f^3)*a^2*b*e^(4*c) + (d^3*
e*f^2 - d^2*f^3)*b^3*e^(4*c))*x^2 - 3*(4*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3
)*a^2*b*e^(4*c) + (d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*b^3*e^(4*c))*x)*e^(d*
x) - 108*(12*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a^2*b*e^(2*c) + 3*(d^2*e^2*f +
 2*d*e*f^2 + 2*f^3)*b^3*e^(2*c) + (4*a^2*b*d^3*f^3*e^(2*c) + b^3*d^3*f^3*e^
(2*c))*x^3 + 3*(4*(d^3*e*f^2 + d^2*f^3)*a^2*b*e^(2*c) + (d^3*e*f^2 + d^2*f^
3)*b^3*e^(2*c))*x^2 + 3*(4*(d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*a^2*b*e^(2*c
) + (d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*b^3*e^(2*c))*x)*e^(-d*x) - 27*(4*a*
b^2*d^3*f^3*x^3*e^c + 6*(2*d^3*e*f^2 + d^2*f^3)*a*b^2*x^2*e^c + 6*(2*d^3*e^
2*f + 2*d^2*e*f^2 + d*f^3)*a*b^2*x*e^c + 3*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)*
a*b^2*e^c)*e^(-2*d*x) - 4*(9*b^3*d^3*f^3*x^3 + 9*(3*d^3*e*f^2 + d^2*f^3)*b^
3*x^2 + 3*(9*d^3*e^2*f + 6*d^2*e*f^2 + 2*d*f^3)*b^3*x + (9*d^2*e^2*f + 6*d*
e*f^2 + 2*f^3)*b^3)*e^(-3*d*x))*e^(-3*c)/(b^4*d^4) + integrate(2*((a^4*f^3*
e^c + a^2*b^2*f^3*e^c)*x^3 + 3*(a^4*e*f^2*e^c + a^2*b^2*e*f^2*e^c)*x^2 + 3*
(a^4*e^2*f*e^c + a^2*b^2*e^2*f*e^c)*x)*e^(d*x)/(b^5*e^(2*d*x + 2*c) + 2*a*b
^4*e^(d*x + c) - b^5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh (c+d x)^2 \sinh (c+d x)^2 \left(e+f x\right)^3}{a+b \sinh (c+d x)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**2*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.368 $\int \frac{(e+fx)^2\cosh^2(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=649

$$-\frac{a^3(e+fx)^3}{3b^4f}+\frac{2a^2f^2\cosh(c+dx)}{b^3d^3}-\frac{2a^2f(e+fx)\sinh(c+dx)}{b^3d^2}+\frac{a^2(e+fx)^2\cosh(c+dx)}{b^3d}-\frac{2a^2f^2\sqrt{a^2+b^2}\,\mathrm{Li}_3\left(-\right.}{b^4d^3}$$

```
[Out] -1/4*a*f^2*x/b^2/d^2-1/3*a^3*(f*x+e)^3/b^4/f-1/6*a*(f*x+e)^3/b^2/f+2*a^2*f^
2*cosh(d*x+c)/b^3/d^3+4/9*f^2*cosh(d*x+c)/b/d^3+a^2*(f*x+e)^2*cosh(d*x+c)/b
^3/d+1/2*a*f*(f*x+e)*cosh(d*x+c)^2/b^2/d^2+2/27*f^2*cosh(d*x+c)^3/b/d^3+1/3
*(f*x+e)^2*cosh(d*x+c)^3/b/d-2*a^2*f*(f*x+e)*sinh(d*x+c)/b^3/d^2-4/9*f*(f*x
+e)*sinh(d*x+c)/b/d^2-1/4*a*f^2*cosh(d*x+c)*sinh(d*x+c)/b^2/d^3-1/2*a*(f*x+
e)^2*cosh(d*x+c)*sinh(d*x+c)/b^2/d-2/9*f*(f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)/
b/d^2+a^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/
b^4/d-a^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/
b^4/d+2*a^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2
)^(1/2)/b^4/d^2-2*a^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2))
)*(a^2+b^2)^(1/2)/b^4/d^2-2*a^2*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1
/2)))*(a^2+b^2)^(1/2)/b^4/d^3+2*a^2*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2
)^(1/2)))*(a^2+b^2)^(1/2)/b^4/d^3
```

Rubi [A] time = 1.20, antiderivative size = 649, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 16, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {5579, 5447, 3310, 3296, 2638, 3311, 32, 2635, 8, 5565, 3322, 2264, 2190, 2531, 2282, 6589}

$$\frac{2a^2f\sqrt{a^2+b^2}\,(e+fx)\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{2a^2f\sqrt{a^2+b^2}\,(e+fx)\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^4d^2}-\frac{2a^2f^2\sqrt{a^2+b^2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]^2*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a*f^2*x)/(4*b^2*d^2) - (a^3*(e + f*x)^3)/(3*b^4*f) - (a*(e + f*x)^3)/(6*b
^2*f) + (2*a^2*f^2*Cosh[c + d*x])/(b^3*d^3) + (4*f^2*Cosh[c + d*x])/(9*b*d^
3) + (a^2*(e + f*x)^2*Cosh[c + d*x])/(b^3*d) + (a*f*(e + f*x)*Cosh[c + d*x]
^2)/(2*b^2*d^2) + (2*f^2*Cosh[c + d*x]^3)/(27*b*d^3) + ((e + f*x)^2*Cosh[c
+ d*x]^3)/(3*b*d) + (a^2*Sqrt[a^2 + b^2]*(e + f*x)^2*Log[1 + (b*E^(c + d*x)
)/(a - Sqrt[a^2 + b^2])])/(b^4*d) - (a^2*Sqrt[a^2 + b^2]*(e + f*x)^2*Log[1
+ (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^4*d) + (2*a^2*Sqrt[a^2 + b^2]*
f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^4*d^2)
 - (2*a^2*Sqrt[a^2 + b^2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqr
```

```
t[a^2 + b^2]))])/(b^4*d^2) - (2*a^2*Sqrt[a^2 + b^2]*f^2*PolyLog[3, -((b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^4*d^3) + (2*a^2*Sqrt[a^2 + b^2]*f^2*P
olyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^4*d^3) - (2*a^2*f*(
e + f*x)*Sinh[c + d*x])/(b^3*d^2) - (4*f*(e + f*x)*Sinh[c + d*x])/(9*b*d^2)
 - (a*f^2*Cosh[c + d*x]*Sinh[c + d*x])/(4*b^2*d^3) - (a*(e + f*x)^2*Cosh[c
+ d*x]*Sinh[c + d*x])/(2*b^2*d) - (2*f*(e + f*x)*Cosh[c + d*x]^2*Sinh[c + d
*x])/(9*b*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
```

```
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^2(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh^2(c+dx)\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\cosh^2(c+dx)\sin}{a+b\sinh(c+dx}}{b}$$

$$= \frac{(e+fx)^2\cosh^3(c+dx)}{3bd} - \frac{a\int (e+fx)^2\cosh^2(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e}{}}{}$$

$$= \frac{af(e+fx)\cosh^2(c+dx)}{2b^2d^2} + \frac{2f^2\cosh^3(c+dx)}{27bd^3} + \frac{(e+fx)^2\cosh^3(}{3bd}$$

$$= -\frac{a^3(e+fx)^3}{3b^4f} - \frac{a(e+fx)^3}{6b^2f} + \frac{a^2(e+fx)^2\cosh(c+dx)}{b^3d} + \frac{af(e+f}{}$$

$$= -\frac{af^2x}{4b^2d^2} - \frac{a^3(e+fx)^3}{3b^4f} - \frac{a(e+fx)^3}{6b^2f} + \frac{4f^2\cosh(c+dx)}{9bd^3} + \frac{a^2(e+}{}$$

$$= -\frac{af^2x}{4b^2d^2} - \frac{a^3(e+fx)^3}{3b^4f} - \frac{a(e+fx)^3}{6b^2f} + \frac{2a^2f^2\cosh(c+dx)}{b^3d^3} + \frac{4f^2 c}{}$$

$$= -\frac{af^2x}{4b^2d^2} - \frac{a^3(e+fx)^3}{3b^4f} - \frac{a(e+fx)^3}{6b^2f} + \frac{2a^2f^2\cosh(c+dx)}{b^3d^3} + \frac{4f^2 c}{}$$

$$= -\frac{af^2x}{4b^2d^2} - \frac{a^3(e+fx)^3}{3b^4f} - \frac{a(e+fx)^3}{6b^2f} + \frac{2a^2f^2\cosh(c+dx)}{b^3d^3} + \frac{4f^2 c}{}$$

$$= -\frac{af^2x}{4b^2d^2} - \frac{a^3(e+fx)^3}{3b^4f} - \frac{a(e+fx)^3}{6b^2f} + \frac{2a^2f^2\cosh(c+dx)}{b^3d^3} + \frac{4f^2 c}{}$$

Mathematica [A] time = 4.56, size = 966, normalized size = 1.49

$$-\frac{-54d^2e^2\cosh(c+dx)b^3 - 108f^2\cosh(c+dx)b^3 - 54d^2f^2x^2\cosh(c+dx)b^3 - 108d^2efx\cosh(c+dx)b^3 - 18d^2e}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^2*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x
]),x]
```

```
[Out] -1/216*(216*a^3*d^3*e^2*x + 108*a*b^2*d^3*e^2*x + 216*a^3*d^3*e*f*x^2 + 108
*a*b^2*d^3*e*f*x^2 + 72*a^3*d^3*f^2*x^3 + 36*a*b^2*d^3*f^2*x^3 + 432*a^2*Sq
```

```
rt[a^2 + b^2]*d^2*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 216*a^
2*b*d^2*e^2*Cosh[c + d*x] - 54*b^3*d^2*e^2*Cosh[c + d*x] - 432*a^2*b*f^2*Co
sh[c + d*x] - 108*b^3*f^2*Cosh[c + d*x] - 432*a^2*b*d^2*e*f*x*Cosh[c + d*x]
 - 108*b^3*d^2*e*f*x*Cosh[c + d*x] - 216*a^2*b*d^2*f^2*x^2*Cosh[c + d*x] -
54*b^3*d^2*f^2*x^2*Cosh[c + d*x] - 54*a*b^2*d*e*f*Cosh[2*(c + d*x)] - 54*a*
b^2*d*f^2*x*Cosh[2*(c + d*x)] - 18*b^3*d^2*e^2*Cosh[3*(c + d*x)] - 4*b^3*f^
2*Cosh[3*(c + d*x)] - 36*b^3*d^2*e*f*x*Cosh[3*(c + d*x)] - 18*b^3*d^2*f^2*x
^2*Cosh[3*(c + d*x)] - 432*a^2*Sqrt[a^2 + b^2]*d^2*e*f*x*Log[1 + (b*E^(c +
d*x))/(a - Sqrt[a^2 + b^2])] - 216*a^2*Sqrt[a^2 + b^2]*d^2*f^2*x^2*Log[1 +
(b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 432*a^2*Sqrt[a^2 + b^2]*d^2*e*f*x*
Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 216*a^2*Sqrt[a^2 + b^2]*d^
2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 432*a^2*Sqrt[a^2
 + b^2]*d*f*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] +
432*a^2*Sqrt[a^2 + b^2]*d*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqr
t[a^2 + b^2]))] + 432*a^2*Sqrt[a^2 + b^2]*f^2*PolyLog[3, (b*E^(c + d*x))/(-
a + Sqrt[a^2 + b^2])] - 432*a^2*Sqrt[a^2 + b^2]*f^2*PolyLog[3, -((b*E^(c +
d*x))/(a + Sqrt[a^2 + b^2]))] + 432*a^2*b*d*e*f*Sinh[c + d*x] + 108*b^3*d*e
*f*Sinh[c + d*x] + 432*a^2*b*d*f^2*x*Sinh[c + d*x] + 108*b^3*d*f^2*x*Sinh[c
 + d*x] + 54*a*b^2*d^2*e^2*Sinh[2*(c + d*x)] + 27*a*b^2*f^2*Sinh[2*(c + d*x
)] + 108*a*b^2*d^2*e*f*x*Sinh[2*(c + d*x)] + 54*a*b^2*d^2*f^2*x^2*Sinh[2*(c
 + d*x)] + 12*b^3*d*e*f*Sinh[3*(c + d*x)] + 12*b^3*d*f^2*x*Sinh[3*(c + d*x)
])/(b^4*d^3)
```

fricas [C] time = 0.57, size = 4311, normalized size = 6.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="fricas")
```

```
[Out] 1/432*(18*b^3*d^2*f^2*x^2 + 18*b^3*d^2*e^2 + 2*(9*b^3*d^2*f^2*x^2 + 9*b^3*d
^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*
x + c)^6 + 2*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 +
 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*sinh(d*x + c)^6 + 12*b^3*d*e*f - 27*(2*a*
b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 - 2*a*b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2*
d^2*e*f - a*b^2*d*f^2)*x)*cosh(d*x + c)^5 - 3*(18*a*b^2*d^2*f^2*x^2 + 18*a*
b^2*d^2*e^2 - 18*a*b^2*d*e*f + 9*a*b^2*f^2 + 18*(2*a*b^2*d^2*e*f - a*b^2*d*
f^2)*x - 4*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6
*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^5 + 4*b^3*f^2
+ 54*((4*a^2*b + b^3)*d^2*f^2*x^2 + (4*a^2*b + b^3)*d^2*e^2 - 2*(4*a^2*b +
b^3)*d*e*f + 2*(4*a^2*b + b^3)*f^2 + 2*((4*a^2*b + b^3)*d^2*e*f - (4*a^2*b
+ b^3)*d*f^2)*x)*cosh(d*x + c)^4 + 3*(18*(4*a^2*b + b^3)*d^2*f^2*x^2 + 18*(
4*a^2*b + b^3)*d^2*e^2 - 36*(4*a^2*b + b^3)*d*e*f + 36*(4*a^2*b + b^3)*f^2
+ 10*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b^
```

```
3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x + c)^2 + 36*((4*a^2*b + b^3)*d^2*e*f - (
4*a^2*b + b^3)*d*f^2)*x - 45*(2*a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 - 2*a*b
^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f - a*b^2*d*f^2)*x)*cosh(d*x + c))*
sinh(d*x + c)^4 - 72*((2*a^3 + a*b^2)*d^3*f^2*x^3 + 3*(2*a^3 + a*b^2)*d^3*e
*f*x^2 + 3*(2*a^3 + a*b^2)*d^3*e^2*x)*cosh(d*x + c)^3 - 2*(36*(2*a^3 + a*b^
2)*d^3*f^2*x^3 + 108*(2*a^3 + a*b^2)*d^3*e*f*x^2 + 108*(2*a^3 + a*b^2)*d^3*
e^2*x - 20*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6
*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x + c)^3 + 135*(2*a*b^2*d^2*f^2*x^2
+ 2*a*b^2*d^2*e^2 - 2*a*b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f - a*b^2*
d*f^2)*x)*cosh(d*x + c)^2 - 108*((4*a^2*b + b^3)*d^2*f^2*x^2 + (4*a^2*b + b
^3)*d^2*e^2 - 2*(4*a^2*b + b^3)*d*e*f + 2*(4*a^2*b + b^3)*f^2 + 2*((4*a^2*b
 + b^3)*d^2*e*f - (4*a^2*b + b^3)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^3
+ 54*((4*a^2*b + b^3)*d^2*f^2*x^2 + (4*a^2*b + b^3)*d^2*e^2 + 2*(4*a^2*b +
b^3)*d*e*f + 2*(4*a^2*b + b^3)*f^2 + 2*((4*a^2*b + b^3)*d^2*e*f + (4*a^2*b
+ b^3)*d*f^2)*x)*cosh(d*x + c)^2 + 6*(9*(4*a^2*b + b^3)*d^2*f^2*x^2 + 9*(4*
a^2*b + b^3)*d^2*e^2 + 5*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f +
 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x + c)^4 + 18*(4*a^2*b
 + b^3)*d*e*f - 45*(2*a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 - 2*a*b^2*d*e*f +
 a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f - a*b^2*d*f^2)*x)*cosh(d*x + c)^3 + 18*(4*a
^2*b + b^3)*f^2 + 54*((4*a^2*b + b^3)*d^2*f^2*x^2 + (4*a^2*b + b^3)*d^2*e^2
 - 2*(4*a^2*b + b^3)*d*e*f + 2*(4*a^2*b + b^3)*f^2 + 2*((4*a^2*b + b^3)*d^2
*e*f - (4*a^2*b + b^3)*d*f^2)*x)*cosh(d*x + c)^2 + 18*((4*a^2*b + b^3)*d^2*
e*f + (4*a^2*b + b^3)*d*f^2)*x - 36*((2*a^3 + a*b^2)*d^3*f^2*x^3 + 3*(2*a^3
 + a*b^2)*d^3*e*f*x^2 + 3*(2*a^3 + a*b^2)*d^3*e^2*x)*cosh(d*x + c))*sinh(d*
x + c)^2 + 864*((a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^3 + 3*(a^2*b*d*
f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^2*b*d*f^2*x + a^2
*b*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d*f^2*x + a^2*b*d*e*f)*sin
h(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c
) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) -
 864*((a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^3 + 3*(a^2*b*d*f^2*x + a^
2*b*d*e*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^2*b*d*f^2*x + a^2*b*d*e*f)*
cosh(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d*f^2*x + a^2*b*d*e*f)*sinh(d*x + c)
^3)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cos
h(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 432*((a^2
*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^3 + 3*(a^2*b*d^
2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*
(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x +
c)^2 + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sinh(d*x + c)^3)*s
qrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((
a^2 + b^2)/b^2) + 2*a) + 432*((a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*
f^2)*cosh(d*x + c)^3 + 3*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*
cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*
c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f +
 a^2*b*c^2*f^2)*sinh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c
) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 432*((a^2*b*d^2*
```

```
f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c
)^3 + 3*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^
2*f^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e
*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^
2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*sinh
(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c)
+ (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 432*(
(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*c
osh(d*x + c)^3 + 3*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f
 - a^2*b*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^2*b*d^2*f^2*x^2 + 2*
a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x +
 c)^2 + (a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^
2*f^2)*sinh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sin
h(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)
/b) - 864*(a^2*b*f^2*cosh(d*x + c)^3 + 3*a^2*b*f^2*cosh(d*x + c)^2*sinh(d*x
 + c) + 3*a^2*b*f^2*cosh(d*x + c)*sinh(d*x + c)^2 + a^2*b*f^2*sinh(d*x + c)
^3)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (
b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 864*(a^2*b*f
^2*cosh(d*x + c)^3 + 3*a^2*b*f^2*cosh(d*x + c)^2*sinh(d*x + c) + 3*a^2*b*f^
2*cosh(d*x + c)*sinh(d*x + c)^2 + a^2*b*f^2*sinh(d*x + c)^3)*sqrt((a^2 + b^
2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) +
b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 12*(3*b^3*d^2*e*f + b^3*d*f^2)
*x + 27*(2*a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 + 2*a*b^2*d*e*f + a*b^2*f^2
+ 2*(2*a*b^2*d^2*e*f + a*b^2*d*f^2)*x)*cosh(d*x + c) + 3*(18*a*b^2*d^2*f^2*
x^2 + 18*a*b^2*d^2*e^2 + 18*a*b^2*d*e*f + 4*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*
e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x +
 c)^5 + 9*a*b^2*f^2 - 45*(2*a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 - 2*a*b^2*d
*e*f + a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f - a*b^2*d*f^2)*x)*cosh(d*x + c)^4 + 7
2*((4*a^2*b + b^3)*d^2*f^2*x^2 + (4*a^2*b + b^3)*d^2*e^2 - 2*(4*a^2*b + b^3
)*d*e*f + 2*(4*a^2*b + b^3)*f^2 + 2*((4*a^2*b + b^3)*d^2*e*f - (4*a^2*b + b
^3)*d*f^2)*x)*cosh(d*x + c)^3 - 72*((2*a^3 + a*b^2)*d^3*f^2*x^3 + 3*(2*a^3
+ a*b^2)*d^3*e*f*x^2 + 3*(2*a^3 + a*b^2)*d^3*e^2*x)*cosh(d*x + c)^2 + 18*(2
*a*b^2*d^2*e*f + a*b^2*d*f^2)*x + 36*((4*a^2*b + b^3)*d^2*f^2*x^2 + (4*a^2*
b + b^3)*d^2*e^2 + 2*(4*a^2*b + b^3)*d*e*f + 2*(4*a^2*b + b^3)*f^2 + 2*((4*
a^2*b + b^3)*d^2*e*f + (4*a^2*b + b^3)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x +
c))/(b^4*d^3*cosh(d*x + c)^3 + 3*b^4*d^3*cosh(d*x + c)^2*sinh(d*x + c) + 3*
b^4*d^3*cosh(d*x + c)*sinh(d*x + c)^2 + b^4*d^3*sinh(d*x + c)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \cosh(dx+c)^2 \sinh(dx+c)^2}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)^2*sinh(d*x + c)^2/(b*sinh(d*x + c) + a)
, x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 (\cosh^2(dx+c)) (\sinh^2(dx+c))}{a+b\sinh(dx+c)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="maxima")
```

```
[Out] 1/24*e^2*(24*sqrt(a^2 + b^2)*a^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))
/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(b^4*d) - (3*a*b*e^(-d*x - c) - b^
2 - 3*(4*a^2 + b^2)*e^(-2*d*x - 2*c))*e^(3*d*x + 3*c)/(b^3*d) - 12*(2*a^3 +
 a*b^2)*(d*x + c)/(b^4*d) + (3*a*b*e^(-2*d*x - 2*c) + b^2*e^(-3*d*x - 3*c)
+ 3*(4*a^2 + b^2)*e^(-d*x - c))/(b^3*d)) - 1/432*(72*(2*a^3*d^3*f^2*e^(3*c)
 + a*b^2*d^3*f^2*e^(3*c))*x^3 + 216*(2*a^3*d^3*e*f*e^(3*c) + a*b^2*d^3*e*f*
e^(3*c))*x^2 - 2*(9*b^3*d^2*f^2*x^2*e^(6*c) + 6*(3*d^2*e*f - d*f^2)*b^3*x*e
^(6*c) - 2*(3*d*e*f - f^2)*b^3*e^(6*c))*e^(3*d*x) + 27*(2*a*b^2*d^2*f^2*x^2
*e^(5*c) + 2*(2*d^2*e*f - d*f^2)*a*b^2*x*e^(5*c) - (2*d*e*f - f^2)*a*b^2*e^
(5*c))*e^(2*d*x) + 54*(8*(d*e*f - f^2)*a^2*b*e^(4*c) + 2*(d*e*f - f^2)*b^3*
e^(4*c) - (4*a^2*b*d^2*f^2*e^(4*c) + b^3*d^2*f^2*e^(4*c))*x^2 - 2*(4*(d^2*e
*f - d*f^2)*a^2*b*e^(4*c) + (d^2*e*f - d*f^2)*b^3*e^(4*c))*x)*e^(d*x) - 54*
(8*(d*e*f + f^2)*a^2*b*e^(2*c) + 2*(d*e*f + f^2)*b^3*e^(2*c) + (4*a^2*b*d^2
*f^2*e^(2*c) + b^3*d^2*f^2*e^(2*c))*x^2 + 2*(4*(d^2*e*f + d*f^2)*a^2*b*e^(2
*c) + (d^2*e*f + d*f^2)*b^3*e^(2*c))*x)*e^(-d*x) - 27*(2*a*b^2*d^2*f^2*x^2*
e^c + 2*(2*d^2*e*f + d*f^2)*a*b^2*x*e^c + (2*d*e*f + f^2)*a*b^2*e^c)*e^(-2*
d*x) - 2*(9*b^3*d^2*f^2*x^2 + 6*(3*d^2*e*f + d*f^2)*b^3*x + 2*(3*d*e*f + f^
2)*b^3)*e^(-3*d*x))*e^(-3*c)/(b^4*d^3) + integrate(2*((a^4*f^2*e^c + a^2*b^
2*f^2*e^c)*x^2 + 2*(a^4*e*f*e^c + a^2*b^2*e*f*e^c)*x)*e^(d*x)/(b^5*e^(2*d*x
 + 2*c) + 2*a*b^4*e^(d*x + c) - b^5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+dx)^2 \sinh(c+dx)^2 \left(e+fx\right)^2}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)**2*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.369 $\int \frac{(e+fx)\cosh^2(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=403

$$-\frac{a^3ex}{b^4}-\frac{a^3fx^2}{2b^4}-\frac{a^2f\sinh(c+dx)}{b^3d^2}+\frac{a^2(e+fx)\cosh(c+dx)}{b^3d}+\frac{a^2f\sqrt{a^2+b^2}\,\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{a^2f\sqrt{a^2+b^2}\,\mathrm{Li}_2\left(-\frac{}{a-}\right.}{b^4d^2}$$

```
[Out] -a^3*e*x/b^4-1/2*a*e*x/b^2-1/2*a^3*f*x^2/b^4-1/4*a*f*x^2/b^2+a^2*(f*x+e)*co
sh(d*x+c)/b^3/d+1/4*a*f*cosh(d*x+c)^2/b^2/d^2+1/3*(f*x+e)*cosh(d*x+c)^3/b/d
-a^2*f*sinh(d*x+c)/b^3/d^2-1/3*f*sinh(d*x+c)/b/d^2-1/2*a*(f*x+e)*cosh(d*x+c
)*sinh(d*x+c)/b^2/d-1/9*f*sinh(d*x+c)^3/b/d^2+a^2*(f*x+e)*ln(1+b*exp(d*x+c)
/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^4/d-a^2*(f*x+e)*ln(1+b*exp(d*x+c)/(
a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^4/d+a^2*f*polylog(2,-b*exp(d*x+c)/(a-
(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^4/d^2-a^2*f*polylog(2,-b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^4/d^2
```

Rubi [A] time = 0.69, antiderivative size = 403, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 12, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.353, Rules used = {5579, 5447, 2633, 3310, 5565, 3296, 2637, 3322, 2264, 2190, 2279, 2391}

$$\frac{a^2f\sqrt{a^2+b^2}\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{a^2f\sqrt{a^2+b^2}\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^4d^2}-\frac{a^2f\sinh(c+dx)}{b^3d^2}+\frac{a^2\sqrt{a^2+b^2}\,(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^2*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a^3*e*x)/b^4) - (a*e*x)/(2*b^2) - (a^3*f*x^2)/(2*b^4) - (a*f*x^2)/(4*b^2
) + (a^2*(e + f*x)*Cosh[c + d*x])/(b^3*d) + (a*f*Cosh[c + d*x]^2)/(4*b^2*d^
2) + ((e + f*x)*Cosh[c + d*x]^3)/(3*b*d) + (a^2*Sqrt[a^2 + b^2]*(e + f*x)*L
og[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^4*d) - (a^2*Sqrt[a^2 + b^
2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^4*d) + (a^2
*Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b
^4*d^2) - (a^2*Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2
 + b^2]))])/(b^4*d^2) - (a^2*f*Sinh[c + d*x])/(b^3*d^2) - (f*Sinh[c + d*x])
/(3*b*d^2) - (a*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(2*b^2*d) - (f*Sinh[
c + d*x]^3)/(9*b*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
```

```
]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh^2(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh^2(c+dx)\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\cosh^2(c+dx)\sinh}{a+b\sinh(c+dx)}}{b}$$

$$= \frac{(e+fx)\cosh^3(c+dx)}{3bd} - \frac{a\int (e+fx)\cosh^2(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+}{a}}{}$$

$$= \frac{af\cosh^2(c+dx)}{4b^2d^2} + \frac{(e+fx)\cosh^3(c+dx)}{3bd} - \frac{a(e+fx)\cosh(c+}{2b^2}$$

$$= -\frac{a^3ex}{b^4} - \frac{aex}{2b^2} - \frac{a^3fx^2}{2b^4} - \frac{afx^2}{4b^2} + \frac{a^2(e+fx)\cosh(c+dx)}{b^3d} + \frac{af\,\mathrm{co}}{}$$

$$= -\frac{a^3ex}{b^4} - \frac{aex}{2b^2} - \frac{a^3fx^2}{2b^4} - \frac{afx^2}{4b^2} + \frac{a^2(e+fx)\cosh(c+dx)}{b^3d} + \frac{af\,\mathrm{co}}{}$$

$$= -\frac{a^3ex}{b^4} - \frac{aex}{2b^2} - \frac{a^3fx^2}{2b^4} - \frac{afx^2}{4b^2} + \frac{a^2(e+fx)\cosh(c+dx)}{b^3d} + \frac{af\,\mathrm{co}}{}$$

$$= -\frac{a^3ex}{b^4} - \frac{aex}{2b^2} - \frac{a^3fx^2}{2b^4} - \frac{afx^2}{4b^2} + \frac{a^2(e+fx)\cosh(c+dx)}{b^3d} + \frac{af\,\mathrm{co}}{}$$

$$= -\frac{a^3ex}{b^4} - \frac{aex}{2b^2} - \frac{a^3fx^2}{2b^4} - \frac{afx^2}{4b^2} + \frac{a^2(e+fx)\cosh(c+dx)}{b^3d} + \frac{af\,\mathrm{co}}{}$$

Mathematica [A] time = 2.78, size = 676, normalized size = 1.68

$$-\frac{-36a^3c^2f + 72a^3cde + 72a^3d^2ex + 36a^3d^2fx^2 + 144a^2de\sqrt{a^2+b^2}\tanh^{-1}\left(\frac{a+b\sinh(c+dx)+b\cosh(c+dx)}{\sqrt{a^2+b^2}}\right) - 72a^2f\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]^2*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/72*(72*a^3*c*d*e + 36*a*b^2*c*d*e - 36*a^3*c^2*f - 18*a*b^2*c^2*f + 72*a
^3*d^2*e*x + 36*a*b^2*d^2*e*x + 36*a^3*d^2*f*x^2 + 18*a*b^2*d^2*f*x^2 + 144
*a^2*Sqrt[a^2 + b^2]*d*e*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sq
rt[a^2 + b^2]] - 144*a^2*Sqrt[a^2 + b^2]*c*f*ArcTanh[(a + b*Cosh[c + d*x] +
 b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] - 72*a^2*b*d*e*Cosh[c + d*x] - 18*b^3*d*
e*Cosh[c + d*x] - 72*a^2*b*d*f*x*Cosh[c + d*x] - 18*b^3*d*f*x*Cosh[c + d*x]
```

```
 - 9*a*b^2*f*Cosh[2*(c + d*x)] - 6*b^3*d*e*Cosh[3*(c + d*x)] - 6*b^3*d*f*x*
Cosh[3*(c + d*x)] - 72*a^2*Sqrt[a^2 + b^2]*c*f*Log[1 + (b*(Cosh[c + d*x] +
Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - 72*a^2*Sqrt[a^2 + b^2]*d*f*x*Log[1
 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] + 72*a^2*Sqrt
[a^2 + b^2]*c*f*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 +
 b^2])] + 72*a^2*Sqrt[a^2 + b^2]*d*f*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c +
 d*x]))/(a + Sqrt[a^2 + b^2])] - 72*a^2*Sqrt[a^2 + b^2]*f*PolyLog[2, (b*(Co
sh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] + 72*a^2*Sqrt[a^2 + b
^2]*f*PolyLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]
))] + 72*a^2*b*f*Sinh[c + d*x] + 18*b^3*f*Sinh[c + d*x] + 18*a*b^2*d*e*Sinh
[2*(c + d*x)] + 18*a*b^2*d*f*x*Sinh[2*(c + d*x)] + 2*b^3*f*Sinh[3*(c + d*x)
])/(b^4*d^2)
```

fricas [B] time = 0.54, size = 2195, normalized size = 5.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/144*(2*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^6 + 2*(3*b^3*d*f*x
 + 3*b^3*d*e - b^3*f)*sinh(d*x + c)^6 + 6*b^3*d*f*x - 9*(2*a*b^2*d*f*x + 2*
a*b^2*d*e - a*b^2*f)*cosh(d*x + c)^5 - 3*(6*a*b^2*d*f*x + 6*a*b^2*d*e - 3*a
*b^2*f - 4*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c))*sinh(d*x + c)^5
 + 6*b^3*d*e + 18*((4*a^2*b + b^3)*d*f*x + (4*a^2*b + b^3)*d*e - (4*a^2*b +
 b^3)*f)*cosh(d*x + c)^4 + 3*(6*(4*a^2*b + b^3)*d*f*x + 6*(4*a^2*b + b^3)*d
*e + 10*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^2 - 6*(4*a^2*b + b^
3)*f - 15*(2*a*b^2*d*f*x + 2*a*b^2*d*e - a*b^2*f)*cosh(d*x + c))*sinh(d*x +
 c)^4 + 2*b^3*f - 36*((2*a^3 + a*b^2)*d^2*f*x^2 + 2*(2*a^3 + a*b^2)*d^2*e*x
)*cosh(d*x + c)^3 - 2*(18*(2*a^3 + a*b^2)*d^2*f*x^2 + 36*(2*a^3 + a*b^2)*d^
2*e*x - 20*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^3 + 45*(2*a*b^2*
d*f*x + 2*a*b^2*d*e - a*b^2*f)*cosh(d*x + c)^2 - 36*((4*a^2*b + b^3)*d*f*x
+ (4*a^2*b + b^3)*d*e - (4*a^2*b + b^3)*f)*cosh(d*x + c))*sinh(d*x + c)^3 +
 18*((4*a^2*b + b^3)*d*f*x + (4*a^2*b + b^3)*d*e + (4*a^2*b + b^3)*f)*cosh(
d*x + c)^2 + 6*(5*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^4 + 3*(4*
a^2*b + b^3)*d*f*x - 15*(2*a*b^2*d*f*x + 2*a*b^2*d*e - a*b^2*f)*cosh(d*x +
c)^3 + 3*(4*a^2*b + b^3)*d*e + 18*((4*a^2*b + b^3)*d*f*x + (4*a^2*b + b^3)*
d*e - (4*a^2*b + b^3)*f)*cosh(d*x + c)^2 + 3*(4*a^2*b + b^3)*f - 18*((2*a^3
 + a*b^2)*d^2*f*x^2 + 2*(2*a^3 + a*b^2)*d^2*e*x)*cosh(d*x + c))*sinh(d*x +
c)^2 + 144*(a^2*b*f*cosh(d*x + c)^3 + 3*a^2*b*f*cosh(d*x + c)^2*sinh(d*x +
c) + 3*a^2*b*f*cosh(d*x + c)*sinh(d*x + c)^2 + a^2*b*f*sinh(d*x + c)^3)*sqr
t((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 144*(a^2*b*f*cos
h(d*x + c)^3 + 3*a^2*b*f*cosh(d*x + c)^2*sinh(d*x + c) + 3*a^2*b*f*cosh(d*x
```

```
 + c)*sinh(d*x + c)^2 + a^2*b*f*sinh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*dilo
g((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*
sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 144*((a^2*b*d*e - a^2*b*c*f)*cosh(d*x +
 c)^3 + 3*(a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^2*b*
d*e - a^2*b*c*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d*e - a^2*b*c*f)*si
nh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x +
 c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 144*((a^2*b*d*e - a^2*b*c*f)*cosh(
d*x + c)^3 + 3*(a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a
^2*b*d*e - a^2*b*c*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d*e - a^2*b*c*
f)*sinh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(
d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 144*((a^2*b*d*f*x + a^2*b*c*f
)*cosh(d*x + c)^3 + 3*(a^2*b*d*f*x + a^2*b*c*f)*cosh(d*x + c)^2*sinh(d*x +
c) + 3*(a^2*b*d*f*x + a^2*b*c*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d*f
*x + a^2*b*c*f)*sinh(d*x + c)^3)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c
) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2) - b)/b) - 144*((a^2*b*d*f*x + a^2*b*c*f)*cosh(d*x + c)^3 + 3*(a^2*b*d*
f*x + a^2*b*c*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^2*b*d*f*x + a^2*b*c*f
)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^2*b*d*f*x + a^2*b*c*f)*sinh(d*x + c)^3
)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d
*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 9*(2*a*b^2*d*f*x
 + 2*a*b^2*d*e + a*b^2*f)*cosh(d*x + c) + 3*(6*a*b^2*d*f*x + 4*(3*b^3*d*f*x
 + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^5 + 6*a*b^2*d*e - 15*(2*a*b^2*d*f*x + 2
*a*b^2*d*e - a*b^2*f)*cosh(d*x + c)^4 + 3*a*b^2*f + 24*((4*a^2*b + b^3)*d*f
*x + (4*a^2*b + b^3)*d*e - (4*a^2*b + b^3)*f)*cosh(d*x + c)^3 - 36*((2*a^3
+ a*b^2)*d^2*f*x^2 + 2*(2*a^3 + a*b^2)*d^2*e*x)*cosh(d*x + c)^2 + 12*((4*a^
2*b + b^3)*d*f*x + (4*a^2*b + b^3)*d*e + (4*a^2*b + b^3)*f)*cosh(d*x + c))*
sinh(d*x + c))/(b^4*d^2*cosh(d*x + c)^3 + 3*b^4*d^2*cosh(d*x + c)^2*sinh(d*
x + c) + 3*b^4*d^2*cosh(d*x + c)*sinh(d*x + c)^2 + b^4*d^2*sinh(d*x + c)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cosh(dx+c)^2\sinh(dx+c)^2}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)^2*sinh(d*x + c)^2/(b*sinh(d*x + c) + a),
x)
```

maple [B] time = 0.17, size = 1128, normalized size = 2.80

$$-\frac{a^{3}ex}{b^{4}}+\frac{a^{2}f\ln\left(\frac{-b\,e^{dx+c}+\sqrt{a^{2}+b^{2}}-a}{-a+\sqrt{a^{2}+b^{2}}}\right)x}{d\,b^{2}\sqrt{a^{2}+b^{2}}}+\frac{a^{2}f\ln\left(\frac{-b\,e^{dx+c}+\sqrt{a^{2}+b^{2}}-a}{-a+\sqrt{a^{2}+b^{2}}}\right)c}{d^{2}b^{2}\sqrt{a^{2}+b^{2}}}-\frac{a^{2}f\ln\left(\frac{b\,e^{dx+c}+\sqrt{a^{2}+b^{2}}+a}{a+\sqrt{a^{2}+b^{2}}}\right)x}{d\,b^{2}\sqrt{a^{2}+b^{2}}}-\frac{a^{2}f\ln\left(\frac{b\,e^{dx+c}+\sqrt{a^{2}+b^{2}}}{a+\sqrt{a^{2}+b^{2}}}\right.}{d^{2}b^{2}\sqrt{a^{2}+b^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -a^3*e*x/b^4+1/d*a^2/b^2*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2
)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d^2*a^2/b^2*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x
+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a^2/b^2*f/(a^2+b^2)^(1/2
)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*a^2/b^2*
f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*
c+2/d^2*a^2/b^2*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b
^2)^(1/2))+1/d*a^4/b^4*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-
a)/(-a+(a^2+b^2)^(1/2)))*x+1/d^2*a^4/b^4*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c
)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a^4/b^4*f/(a^2+b^2)^(1/2)*
ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*a^4/b^4*f/
(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+
2/d^2*a^4/b^4*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2
)^(1/2))-2/d*a^2/b^2*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^
2+b^2)^(1/2))+1/d^2*a^2/b^2*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2
)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2*a^2/b^2*f/(a^2+b^2)^(1/2)*dilog((b*e
xp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/2*a*e*x/b^2+1/d^2*a^4/b
^4*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^
(1/2)))-1/d^2*a^4/b^4*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)
+a)/(a+(a^2+b^2)^(1/2)))-2/d*a^4/b^4*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp
(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/4*a*f*x^2/b^2+1/72*(3*d*f*x+3*d*e-f)/b/d^2*
exp(3*d*x+3*c)+1/72*(3*d*f*x+3*d*e+f)/b/d^2*exp(-3*d*x-3*c)+1/8*(4*a^2*d*f*
x+b^2*d*f*x+4*a^2*d*e+b^2*d*e-4*a^2*f-b^2*f)/b^3/d^2*exp(d*x+c)-1/2*a^3*f*x
^2/b^4+1/8*(4*a^2+b^2)*(d*f*x+d*e+f)/b^3/d^2*exp(-d*x-c)-1/16*a*(2*d*f*x+2*
d*e-f)/b^2/d^2*exp(2*d*x+2*c)+1/16*a*(2*d*f*x+2*d*e+f)/b^2/d^2*exp(-2*d*x-2
*c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{144}\left(288\left(a^{4}e^{c}+a^{2}b^{2}e^{c}\right)\int\frac{xe^{(dx)}}{b^{5}e^{(2\,dx+2\,c)}+2\,ab^{4}e^{(dx+c)}-b^{5}}\,dx-\frac{\left(36\left(2\,a^{3}d^{2}e^{(3\,c)}+ab^{2}d^{2}e^{(3\,c)}\right)x^{2}-2\left(3\,b^{3}dxe^{(6\,c)}-\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] 1/144*(288*(a^4*e^c + a^2*b^2*e^c)*integrate(x*e^(d*x)/(b^5*e^(2*d*x + 2*c)
 + 2*a*b^4*e^(d*x + c) - b^5), x) - (36*(2*a^3*d^2*e^(3*c) + a*b^2*d^2*e^(3
*c))*x^2 - 2*(3*b^3*d*x*e^(6*c) - b^3*e^(6*c))*e^(3*d*x) + 9*(2*a*b^2*d*x*e
^(5*c) - a*b^2*e^(5*c))*e^(2*d*x) + 18*(4*a^2*b*e^(4*c) + b^3*e^(4*c) - (4*
a^2*b*d*e^(4*c) + b^3*d*e^(4*c))*x)*e^(d*x) - 18*(4*a^2*b*e^(2*c) + b^3*e^(
2*c) + (4*a^2*b*d*e^(2*c) + b^3*d*e^(2*c))*x)*e^(-d*x) - 9*(2*a*b^2*d*x*e^c
 + a*b^2*e^c)*e^(-2*d*x) - 2*(3*b^3*d*x + b^3)*e^(-3*d*x))*e^(-3*c)/(b^4*d^
2))*f + 1/24*e*(24*sqrt(a^2 + b^2)*a^2*log((b*e^(-d*x - c) - a - sqrt(a^2 +
 b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(b^4*d) - (3*a*b*e^(-d*x - c
) - b^2 - 3*(4*a^2 + b^2)*e^(-2*d*x - 2*c))*e^(3*d*x + 3*c)/(b^3*d) - 12*(2
*a^3 + a*b^2)*(d*x + c)/(b^4*d) + (3*a*b*e^(-2*d*x - 2*c) + b^2*e^(-3*d*x -
 3*c) + 3*(4*a^2 + b^2)*e^(-d*x - c))/(b^3*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)^2\,\sinh(c+d\,x)^2\,\left(e+f\,x\right)}{a+b\,\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**2*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.370 $\int \frac{\cosh^2(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=141

$$-\frac{2a^2\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^4d}-\frac{ax\left(2a^2+b^2\right)}{2b^4}+\frac{\left(3a^2+b^2\right)\cosh(c+dx)}{3b^3d}-\frac{a\sinh(c+dx)\cosh(c+dx)}{2b^2d}+$$

```
[Out] -1/2*a*(2*a^2+b^2)*x/b^4+1/3*(3*a^2+b^2)*cosh(d*x+c)/b^3/d-1/2*a*cosh(d*x+c
)*sinh(d*x+c)/b^2/d+1/3*cosh(d*x+c)*sinh(d*x+c)^2/b/d-2*a^2*arctanh((b-a*ta
nh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))*(a^2+b^2)^(1/2)/b^4/d
```

Rubi [A] time = 0.50, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2889, 3050, 3049, 3023, 2735, 2660, 618, 204}

$$\frac{\left(3a^2+b^2\right)\cosh(c+dx)}{3b^3d}-\frac{2a^2\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^4d}-\frac{ax\left(2a^2+b^2\right)}{2b^4}-\frac{a\sinh(c+dx)\cosh(c+dx)}{2b^2d}+$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]^2*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a*(2*a^2 + b^2)*x)/(2*b^4) - (2*a^2*Sqrt[a^2 + b^2]*ArcTanh[(b - a*Tanh[(
c + d*x)/2])/Sqrt[a^2 + b^2]])/(b^4*d) + ((3*a^2 + b^2)*Cosh[c + d*x])/(3*b
^3*d) - (a*Cosh[c + d*x]*Sinh[c + d*x])/(2*b^2*d) + (Cosh[c + d*x]*Sinh[c +
 d*x]^2)/(3*b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
```

```
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2889

```
Int[cos[(e_.) + (f_.)*(x_)]^2*((d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)*((a_) +
(b_.)*sin[(e_.) + (f_.)*(x_)])^(m_), x_Symbol] :> Int[(d*Sin[e + f*x])^n*(a
 + b*Sin[e + f*x])^m*(1 - Sin[e + f*x]^2), x] /; FreeQ[{a, b, d, e, f, m, n
}, x] && NeQ[a^2 - b^2, 0] && (IGtQ[m, 0] || IntegersQ[2*m, 2*n])
```

Rule 3023

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*sin[(e_.)
+ (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[(C*Cos
[e + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b*f*(m + 2)), x] + Dist[1/(b*(m +
2)), Int[(a + b*Sin[e + f*x])^m*Simp[A*b*(m + 2) + b*C*(m + 1) + (b*B*(m +
2) - a*C)*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
  !LtQ[m, -1]
```

Rule 3049

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*sin[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_
.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[(C*Cos[e + f*x]*(a + b*Sin[e + f*x]
)^m*(c + d*Sin[e + f*x])^(n + 1))/(d*f*(m + n + 2)), x] + Dist[1/(d*(m + n
+ 2)), Int[(a + b*Sin[e + f*x])^(m - 1)*(c + d*Sin[e + f*x])^n*Simp[a*A*d*(
m + n + 2) + C*(b*c*m + a*d*(n + 1)) + (d*(A*b + a*B)*(m + n + 2) - C*(a*c
- b*d*(m + n + 1)))*Sin[e + f*x] + (C*(a*d*m - b*c*(m + 1)) + b*B*d*(m + n
+ 2))*Sin[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x
] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && GtQ[m,
0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[a, 0] && NeQ[c, 0])))
```

Rule 3050

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*sin[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :
> -Simp[(C*Cos[e + f*x]*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f*x])^(n + 1)
)/(d*f*(m + n + 2)), x] + Dist[1/(d*(m + n + 2)), Int[(a + b*Sin[e + f*x])^
(m - 1)*(c + d*Sin[e + f*x])^n*Simp[a*A*d*(m + n + 2) + C*(b*c*m + a*d*(n +
```

```
 1)) + (A*b*d*(m + n + 2) - C*(a*c - b*d*(m + n + 1)))*Sin[e + f*x] + C*(a*
d*m - b*c*(m + 1))*Sin[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A
, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
&& GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[a, 0] && NeQ[c, 0])
))
```

Rubi steps

$$\int \frac{\cosh^2(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \int \frac{\sinh^2(c+dx)\left(1+\sinh^2(c+dx)\right)}{a+b\sinh(c+dx)}\,dx$$

$$= \frac{\cosh(c+dx)\sinh^2(c+dx)}{3bd} + \frac{\int \frac{\sinh(c+dx)\left(-2a+b\sinh(c+dx)-3a\sinh^2(c+dx)\right)}{a+b\sinh(c+dx)}\,dx}{3b}$$

$$= -\frac{a\cosh(c+dx)\sinh(c+dx)}{2b^2d} + \frac{\cosh(c+dx)\sinh^2(c+dx)}{3bd} + \frac{\int \frac{3a^2-ab\sinh(}{}}{}$$

$$= \frac{\left(3a^2+b^2\right)\cosh(c+dx)}{3b^3d} - \frac{a\cosh(c+dx)\sinh(c+dx)}{2b^2d} + \frac{\cosh(c+dx)\sinh}{3bd}$$

$$= -\frac{a\left(2a^2+b^2\right)x}{2b^4} + \frac{\left(3a^2+b^2\right)\cosh(c+dx)}{3b^3d} - \frac{a\cosh(c+dx)\sinh(c+dx)}{2b^2d} +$$

$$= -\frac{a\left(2a^2+b^2\right)x}{2b^4} + \frac{\left(3a^2+b^2\right)\cosh(c+dx)}{3b^3d} - \frac{a\cosh(c+dx)\sinh(c+dx)}{2b^2d} +$$

$$= -\frac{a\left(2a^2+b^2\right)x}{2b^4} + \frac{\left(3a^2+b^2\right)\cosh(c+dx)}{3b^3d} - \frac{a\cosh(c+dx)\sinh(c+dx)}{2b^2d} +$$

$$= -\frac{a\left(2a^2+b^2\right)x}{2b^4} - \frac{2a^2\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^4d} + \frac{\left(3a^2+b^2\right)\cosh}{3b^3d}$$

Mathematica [A] time = 0.35, size = 123, normalized size = 0.87

$$\frac{3b\left(4a^2+b^2\right)\cosh(c+dx) - 3a\left(2\left(2a^2+b^2\right)(c+dx) + 8a\sqrt{-a^2-b^2}\,\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right) + b^2\sinh(2(c+dx}{12b^4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]^2*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (3*b*(4*a^2 + b^2)*Cosh[c + d*x] + b^3*Cosh[3*(c + d*x)] - 3*a*(2*(2*a^2 +
b^2)*(c + d*x) + 8*a*Sqrt[-a^2 - b^2]*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt
[-a^2 - b^2]] + b^2*Sinh[2*(c + d*x)]))/(12*b^4*d)
```

fricas [B] time = 0.54, size = 745, normalized size = 5.28

$$\frac{b^3\cosh(dx+c)^6 + b^3\sinh(dx+c)^6 - 3\,ab^2\cosh(dx+c)^5 - 12\left(2\,a^3+ab^2\right)dx\cosh(dx+c)^3 + 3\left(2\,b^3\cosh(d\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="frica
s")
```

```
[Out] 1/24*(b^3*cosh(d*x + c)^6 + b^3*sinh(d*x + c)^6 - 3*a*b^2*cosh(d*x + c)^5 -
 12*(2*a^3 + a*b^2)*d*x*cosh(d*x + c)^3 + 3*(2*b^3*cosh(d*x + c) - a*b^2)*s
inh(d*x + c)^5 + 3*(4*a^2*b + b^3)*cosh(d*x + c)^4 + 3*(5*b^3*cosh(d*x + c)
^2 - 5*a*b^2*cosh(d*x + c) + 4*a^2*b + b^3)*sinh(d*x + c)^4 + 3*a*b^2*cosh(
d*x + c) + 2*(10*b^3*cosh(d*x + c)^3 - 15*a*b^2*cosh(d*x + c)^2 - 6*(2*a^3
+ a*b^2)*d*x + 6*(4*a^2*b + b^3)*cosh(d*x + c))*sinh(d*x + c)^3 + b^3 + 3*(
4*a^2*b + b^3)*cosh(d*x + c)^2 + 3*(5*b^3*cosh(d*x + c)^4 - 10*a*b^2*cosh(d
*x + c)^3 - 12*(2*a^3 + a*b^2)*d*x*cosh(d*x + c) + 4*a^2*b + b^3 + 6*(4*a^2
*b + b^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 24*(a^2*cosh(d*x + c)^3 + 3*a^
2*cosh(d*x + c)^2*sinh(d*x + c) + 3*a^2*cosh(d*x + c)*sinh(d*x + c)^2 + a^2
*sinh(d*x + c)^3)*sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x +
 c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sin
h(d*x + c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x + c) + a))/(b*
cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c
) + a)*sinh(d*x + c) - b)) + 3*(2*b^3*cosh(d*x + c)^5 - 5*a*b^2*cosh(d*x +
c)^4 - 12*(2*a^3 + a*b^2)*d*x*cosh(d*x + c)^2 + 4*(4*a^2*b + b^3)*cosh(d*x
+ c)^3 + a*b^2 + 2*(4*a^2*b + b^3)*cosh(d*x + c))*sinh(d*x + c))/(b^4*d*cos
h(d*x + c)^3 + 3*b^4*d*cosh(d*x + c)^2*sinh(d*x + c) + 3*b^4*d*cosh(d*x + c
)*sinh(d*x + c)^2 + b^4*d*sinh(d*x + c)^3)
```

giac [A] time = 0.23, size = 211, normalized size = 1.50

$$-\frac{\frac{12\left(2\,a^3+ab^2\right)(dx+c)}{b^4} - \frac{b^2e^{(3\,dx+3\,c)}-3\,abe^{(2\,dx+2\,c)}+12\,a^2e^{(dx+c)}+3\,b^2e^{(dx+c)}}{b^3} - \frac{\left(3\,ab^2e^{(dx+c)}+b^3+3\left(4\,a^2b+b^3\right)e^{(2\,dx+2\,c)}\right)e^{(-3\,dx-3\,c)}}{b^4} - \frac{24\left(a^4+a^2b\cdots\right.}{\cdots}}{24\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac"
)
```

```
[Out] -1/24*(12*(2*a^3 + a*b^2)*(d*x + c)/b^4 - (b^2*e^(3*d*x + 3*c) - 3*a*b*e^(2
*d*x + 2*c) + 12*a^2*e^(d*x + c) + 3*b^2*e^(d*x + c))/b^3 - (3*a*b^2*e^(d*x
 + c) + b^3 + 3*(4*a^2*b + b^3)*e^(2*d*x + 2*c))*e^(-3*d*x - 3*c)/b^4 - 24*
(a^4 + a^2*b^2)*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*
e^(d*x + c) + 2*a + 2*sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^4))/d
```

maple [B] time = 0.07, size = 398, normalized size = 2.82

$$-\frac{1}{3db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^{3}}-\frac{a}{2d\,b^{2}\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^{2}}-\frac{1}{2db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)^{2}}-\frac{a^{2}}{d\,b^{3}\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{\quad}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/3/d/b/(tanh(1/2*d*x+1/2*c)-1)^3-1/2/d/b^2/(tanh(1/2*d*x+1/2*c)-1)^2*a-1/
2/d/b/(tanh(1/2*d*x+1/2*c)-1)^2-1/d/b^3/(tanh(1/2*d*x+1/2*c)-1)*a^2-1/2/d/b
^2/(tanh(1/2*d*x+1/2*c)-1)*a-1/2/d/b/(tanh(1/2*d*x+1/2*c)-1)+1/d*a^3/b^4*ln
(tanh(1/2*d*x+1/2*c)-1)+1/2/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)-1)+1/3/d/b/(tanh
(1/2*d*x+1/2*c)+1)^3-1/2/d/b/(tanh(1/2*d*x+1/2*c)+1)^2+1/2/d/b^2/(tanh(1/2*
d*x+1/2*c)+1)^2*a+1/d/b^3/(tanh(1/2*d*x+1/2*c)+1)*a^2-1/2/d/b^2/(tanh(1/2*d
*x+1/2*c)+1)*a+1/2/d/b/(tanh(1/2*d*x+1/2*c)+1)-1/d*a^3/b^4*ln(tanh(1/2*d*x+
1/2*c)+1)-1/2/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)+1)+2/d*a^2*(a^2+b^2)^(1/2)/b^4
*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))
```

maxima [A] time = 0.47, size = 209, normalized size = 1.48

$$\frac{\sqrt{a^{2}+b^{2}}\,a^{2}\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{b^{4}d}-\frac{\left(3\,abe^{(-dx-c)}-b^{2}-3\left(4\,a^{2}+b^{2}\right)e^{(-2\,dx-2\,c)}\right)e^{(3\,dx+3\,c)}}{24\,b^{3}d}-\frac{\left(2\,a^{3}+ab^{2}\right)(dx+c)}{2\,b^{4}d}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxim
a")
```

```
[Out] sqrt(a^2 + b^2)*a^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x -
 c) - a + sqrt(a^2 + b^2)))/(b^4*d) - 1/24*(3*a*b*e^(-d*x - c) - b^2 - 3*(4
*a^2 + b^2)*e^(-2*d*x - 2*c))*e^(3*d*x + 3*c)/(b^3*d) - 1/2*(2*a^3 + a*b^2)
*(d*x + c)/(b^4*d) + 1/24*(3*a*b*e^(-2*d*x - 2*c) + b^2*e^(-3*d*x - 3*c) +
3*(4*a^2 + b^2)*e^(-d*x - c))/(b^3*d)
```

mupad [B] time = 0.61, size = 278, normalized size = 1.97

$$\frac{e^{-3c-3dx}}{24bd}-\frac{x\left(2a^3+ab^2\right)}{2b^4}+\frac{e^{3c+3dx}}{24bd}+\frac{a\,e^{-2c-2dx}}{8b^2d}-\frac{a\,e^{2c+2dx}}{8b^2d}+\frac{e^{c+dx}\left(4a^2+b^2\right)}{8b^3d}+\frac{e^{-c-dx}\left(4a^2+b^2\right)}{8b^3d}-\frac{a^2\ln\left(-\frac{2a}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] exp(- 3*c - 3*d*x)/(24*b*d) - (x*(a*b^2 + 2*a^3))/(2*b^4) + exp(3*c + 3*d*x
)/(24*b*d) + (a*exp(- 2*c - 2*d*x))/(8*b^2*d) - (a*exp(2*c + 2*d*x))/(8*b^2
*d) + (exp(c + d*x)*(4*a^2 + b^2))/(8*b^3*d) + (exp(- c - d*x)*(4*a^2 + b^2
))/(8*b^3*d) - (a^2*log(- (2*a^2*(a^2 + b^2)^(1/2)*(b - a*exp(c + d*x)))/b^
5 - (2*a^2*exp(c + d*x)*(a^2 + b^2))/b^5)*(a^2 + b^2)^(1/2))/(b^4*d) + (a^2
*log((2*a^2*(a^2 + b^2)^(1/2)*(b - a*exp(c + d*x)))/b^5 - (2*a^2*exp(c + d*
x)*(a^2 + b^2))/b^5)*(a^2 + b^2)^(1/2))/(b^4*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.371 $\int \frac{\cosh^2(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=39

$$\text{Int}\left(\frac{\sinh^2(c+dx)\cosh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)^2*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh^2(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]^2*Sinh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]^2*Sinh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x
])), x]
```

Rubi steps

$$\int \frac{\cosh^2(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\cosh^2(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]^2*Sinh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]
)),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)^2\sinh(dx+c)^2}{afx+ae+(bfx+be)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] integral(cosh(d*x + c)^2*sinh(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(
d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\left(\cosh^2(dx+c)\right)\left(\sinh^2(dx+c)\right)}{\left(fx+e\right)\left(a+b\sinh(dx+c)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)^2*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$2\left(a^4e^c+a^2b^2e^c\right)\int -\frac{e^{(dx)}}{b^5fx+b^5e-\left(b^5fxe^{(2c)}+b^5ee^{(2c)}\right)e^{(2dx)}-2\left(ab^4fxe^c+ab^4ee^c\right)e^{(dx)}}\,dx+\frac{e^{\left(-3c+\frac{3de}{f}\right)}E_1\left(\frac{3(f}{}\right.}{8bf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] 2*(a^4*e^c + a^2*b^2*e^c)*integrate(-e^(d*x)/(b^5*f*x + b^5*e - (b^5*f*x*e^
(2*c) + b^5*e*e^(2*c))*e^(2*d*x) - 2*(a*b^4*f*x*e^c + a*b^4*e*e^c)*e^(d*x))
, x) + 1/8*e^(-3*c + 3*d*e/f)*exp_integral_e(1, 3*(f*x + e)*d/f)/(b*f) + 1/
4*a*e^(-2*c + 2*d*e/f)*exp_integral_e(1, 2*(f*x + e)*d/f)/(b^2*f) + 1/4*a*e
^(2*c - 2*d*e/f)*exp_integral_e(1, -2*(f*x + e)*d/f)/(b^2*f) - 1/8*e^(3*c -
 3*d*e/f)*exp_integral_e(1, -3*(f*x + e)*d/f)/(b*f) + 1/8*(4*a^2 + b^2)*e^(
```

```
-c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b^3*f) - 1/8*(4*a^2*e^c + b^2
*e^c)*e^(-d*e/f)*exp_integral_e(1, -(f*x + e)*d/f)/(b^3*f) - 1/2*(2*a^3 + a
*b^2)*log(f*x + e)/(b^4*f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh(c+dx)^2 \sinh(c+dx)^2}{(e+fx)\,(a+b\sinh(c+dx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)^2)/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)^2)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2*sinh(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.372 $\int \frac{(e+fx)^3 \cosh^3(c+dx) \sinh^2(c+dx)}{a+b\sinh(c+dx)} dx$

Optimal. Leaf size=1123

$$-\frac{a^2\left(a^2+b^2\right)(e+fx)^4}{4b^5f}+\frac{\cosh^4(c+dx)(e+fx)^3}{4bd}+\frac{a^2\sinh^2(c+dx)(e+fx)^3}{2b^3d}+\frac{a^2\left(a^2+b^2\right)\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)(e}{b^5d}$$

```
[Out] a^2*(a^2+b^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^5/d+6*a^2*
(a^2+b^2)*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^5/d^4+6*a^2*(a
^2+b^2)*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^5/d^4+a^2*(a^2+b
^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^5/d-3/16*f*(f*x+e)^2
*cosh(d*x+c)^3*sinh(d*x+c)/b/d^2+3/4*a^2*f^2*(f*x+e)*sinh(d*x+c)^2/b^3/d^3+
3*a^3*f*(f*x+e)^2*cosh(d*x+c)/b^4/d^2+1/3*a*f*(f*x+e)^2*cosh(d*x+c)^3/b^2/d
^2-6*a^3*f^2*(f*x+e)*sinh(d*x+c)/b^4/d^3-3/8*a^2*f^3*cosh(d*x+c)*sinh(d*x+c
)/b^3/d^4-1/3*a*(f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)/b^2/d-3/4*a^2*f*(f*x+e)
^2*cosh(d*x+c)*sinh(d*x+c)/b^3/d^2-2/9*a*f^2*(f*x+e)*cosh(d*x+c)^2*sinh(d*x
+c)/b^2/d^3+1/4*a^2*(f*x+e)^3/b^3/d+1/4*(f*x+e)^3*cosh(d*x+c)^4/b/d-45/256*
f^3*x/b/d^3+3/8*a^2*f^3*x/b^3/d^3-1/4*a^2*(a^2+b^2)*(f*x+e)^4/b^5/f+6*a^3*f
^3*cosh(d*x+c)/b^4/d^4+9/32*f^2*(f*x+e)*cosh(d*x+c)^2/b/d^3+2/27*a*f^3*cosh
(d*x+c)^3/b^2/d^4+3/32*f^2*(f*x+e)*cosh(d*x+c)^4/b/d^3-2/3*a*(f*x+e)^3*sinh
(d*x+c)/b^2/d-3/128*f^3*cosh(d*x+c)^3*sinh(d*x+c)/b/d^4+1/2*a^2*(f*x+e)^3*s
inh(d*x+c)^2/b^3/d+40/9*a*f^3*cosh(d*x+c)/b^2/d^4-45/256*f^3*cosh(d*x+c)*si
nh(d*x+c)/b/d^4+2*a*f*(f*x+e)^2*cosh(d*x+c)/b^2/d^2-40/9*a*f^2*(f*x+e)*sinh
(d*x+c)/b^2/d^3-9/32*f*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/b/d^2-3/32*(f*x+e)
^3/b/d+3*a^2*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/
2)))/b^5/d^2+3*a^2*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^
2)^(1/2)))/b^5/d^2-6*a^2*(a^2+b^2)*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(
a^2+b^2)^(1/2)))/b^5/d^3-6*a^2*(a^2+b^2)*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c
)/(a+(a^2+b^2)^(1/2)))/b^5/d^3-a^3*(f*x+e)^3*sinh(d*x+c)/b^4/d
```

Rubi [A] time = 1.52, antiderivative size = 1123, normalized size of antiderivative = 1.00, number of steps used = 40, number of rules used = 17, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.472, Rules used = {5579, 5447, 3311, 32, 2635, 8, 3296, 2638, 3310, 5565, 5446, 5561, 2190, 2531, 6609, 2282, 6589}

$$-\frac{a^2\left(a^2+b^2\right)(e+fx)^4}{4b^5f}+\frac{\cosh^4(c+dx)(e+fx)^3}{4bd}+\frac{a^2\sinh^2(c+dx)(e+fx)^3}{2b^3d}+\frac{a^2\left(a^2+b^2\right)\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)(e}{b^5d}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]^3*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (3*a^2*f^3*x)/(8*b^3*d^3) - (45*f^3*x)/(256*b*d^3) + (a^2*(e + f*x)^3)/(4*b
^3*d) - (3*(e + f*x)^3)/(32*b*d) - (a^2*(a^2 + b^2)*(e + f*x)^4)/(4*b^5*f)
+ (6*a^3*f^3*Cosh[c + d*x])/(b^4*d^4) + (40*a*f^3*Cosh[c + d*x])/(9*b^2*d^4
) + (3*a^3*f*(e + f*x)^2*Cosh[c + d*x])/(b^4*d^2) + (2*a*f*(e + f*x)^2*Cosh
[c + d*x])/(b^2*d^2) + (9*f^2*(e + f*x)*Cosh[c + d*x]^2)/(32*b*d^3) + (2*a*
f^3*Cosh[c + d*x]^3)/(27*b^2*d^4) + (a*f*(e + f*x)^2*Cosh[c + d*x]^3)/(3*b^
2*d^2) + (3*f^2*(e + f*x)*Cosh[c + d*x]^4)/(32*b*d^3) + ((e + f*x)^3*Cosh[c
 + d*x]^4)/(4*b*d) + (a^2*(a^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2])])/(b^5*d) + (a^2*(a^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^5*d) + (3*a^2*(a^2 + b^2)*f*(e + f*x)
^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^5*d^2) + (3*a^2
*(a^2 + b^2)*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
]))])/(b^5*d^2) - (6*a^2*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d
*x))/(a - Sqrt[a^2 + b^2]))])/(b^5*d^3) - (6*a^2*(a^2 + b^2)*f^2*(e + f*x)*
PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^5*d^3) + (6*a^2*(a
^2 + b^2)*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^5*d^
4) + (6*a^2*(a^2 + b^2)*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2]))])/(b^5*d^4) - (6*a^3*f^2*(e + f*x)*Sinh[c + d*x])/(b^4*d^3) - (40*a*f^
2*(e + f*x)*Sinh[c + d*x])/(9*b^2*d^3) - (a^3*(e + f*x)^3*Sinh[c + d*x])/(b
^4*d) - (2*a*(e + f*x)^3*Sinh[c + d*x])/(3*b^2*d) - (3*a^2*f^3*Cosh[c + d*x
]*Sinh[c + d*x])/(8*b^3*d^4) - (45*f^3*Cosh[c + d*x]*Sinh[c + d*x])/(256*b*
d^4) - (3*a^2*f*(e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x])/(4*b^3*d^2) - (9*f
*(e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x])/(32*b*d^2) - (2*a*f^2*(e + f*x)*C
osh[c + d*x]^2*Sinh[c + d*x])/(9*b^2*d^3) - (a*(e + f*x)^3*Cosh[c + d*x]^2*
Sinh[c + d*x])/(3*b^2*d) - (3*f^3*Cosh[c + d*x]^3*Sinh[c + d*x])/(128*b*d^4
) - (3*f*(e + f*x)^2*Cosh[c + d*x]^3*Sinh[c + d*x])/(16*b*d^2) + (3*a^2*f^2
*(e + f*x)*Sinh[c + d*x]^2)/(4*b^3*d^3) + (a^2*(e + f*x)^3*Sinh[c + d*x]^2)
/(2*b^3*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
```

```
1] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
```

```
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh^3(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\cosh^3(c+dx)\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\cosh^3(c+dx)\mathrm{si}}{a+b\sinh(c+dx}}{b}$$

$$= \frac{(e+fx)^3\cosh^4(c+dx)}{4bd} - \frac{a\int (e+fx)^3\cosh^3(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e}{}}{}$$

$$= \frac{af(e+fx)^2\cosh^3(c+dx)}{3b^2d^2} + \frac{3f^2(e+fx)\cosh^4(c+dx)}{32bd^3} + \frac{(e+fx}{}$$

$$= -\frac{a^2\left(a^2+b^2\right)(e+fx)^4}{4b^5f} + \frac{9f^2(e+fx)\cosh^2(c+dx)}{32bd^3} + \frac{2af^3\cosh}{27b^2}$$

$$= -\frac{3(e+fx)^3}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+fx)^4}{4b^5f} + \frac{3a^3f(e+fx)^2\cosh(c+dx}{b^4d^2}$$

$$= -\frac{45f^3x}{256bd^3} + \frac{a^2(e+fx)^3}{4b^3d} - \frac{3(e+fx)^3}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+fx)^4}{4b^5f} + \frac{4}{}$$

$$= \frac{3a^2f^3x}{8b^3d^3} - \frac{45f^3x}{256bd^3} + \frac{a^2(e+fx)^3}{4b^3d} - \frac{3(e+fx)^3}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+}{4b^5f}$$

$$= \frac{3a^2f^3x}{8b^3d^3} - \frac{45f^3x}{256bd^3} + \frac{a^2(e+fx)^3}{4b^3d} - \frac{3(e+fx)^3}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+}{4b^5f}$$

$$= \frac{3a^2f^3x}{8b^3d^3} - \frac{45f^3x}{256bd^3} + \frac{a^2(e+fx)^3}{4b^3d} - \frac{3(e+fx)^3}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+}{4b^5f}$$

Mathematica [B] time = 40.41, size = 8706, normalized size = 7.75

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^3*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x
]),x]
```

```
[Out] Result too large to show
```

fricas [C] time = 0.99, size = 12603, normalized size = 11.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="fricas")
```

```
[Out] 1/55296*(864*b^4*d^3*f^3*x^3 + 864*b^4*d^3*e^3 + 648*b^4*d^2*e^2*f + 27*(32
*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b
^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b
^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^8 + 27*(32*b^4*d^3*f^3*x^3 + 32*
b^4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3
*e*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f
^3)*x)*sinh(d*x + c)^8 + 324*b^4*d*e*f^2 - 256*(9*a*b^3*d^3*f^3*x^3 + 9*a*b
^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f + 6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3
*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2
+ 2*a*b^3*d*f^3)*x)*cosh(d*x + c)^7 - 8*(288*a*b^3*d^3*f^3*x^3 + 288*a*b^3*
d^3*e^3 - 288*a*b^3*d^2*e^2*f + 192*a*b^3*d*e*f^2 - 64*a*b^3*f^3 + 288*(3*a
*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 96*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e
*f^2 + 2*a*b^3*d*f^3)*x - 27*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*
d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)
*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c))
*sinh(d*x + c)^7 + 81*b^4*f^3 + 864*(4*(2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(2
*a^2*b^2 + b^4)*d^3*e^3 - 6*(2*a^2*b^2 + b^4)*d^2*e^2*f + 6*(2*a^2*b^2 + b^
4)*d*e*f^2 - 3*(2*a^2*b^2 + b^4)*f^3 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e*f^2 - (
2*a^2*b^2 + b^4)*d^2*f^3)*x^2 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e^2*f - 2*(2*a^2
*b^2 + b^4)*d^2*e*f^2 + (2*a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c)^6 + 4*(86
4*(2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 864*(2*a^2*b^2 + b^4)*d^3*e^3 - 1296*(2*a
^2*b^2 + b^4)*d^2*e^2*f + 1296*(2*a^2*b^2 + b^4)*d*e*f^2 - 648*(2*a^2*b^2 +
 b^4)*f^3 + 1296*(2*(2*a^2*b^2 + b^4)*d^3*e*f^2 - (2*a^2*b^2 + b^4)*d^2*f^3
)*x^2 + 189*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^
4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*
d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^2 + 1296*(2*(2*a^
2*b^2 + b^4)*d^3*e^2*f - 2*(2*a^2*b^2 + b^4)*d^2*e*f^2 + (2*a^2*b^2 + b^4)*
d*f^3)*x - 448*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f +
 6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2
+ 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c
))*sinh(d*x + c)^6 - 6912*((4*a^3*b + 3*a*b^3)*d^3*f^3*x^3 + (4*a^3*b + 3*a
*b^3)*d^3*e^3 - 3*(4*a^3*b + 3*a*b^3)*d^2*e^2*f + 6*(4*a^3*b + 3*a*b^3)*d*e
*f^2 - 6*(4*a^3*b + 3*a*b^3)*f^3 + 3*((4*a^3*b + 3*a*b^3)*d^3*e*f^2 - (4*a^
3*b + 3*a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + 3*a*b^3)*d^3*e^2*f - 2*(4*a^3*b
 + 3*a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + 3*a*b^3)*d*f^3)*x)*cosh(d*x + c)^5 - 2
4*(288*(4*a^3*b + 3*a*b^3)*d^3*f^3*x^3 + 288*(4*a^3*b + 3*a*b^3)*d^3*e^3 -
864*(4*a^3*b + 3*a*b^3)*d^2*e^2*f + 1728*(4*a^3*b + 3*a*b^3)*d*e*f^2 - 1728
*(4*a^3*b + 3*a*b^3)*f^3 - 63*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4
*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3
)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)
```

^3 + 864*((4*a^3*b + 3*a*b^3)*d^3*e*f^2 - (4*a^3*b + 3*a*b^3)*d^2*f^3)*x^2 + 224*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f + 6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c)^2 + 864*((4*a^3*b + 3*a*b^3)*d^3*e^2*f - 2*(4*a^3*b + 3*a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + 3*a*b^3)*d*f^3)*x - 216*(4*(2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(2*a^2*b^2 + b^4)*d^3*e^3 - 6*(2*a^2*b^2 + b^4)*d^2*e^2*f + 6*(2*a^2*b^2 + b^4)*d*e*f^2 - 3*(2*a^2*b^2 + b^4)*f^3 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e*f^2 - (2*a^2*b^2 + b^4)*d^2*f^3)*x^2 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e^2*f - 2*(2*a^2*b^2 + b^4)*d^2*e*f^2 + (2*a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^5 - 13824*((a^4 + a^2*b^2)*d^4*f^3*x^4 + 4*(a^4 + a^2*b^2)*d^4*e*f^2*x^3 + 6*(a^4 + a^2*b^2)*d^4*e^2*f*x^2 + 4*(a^4 + a^2*b^2)*d^4*e^3*x + 8*(a^4 + a^2*b^2)*c*d^3*e^3 - 12*(a^4 + a^2*b^2)*c^2*d^2*e^2*f + 8*(a^4 + a^2*b^2)*c^3*d*e*f^2 - 2*(a^4 + a^2*b^2)*c^4*f^3)*cosh(d*x + c)^4 - 2*(6912*(a^4 + a^2*b^2)*d^4*f^3*x^4 + 27648*(a^4 + a^2*b^2)*d^4*e*f^2*x^3 + 41472*(a^4 + a^2*b^2)*d^4*e^2*f*x^2 + 27648*(a^4 + a^2*b^2)*d^4*e^3*x + 55296*(a^4 + a^2*b^2)*c*d^3*e^3 - 82944*(a^4 + a^2*b^2)*c^2*d^2*e^2*f + 55296*(a^4 + a^2*b^2)*c^3*d*e*f^2 - 13824*(a^4 + a^2*b^2)*c^4*f^3 - 945*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^4 + 4480*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f + 6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c)^3 - 6480*(4*(2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(2*a^2*b^2 + b^4)*d^3*e^3 - 6*(2*a^2*b^2 + b^4)*d^2*e^2*f + 6*(2*a^2*b^2 + b^4)*d*e*f^2 - 3*(2*a^2*b^2 + b^4)*f^3 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e*f^2 - (2*a^2*b^2 + b^4)*d^2*f^3)*x^2 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e^2*f - 2*(2*a^2*b^2 + b^4)*d^2*e*f^2 + (2*a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c)^2 + 17280*((4*a^3*b + 3*a*b^3)*d^3*f^3*x^3 + (4*a^3*b + 3*a*b^3)*d^3*e^3 - 3*(4*a^3*b + 3*a*b^3)*d^2*e^2*f + 6*(4*a^3*b + 3*a*b^3)*d*e*f^2 - 6*(4*a^3*b + 3*a*b^3)*f^3 + 3*((4*a^3*b + 3*a*b^3)*d^3*e*f^2 - (4*a^3*b + 3*a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + 3*a*b^3)*d^3*e^2*f - 2*(4*a^3*b + 3*a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + 3*a*b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^4 + 6912*((4*a^3*b + 3*a*b^3)*d^3*f^3*x^3 + (4*a^3*b + 3*a*b^3)*d^3*e^3 + 3*(4*a^3*b + 3*a*b^3)*d^2*e^2*f + 6*(4*a^3*b + 3*a*b^3)*d*e*f^2 + 6*(4*a^3*b + 3*a*b^3)*f^3 + 3*((4*a^3*b + 3*a*b^3)*d^3*e*f^2 + (4*a^3*b + 3*a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + 3*a*b^3)*d^3*e^2*f + 2*(4*a^3*b + 3*a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + 3*a*b^3)*d*f^3)*x)*cosh(d*x + c)^3 + 8*(864*(4*a^3*b + 3*a*b^3)*d^3*f^3*x^3 + 864*(4*a^3*b + 3*a*b^3)*d^3*e^3 + 2592*(4*a^3*b + 3*a*b^3)*d^2*e^2*f + 189*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^5 + 5184*(4*a^3*b + 3*a*b^3)*d*e*f^2 - 1120*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f + 6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c)^4

+ 5184*(4*a^3*b + 3*a*b^3)*f^3 + 2160*(4*(2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(2*a^2*b^2 + b^4)*d^3*e^3 - 6*(2*a^2*b^2 + b^4)*d^2*e^2*f + 6*(2*a^2*b^2 + b^4)*d*e*f^2 - 3*(2*a^2*b^2 + b^4)*f^3 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e*f^2 - (2*a^2*b^2 + b^4)*d^2*f^3)*x^2 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e^2*f - 2*(2*a^2*b^2 + b^4)*d^2*e*f^2 + (2*a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c)^3 + 2592*((4*a^3*b + 3*a*b^3)*d^3*e*f^2 + (4*a^3*b + 3*a*b^3)*d^2*f^3)*x^2 - 8640*((4*a^3*b + 3*a*b^3)*d^3*f^3*x^3 + (4*a^3*b + 3*a*b^3)*d^3*e^3 - 3*(4*a^3*b + 3*a*b^3)*d^2*e^2*f + 6*(4*a^3*b + 3*a*b^3)*d*e*f^2 - 6*(4*a^3*b + 3*a*b^3)*f^3 + 3*((4*a^3*b + 3*a*b^3)*d^3*e*f^2 - (4*a^3*b + 3*a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + 3*a*b^3)*d^3*e^2*f - 2*(4*a^3*b + 3*a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + 3*a*b^3)*d*f^3)*x)*cosh(d*x + c)^2 + 2592*((4*a^3*b + 3*a*b^3)*d^3*e^2*f + 2*(4*a^3*b + 3*a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + 3*a*b^3)*d*f^3)*x - 6912*((a^4 + a^2*b^2)*d^4*f^3*x^4 + 4*(a^4 + a^2*b^2)*d^4*e*f^2*x^3 + 6*(a^4 + a^2*b^2)*d^4*e^2*f*x^2 + 4*(a^4 + a^2*b^2)*d^4*e^3*x + 8*(a^4 + a^2*b^2)*c*d^3*e^3 - 12*(a^4 + a^2*b^2)*c^2*d^2*e^2*f + 8*(a^4 + a^2*b^2)*c^3*d*e*f^2 - 2*(a^4 + a^2*b^2)*c^4*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 + 648*(4*b^4*d^3*e*f^2 + b^4*d^2*f^3)*x^2 + 864*(4*(2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(2*a^2*b^2 + b^4)*d^3*e^3 + 6*(2*a^2*b^2 + b^4)*d^2*e^2*f + 6*(2*a^2*b^2 + b^4)*d*e*f^2 + 3*(2*a^2*b^2 + b^4)*f^3 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e*f^2 + (2*a^2*b^2 + b^4)*d^2*f^3)*x^2 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e^2*f + 2*(2*a^2*b^2 + b^4)*d^2*e*f^2 + (2*a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c)^2 + 12*(288*(2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 288*(2*a^2*b^2 + b^4)*d^3*e^3 + 63*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^6 + 432*(2*a^2*b^2 + b^4)*d^2*e^2*f - 448*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f + 6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c)^5 + 432*(2*a^2*b^2 + b^4)*d*e*f^2 + 1080*(4*(2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(2*a^2*b^2 + b^4)*d^3*e^3 - 6*(2*a^2*b^2 + b^4)*d^2*e^2*f + 6*(2*a^2*b^2 + b^4)*d*e*f^2 - 3*(2*a^2*b^2 + b^4)*f^3 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e*f^2 - (2*a^2*b^2 + b^4)*d^2*f^3)*x^2 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e^2*f - 2*(2*a^2*b^2 + b^4)*d^2*e*f^2 + (2*a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c)^4 + 216*(2*a^2*b^2 + b^4)*f^3 - 5760*((4*a^3*b + 3*a*b^3)*d^3*f^3*x^3 + (4*a^3*b + 3*a*b^3)*d^3*e^3 - 3*(4*a^3*b + 3*a*b^3)*d^2*e^2*f + 6*(4*a^3*b + 3*a*b^3)*d*e*f^2 - 6*(4*a^3*b + 3*a*b^3)*f^3 + 3*((4*a^3*b + 3*a*b^3)*d^3*e*f^2 - (4*a^3*b + 3*a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + 3*a*b^3)*d^3*e^2*f - 2*(4*a^3*b + 3*a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + 3*a*b^3)*d*f^3)*x)*cosh(d*x + c)^3 + 432*(2*(2*a^2*b^2 + b^4)*d^3*e*f^2 + (2*a^2*b^2 + b^4)*d^2*f^3)*x^2 - 6912*((a^4 + a^2*b^2)*d^4*f^3*x^4 + 4*(a^4 + a^2*b^2)*d^4*e*f^2*x^3 + 6*(a^4 + a^2*b^2)*d^4*e^2*f*x^2 + 4*(a^4 + a^2*b^2)*d^4*e^3*x + 8*(a^4 + a^2*b^2)*c*d^3*e^3 - 12*(a^4 + a^2*b^2)*c^2*d^2*e^2*f + 8*(a^4 + a^2*b^2)*c^3*d*e*f^2 - 2*(a^4 + a^2*b^2)*c^4*f^3)*cosh(d*x + c)^2 + 432*(2*(2*a^2*b^2 + b^4)*d^3*e^2*f + 2*(2*a^2*b^2 + b^4)*d^2*e*f^2 + (2*a^2*b^2 + b^4)*d*f^3)*x + 1728*((4*a^3*b + 3*a*b^3)*d^3*f^3*x^3 + (4*a^3*b + 3*a*b^3)*d^3*e^3 + 3*(4*a

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^3*b + 3*a*b^3)*d^2*e^2*f + 6*(4*a^3*b + 3*a*b^3)*d*e*f^2 + 6*(4*a^3*b + 3*
a*b^3)*f^3 + 3*((4*a^3*b + 3*a*b^3)*d^3*e*f^2 + (4*a^3*b + 3*a*b^3)*d^2*f^3
)*x^2 + 3*((4*a^3*b + 3*a*b^3)*d^3*e^2*f + 2*(4*a^3*b + 3*a*b^3)*d^2*e*f^2
+ 2*(4*a^3*b + 3*a*b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 324*(8*b
^4*d^3*e^2*f + 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x + 256*(9*a*b^3*d^3*f^3*x^3 +
9*a*b^3*d^3*e^3 + 9*a*b^3*d^2*e^2*f + 6*a*b^3*d*e*f^2 + 2*a*b^3*f^3 + 9*(3*
a*b^3*d^3*e*f^2 + a*b^3*d^2*f^3)*x^2 + 3*(9*a*b^3*d^3*e^2*f + 6*a*b^3*d^2*e
*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c) + 165888*(((a^4 + a^2*b^2)*d^2*f^3*x
^2 + 2*(a^4 + a^2*b^2)*d^2*e*f^2*x + (a^4 + a^2*b^2)*d^2*e^2*f)*cosh(d*x +
c)^4 + 4*((a^4 + a^2*b^2)*d^2*f^3*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f^2*x + (a^
4 + a^2*b^2)*d^2*e^2*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*
d^2*f^3*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f^2*x + (a^4 + a^2*b^2)*d^2*e^2*f)*co
sh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2*b^2)*d^2*f^3*x^2 + 2*(a^4 + a
^2*b^2)*d^2*e*f^2*x + (a^4 + a^2*b^2)*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c
)^3 + ((a^4 + a^2*b^2)*d^2*f^3*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f^2*x + (a^4 +
 a^2*b^2)*d^2*e^2*f)*sinh(d*x + c)^4)*dilog((a*cosh(d*x + c) + a*sinh(d*x +
 c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1)
 + 165888*(((a^4 + a^2*b^2)*d^2*f^3*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f^2*x + (
a^4 + a^2*b^2)*d^2*e^2*f)*cosh(d*x + c)^4 + 4*((a^4 + a^2*b^2)*d^2*f^3*x^2
+ 2*(a^4 + a^2*b^2)*d^2*e*f^2*x + (a^4 + a^2*b^2)*d^2*e^2*f)*cosh(d*x + c)^
3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d^2*f^3*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*
f^2*x + (a^4 + a^2*b^2)*d^2*e^2*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^
4 + a^2*b^2)*d^2*f^3*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f^2*x + (a^4 + a^2*b^2)*
d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d^2*f^3*x^2 + 2
*(a^4 + a^2*b^2)*d^2*e*f^2*x + (a^4 + a^2*b^2)*d^2*e^2*f)*sinh(d*x + c)^4)*
dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 55296*(((a^4 + a^2*b^2)*d^3*e^3 - 3
*(a^4 + a^2*b^2)*c*d^2*e^2*f + 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 - (a^4 + a^2*b
^2)*c^3*f^3)*cosh(d*x + c)^4 + 4*((a^4 + a^2*b^2)*d^3*e^3 - 3*(a^4 + a^2*b^
2)*c*d^2*e^2*f + 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 - (a^4 + a^2*b^2)*c^3*f^3)*c
osh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d^3*e^3 - 3*(a^4 + a^2*b^
2)*c*d^2*e^2*f + 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 - (a^4 + a^2*b^2)*c^3*f^3)*c
osh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2*b^2)*d^3*e^3 - 3*(a^4 + a^2*
b^2)*c*d^2*e^2*f + 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 - (a^4 + a^2*b^2)*c^3*f^3)
*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d^3*e^3 - 3*(a^4 + a^2*b^
2)*c*d^2*e^2*f + 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 - (a^4 + a^2*b^2)*c^3*f^3)*s
inh(d*x + c)^4)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 +
 b^2)/b^2) + 2*a) + 55296*(((a^4 + a^2*b^2)*d^3*e^3 - 3*(a^4 + a^2*b^2)*c*d
^2*e^2*f + 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 - (a^4 + a^2*b^2)*c^3*f^3)*cosh(d*
x + c)^4 + 4*((a^4 + a^2*b^2)*d^3*e^3 - 3*(a^4 + a^2*b^2)*c*d^2*e^2*f + 3*(
a^4 + a^2*b^2)*c^2*d*e*f^2 - (a^4 + a^2*b^2)*c^3*f^3)*cosh(d*x + c)^3*sinh(
d*x + c) + 6*((a^4 + a^2*b^2)*d^3*e^3 - 3*(a^4 + a^2*b^2)*c*d^2*e^2*f + 3*(
a^4 + a^2*b^2)*c^2*d*e*f^2 - (a^4 + a^2*b^2)*c^3*f^3)*cosh(d*x + c)^2*sinh(
d*x + c)^2 + 4*((a^4 + a^2*b^2)*d^3*e^3 - 3*(a^4 + a^2*b^2)*c*d^2*e^2*f + 3
*(a^4 + a^2*b^2)*c^2*d*e*f^2 - (a^4 + a^2*b^2)*c^3*f^3)*cosh(d*x + c)*sinh(
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d*x + c)^3 + ((a^4 + a^2*b^2)*d^3*e^3 - 3*(a^4 + a^2*b^2)*c*d^2*e^2*f + 3*(
a^4 + a^2*b^2)*c^2*d*e*f^2 - (a^4 + a^2*b^2)*c^3*f^3)*sinh(d*x + c)^4)*log(
2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) +
55296*(((a^4 + a^2*b^2)*d^3*f^3*x^3 + 3*(a^4 + a^2*b^2)*d^3*e*f^2*x^2 + 3*(
a^4 + a^2*b^2)*d^3*e^2*f*x + 3*(a^4 + a^2*b^2)*c*d^2*e^2*f - 3*(a^4 + a^2*b
^2)*c^2*d*e*f^2 + (a^4 + a^2*b^2)*c^3*f^3)*cosh(d*x + c)^4 + 4*((a^4 + a^2*
b^2)*d^3*f^3*x^3 + 3*(a^4 + a^2*b^2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)*d^3*
e^2*f*x + 3*(a^4 + a^2*b^2)*c*d^2*e^2*f - 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 + (
a^4 + a^2*b^2)*c^3*f^3)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*
d^3*f^3*x^3 + 3*(a^4 + a^2*b^2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*f
x + 3(a^4 + a^2*b^2)*c*d^2*e^2*f - 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 + (a^4 +
 a^2*b^2)*c^3*f^3)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2*b^2)*d^3
*f^3*x^3 + 3*(a^4 + a^2*b^2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*f*x
+ 3*(a^4 + a^2*b^2)*c*d^2*e^2*f - 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 + (a^4 + a^
2*b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d^3*f^3*x^
3 + 3*(a^4 + a^2*b^2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*f*x + 3*(a^
4 + a^2*b^2)*c*d^2*e^2*f - 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 + (a^4 + a^2*b^2)*
c^3*f^3)*sinh(d*x + c)^4)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 55296*(((a^4 +
 a^2*b^2)*d^3*f^3*x^3 + 3*(a^4 + a^2*b^2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)
*d^3*e^2*f*x + 3*(a^4 + a^2*b^2)*c*d^2*e^2*f - 3*(a^4 + a^2*b^2)*c^2*d*e*f^
2 + (a^4 + a^2*b^2)*c^3*f^3)*cosh(d*x + c)^4 + 4*((a^4 + a^2*b^2)*d^3*f^3*x
^3 + 3*(a^4 + a^2*b^2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*f*x + 3*(a
^4 + a^2*b^2)*c*d^2*e^2*f - 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 + (a^4 + a^2*b^2)
*c^3*f^3)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d^3*f^3*x^3 +
3*(a^4 + a^2*b^2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*f*x + 3*(a^4 +
a^2*b^2)*c*d^2*e^2*f - 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 + (a^4 + a^2*b^2)*c^3*
f^3)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2*b^2)*d^3*f^3*x^3 + 3*(
a^4 + a^2*b^2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*f*x + 3*(a^4 + a^2
*b^2)*c*d^2*e^2*f - 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 + (a^4 + a^2*b^2)*c^3*f^3
)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d^3*f^3*x^3 + 3*(a^4 + a
^2*b^2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*f*x + 3*(a^4 + a^2*b^2)*c
*d^2*e^2*f - 3*(a^4 + a^2*b^2)*c^2*d*e*f^2 + (a^4 + a^2*b^2)*c^3*f^3)*sinh(
d*x + c)^4)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*
sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 331776*((a^4 + a^2*b^2)*f^3*
cosh(d*x + c)^4 + 4*(a^4 + a^2*b^2)*f^3*cosh(d*x + c)^3*sinh(d*x + c) + 6*(
a^4 + a^2*b^2)*f^3*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^4 + a^2*b^2)*f^3*
cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + a^2*b^2)*f^3*sinh(d*x + c)^4)*polylo
g(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2))/b) + 331776*((a^4 + a^2*b^2)*f^3*cosh(d*x + c)^4
+ 4*(a^4 + a^2*b^2)*f^3*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^4 + a^2*b^2)*f
^3*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^4 + a^2*b^2)*f^3*cosh(d*x + c)*si
nh(d*x + c)^3 + (a^4 + a^2*b^2)*f^3*sinh(d*x + c)^4)*polylog(4, (a*cosh(d*x
 + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2))/b) - 331776*(((a^4 + a^2*b^2)*d*f^3*x + (a^4 + a^2*b^2)*d*e*f^2)*

```
cosh(d*x + c)^4 + 4*((a^4 + a^2*b^2)*d*f^3*x + (a^4 + a^2*b^2)*d*e*f^2)*cos
h(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d*f^3*x + (a^4 + a^2*b^2)*d
*e*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2*b^2)*d*f^3*x + (a^4
 + a^2*b^2)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d*f^3
*x + (a^4 + a^2*b^2)*d*e*f^2)*sinh(d*x + c)^4)*polylog(3, (a*cosh(d*x + c)
+ a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2))/b) - 331776*(((a^4 + a^2*b^2)*d*f^3*x + (a^4 + a^2*b^2)*d*e*f^2)*cosh(d
*x + c)^4 + 4*((a^4 + a^2*b^2)*d*f^3*x + (a^4 + a^2*b^2)*d*e*f^2)*cosh(d*x
+ c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d*f^3*x + (a^4 + a^2*b^2)*d*e*f^2
)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2*b^2)*d*f^3*x + (a^4 + a^2
*b^2)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d*f^3*x + (
a^4 + a^2*b^2)*d*e*f^2)*sinh(d*x + c)^4)*polylog(3, (a*cosh(d*x + c) + a*si
nh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b)
 + 8*(288*a*b^3*d^3*f^3*x^3 + 288*a*b^3*d^3*e^3 + 288*a*b^3*d^2*e^2*f + 192
*a*b^3*d*e*f^2 + 27*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*d^2*e^2*f
 + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)*x^2 + 12
*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^7 + 64*a*
b^3*f^3 - 224*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f +
6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 +
 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c)
^6 + 648*(4*(2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(2*a^2*b^2 + b^4)*d^3*e^3 - 6
*(2*a^2*b^2 + b^4)*d^2*e^2*f + 6*(2*a^2*b^2 + b^4)*d*e*f^2 - 3*(2*a^2*b^2 +
 b^4)*f^3 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e*f^2 - (2*a^2*b^2 + b^4)*d^2*f^3)*x
^2 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e^2*f - 2*(2*a^2*b^2 + b^4)*d^2*e*f^2 + (2*
a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c)^5 - 4320*((4*a^3*b + 3*a*b^3)*d^3*f^
3*x^3 + (4*a^3*b + 3*a*b^3)*d^3*e^3 - 3*(4*a^3*b + 3*a*b^3)*d^2*e^2*f + 6*(
4*a^3*b + 3*a*b^3)*d*e*f^2 - 6*(4*a^3*b + 3*a*b^3)*f^3 + 3*((4*a^3*b + 3*a*
b^3)*d^3*e*f^2 - (4*a^3*b + 3*a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + 3*a*b^3)*
d^3*e^2*f - 2*(4*a^3*b + 3*a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + 3*a*b^3)*d*f^3)*
x)*cosh(d*x + c)^4 - 6912*((a^4 + a^2*b^2)*d^4*f^3*x^4 + 4*(a^4 + a^2*b^2)*
d^4*e*f^2*x^3 + 6*(a^4 + a^2*b^2)*d^4*e^2*f*x^2 + 4*(a^4 + a^2*b^2)*d^4*e^3
*x + 8*(a^4 + a^2*b^2)*c*d^3*e^3 - 12*(a^4 + a^2*b^2)*c^2*d^2*e^2*f + 8*(a^
4 + a^2*b^2)*c^3*d*e*f^2 - 2*(a^4 + a^2*b^2)*c^4*f^3)*cosh(d*x + c)^3 + 288
*(3*a*b^3*d^3*e*f^2 + a*b^3*d^2*f^3)*x^2 + 2592*((4*a^3*b + 3*a*b^3)*d^3*f^
3*x^3 + (4*a^3*b + 3*a*b^3)*d^3*e^3 + 3*(4*a^3*b + 3*a*b^3)*d^2*e^2*f + 6*(
4*a^3*b + 3*a*b^3)*d*e*f^2 + 6*(4*a^3*b + 3*a*b^3)*f^3 + 3*((4*a^3*b + 3*a*
b^3)*d^3*e*f^2 + (4*a^3*b + 3*a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + 3*a*b^3)*
d^3*e^2*f + 2*(4*a^3*b + 3*a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + 3*a*b^3)*d*f^3)*
x)*cosh(d*x + c)^2 + 96*(9*a*b^3*d^3*e^2*f + 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*
f^3)*x + 216*(4*(2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 4*(2*a^2*b^2 + b^4)*d^3*e^3
 + 6*(2*a^2*b^2 + b^4)*d^2*e^2*f + 6*(2*a^2*b^2 + b^4)*d*e*f^2 + 3*(2*a^2*b
^2 + b^4)*f^3 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e*f^2 + (2*a^2*b^2 + b^4)*d^2*f^
3)*x^2 + 6*(2*(2*a^2*b^2 + b^4)*d^3*e^2*f + 2*(2*a^2*b^2 + b^4)*d^2*e*f^2 +
 (2*a^2*b^2 + b^4)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^5*d^4*cosh(d*
x + c)^4 + 4*b^5*d^4*cosh(d*x + c)^3*sinh(d*x + c) + 6*b^5*d^4*cosh(d*x + c
```

```
)^2*sinh(d*x + c)^2 + 4*b^5*d^4*cosh(d*x + c)*sinh(d*x + c)^3 + b^5*d^4*sin
h(d*x + c)^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \cosh(dx+c)^3 \sinh(dx+c)^2}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)^3*sinh(d*x + c)^2/(b*sinh(d*x + c) + a)
, x)
```

maple [F] time = 0.72, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \left(\cosh^3(dx+c)\right)\left(\sinh^2(dx+c)\right)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="maxima")
```

```
[Out] -1/192*e^3*((8*a*b^2*e^(-d*x - c) - 3*b^3 - 12*(2*a^2*b + b^3)*e^(-2*d*x -
2*c) + 24*(4*a^3 + 3*a*b^2)*e^(-3*d*x - 3*c))*e^(4*d*x + 4*c)/(b^4*d) - 192
*(a^4 + a^2*b^2)*(d*x + c)/(b^5*d) - (8*a*b^2*e^(-3*d*x - 3*c) + 3*b^3*e^(-
4*d*x - 4*c) + 24*(4*a^3 + 3*a*b^2)*e^(-d*x - c) + 12*(2*a^2*b + b^3)*e^(-2
*d*x - 2*c))/(b^4*d) - 192*(a^4 + a^2*b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*
d*x - 2*c) - b)/(b^5*d)) + 1/55296*(13824*(a^4*d^4*f^3*e^(4*c) + a^2*b^2*d^
4*f^3*e^(4*c))*x^4 + 55296*(a^4*d^4*e*f^2*e^(4*c) + a^2*b^2*d^4*e*f^2*e^(4*
c))*x^3 + 82944*(a^4*d^4*e^2*f*e^(4*c) + a^2*b^2*d^4*e^2*f*e^(4*c))*x^2 + 2
7*(32*b^4*d^3*f^3*x^3*e^(8*c) + 24*(4*d^3*e*f^2 - d^2*f^3)*b^4*x^2*e^(8*c)
+ 12*(8*d^3*e^2*f - 4*d^2*e*f^2 + d*f^3)*b^4*x*e^(8*c) - 3*(8*d^2*e^2*f - 4
```

```
*d*e*f^2 + f^3)*b^4*e^(8*c))*e^(4*d*x) - 256*(9*a*b^3*d^3*f^3*x^3*e^(7*c) +
 9*(3*d^3*e*f^2 - d^2*f^3)*a*b^3*x^2*e^(7*c) + 3*(9*d^3*e^2*f - 6*d^2*e*f^2
 + 2*d*f^3)*a*b^3*x*e^(7*c) - (9*d^2*e^2*f - 6*d*e*f^2 + 2*f^3)*a*b^3*e^(7*
c))*e^(3*d*x) - 864*(6*(2*d^2*e^2*f - 2*d*e*f^2 + f^3)*a^2*b^2*e^(6*c) + 3*
(2*d^2*e^2*f - 2*d*e*f^2 + f^3)*b^4*e^(6*c) - 4*(2*a^2*b^2*d^3*f^3*e^(6*c)
+ b^4*d^3*f^3*e^(6*c))*x^3 - 6*(2*(2*d^3*e*f^2 - d^2*f^3)*a^2*b^2*e^(6*c) +
 (2*d^3*e*f^2 - d^2*f^3)*b^4*e^(6*c))*x^2 - 6*(2*(2*d^3*e^2*f - 2*d^2*e*f^2
 + d*f^3)*a^2*b^2*e^(6*c) + (2*d^3*e^2*f - 2*d^2*e*f^2 + d*f^3)*b^4*e^(6*c)
)*x)*e^(2*d*x) + 6912*(12*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a^3*b*e^(5*c) + 9
*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a*b^3*e^(5*c) - (4*a^3*b*d^3*f^3*e^(5*c) +
 3*a*b^3*d^3*f^3*e^(5*c))*x^3 - 3*(4*(d^3*e*f^2 - d^2*f^3)*a^3*b*e^(5*c) +
3*(d^3*e*f^2 - d^2*f^3)*a*b^3*e^(5*c))*x^2 - 3*(4*(d^3*e^2*f - 2*d^2*e*f^2
+ 2*d*f^3)*a^3*b*e^(5*c) + 3*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*a*b^3*e^(5
*c))*x)*e^(d*x) + 6912*(12*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a^3*b*e^(3*c) +
9*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a*b^3*e^(3*c) + (4*a^3*b*d^3*f^3*e^(3*c)
+ 3*a*b^3*d^3*f^3*e^(3*c))*x^3 + 3*(4*(d^3*e*f^2 + d^2*f^3)*a^3*b*e^(3*c) +
 3*(d^3*e*f^2 + d^2*f^3)*a*b^3*e^(3*c))*x^2 + 3*(4*(d^3*e^2*f + 2*d^2*e*f^2
 + 2*d*f^3)*a^3*b*e^(3*c) + 3*(d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*a*b^3*e^(
3*c))*x)*e^(-d*x) + 864*(6*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)*a^2*b^2*e^(2*c)
+ 3*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)*b^4*e^(2*c) + 4*(2*a^2*b^2*d^3*f^3*e^(2
*c) + b^4*d^3*f^3*e^(2*c))*x^3 + 6*(2*(2*d^3*e*f^2 + d^2*f^3)*a^2*b^2*e^(2*
c) + (2*d^3*e*f^2 + d^2*f^3)*b^4*e^(2*c))*x^2 + 6*(2*(2*d^3*e^2*f + 2*d^2*e
*f^2 + d*f^3)*a^2*b^2*e^(2*c) + (2*d^3*e^2*f + 2*d^2*e*f^2 + d*f^3)*b^4*e^(
2*c))*x)*e^(-2*d*x) + 256*(9*a*b^3*d^3*f^3*x^3*e^c + 9*(3*d^3*e*f^2 + d^2*f
^3)*a*b^3*x^2*e^c + 3*(9*d^3*e^2*f + 6*d^2*e*f^2 + 2*d*f^3)*a*b^3*x*e^c + (
9*d^2*e^2*f + 6*d*e*f^2 + 2*f^3)*a*b^3*e^c)*e^(-3*d*x) + 27*(32*b^4*d^3*f^3
*x^3 + 24*(4*d^3*e*f^2 + d^2*f^3)*b^4*x^2 + 12*(8*d^3*e^2*f + 4*d^2*e*f^2 +
 d*f^3)*b^4*x + 3*(8*d^2*e^2*f + 4*d*e*f^2 + f^3)*b^4)*e^(-4*d*x))*e^(-4*c)
/(b^5*d^4) - integrate(-2*((a^4*b*f^3 + a^2*b^3*f^3)*x^3 + 3*(a^4*b*e*f^2 +
 a^2*b^3*e*f^2)*x^2 + 3*(a^4*b*e^2*f + a^2*b^3*e^2*f)*x - ((a^5*f^3*e^c + a
^3*b^2*f^3*e^c)*x^3 + 3*(a^5*e*f^2*e^c + a^3*b^2*e*f^2*e^c)*x^2 + 3*(a^5*e^
2*f*e^c + a^3*b^2*e^2*f*e^c)*x)*e^(d*x))/(b^6*e^(2*d*x + 2*c) + 2*a*b^5*e^(
d*x + c) - b^6), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+dx)^3 \sinh(c+dx)^2 \left(e+fx\right)^3}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^3*sinh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**3*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.373 $\int \frac{(e+fx)^2 \cosh^3(c+dx) \sinh^2(c+dx)}{a+b \sinh(c+dx)} dx$

Optimal. Leaf size=819

$$\frac{f^2 \cosh^4(c+dx)}{32bd^3}+\frac{(e+fx)^2 \cosh^4(c+dx)}{4bd}+\frac{2af(e+fx)\cosh^3(c+dx)}{9b^2d^2}-\frac{f(e+fx)\sinh(c+dx)\cosh^3(c+dx)}{8bd^2}+$$

```
[Out] a^2*(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^5/d+a^2*(a
^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^5/d-2*a^2*(a^2+b
^2)*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^5/d^3-2*a^2*(a^2+b^2
)*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^5/d^3+1/2*a^2*e*f*x/b^
3/d+2*a^3*f*(f*x+e)*cosh(d*x+c)/b^4/d^2+2/9*a*f*(f*x+e)*cosh(d*x+c)^3/b^2/d
^2-1/3*a*(f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)/b^2/d-1/8*f*(f*x+e)*cosh(d*x+c
)^3*sinh(d*x+c)/b/d^2-1/2*a^2*f*(f*x+e)*cosh(d*x+c)*sinh(d*x+c)/b^3/d^2+3/3
2*f^2*cosh(d*x+c)^2/b/d^3+1/32*f^2*cosh(d*x+c)^4/b/d^3+1/4*(f*x+e)^2*cosh(d
*x+c)^4/b/d-3/32*f^2*x^2/b/d+1/4*a^2*f^2*x^2/b^3/d-1/3*a^2*(a^2+b^2)*(f*x+e
)^3/b^5/f-2*a^3*f^2*sinh(d*x+c)/b^4/d^3-2/3*a*(f*x+e)^2*sinh(d*x+c)/b^2/d+1
/4*a^2*f^2*sinh(d*x+c)^2/b^3/d^3+1/2*a^2*(f*x+e)^2*sinh(d*x+c)^2/b^3/d-2/27
*a*f^2*sinh(d*x+c)^3/b^2/d^3-3/16*e*f*x/b/d-14/9*a*f^2*sinh(d*x+c)/b^2/d^3+
4/3*a*f*(f*x+e)*cosh(d*x+c)/b^2/d^2-3/16*f*(f*x+e)*cosh(d*x+c)*sinh(d*x+c)/
b/d^2+2*a^2*(a^2+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2))
)/b^5/d^2+2*a^2*(a^2+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1
/2)))/b^5/d^2-a^3*(f*x+e)^2*sinh(d*x+c)/b^4/d
```

Rubi [A] time = 1.17, antiderivative size = 819, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 14, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {5579, 5447, 3310, 3311, 3296, 2637, 2633, 5565, 5446, 5561, 2190, 2531, 2282, 6589}

$$\frac{f^2 \cosh^4(c+dx)}{32bd^3}+\frac{(e+fx)^2 \cosh^4(c+dx)}{4bd}+\frac{2af(e+fx)\cosh^3(c+dx)}{9b^2d^2}-\frac{f(e+fx)\sinh(c+dx)\cosh^3(c+dx)}{8bd^2}+$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]^3*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*e*f*x)/(2*b^3*d) - (3*e*f*x)/(16*b*d) + (a^2*f^2*x^2)/(4*b^3*d) - (3*f
^2*x^2)/(32*b*d) - (a^2*(a^2 + b^2)*(e + f*x)^3)/(3*b^5*f) + (2*a^3*f*(e +
f*x)*Cosh[c + d*x])/(b^4*d^2) + (4*a*f*(e + f*x)*Cosh[c + d*x])/(3*b^2*d^2)
 + (3*f^2*Cosh[c + d*x]^2)/(32*b*d^3) + (2*a*f*(e + f*x)*Cosh[c + d*x]^3)/(
9*b^2*d^2) + (f^2*Cosh[c + d*x]^4)/(32*b*d^3) + ((e + f*x)^2*Cosh[c + d*x]^
4)/(4*b*d) + (a^2*(a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt
```

```
[a^2 + b^2])])/(b^5*d) + (a^2*(a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2])])/(b^5*d) + (2*a^2*(a^2 + b^2)*f*(e + f*x)*PolyLog
[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^5*d^2) + (2*a^2*(a^2 + b^
2)*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^5*d
^2) - (2*a^2*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b
^2]))])/(b^5*d^3) - (2*a^2*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2]))])/(b^5*d^3) - (2*a^3*f^2*Sinh[c + d*x])/(b^4*d^3) - (14
*a*f^2*Sinh[c + d*x])/(9*b^2*d^3) - (a^3*(e + f*x)^2*Sinh[c + d*x])/(b^4*d)
 - (2*a*(e + f*x)^2*Sinh[c + d*x])/(3*b^2*d) - (a^2*f*(e + f*x)*Cosh[c + d*
x]*Sinh[c + d*x])/(2*b^3*d^2) - (3*f*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])
/(16*b*d^2) - (a*(e + f*x)^2*Cosh[c + d*x]^2*Sinh[c + d*x])/(3*b^2*d) - (f*
(e + f*x)*Cosh[c + d*x]^3*Sinh[c + d*x])/(8*b*d^2) + (a^2*f^2*Sinh[c + d*x]
^2)/(4*b^3*d^3) + (a^2*(e + f*x)^2*Sinh[c + d*x]^2)/(2*b^3*d) - (2*a*f^2*Si
nh[c + d*x]^3)/(27*b^2*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
```

```
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^3(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh^3(c+dx)\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\cosh^3(c+dx)\sin}{a+b\sinh(c+dx}}{b}$$

$$= \frac{(e+fx)^2\cosh^4(c+dx)}{4bd} - \frac{a\int (e+fx)^2\cosh^3(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e}{}}{}$$

$$= \frac{2af(e+fx)\cosh^3(c+dx)}{9b^2d^2} + \frac{f^2\cosh^4(c+dx)}{32bd^3} + \frac{(e+fx)^2\cosh^4(}{4bd}$$

$$= -\frac{a^2\left(a^2+b^2\right)(e+fx)^3}{3b^5f} + \frac{3f^2\cosh^2(c+dx)}{32bd^3} + \frac{2af(e+fx)\cosh^3}{9b^2d^2}$$

$$= -\frac{3efx}{16bd} - \frac{3f^2x^2}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+fx)^3}{3b^5f} + \frac{2a^3f(e+fx)\cosh(c+}{b^4d^2}$$

$$= \frac{a^2efx}{2b^3d} - \frac{3efx}{16bd} + \frac{a^2f^2x^2}{4b^3d} - \frac{3f^2x^2}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+fx)^3}{3b^5f} + \frac{2a^3f}{}$$

$$= \frac{a^2efx}{2b^3d} - \frac{3efx}{16bd} + \frac{a^2f^2x^2}{4b^3d} - \frac{3f^2x^2}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+fx)^3}{3b^5f} + \frac{2a^3f}{}$$

$$= \frac{a^2efx}{2b^3d} - \frac{3efx}{16bd} + \frac{a^2f^2x^2}{4b^3d} - \frac{3f^2x^2}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+fx)^3}{3b^5f} + \frac{2a^3f}{}$$

Mathematica [B] time = 18.25, size = 5198, normalized size = 6.35

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^3*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x
]),x]
```

```
[Out] Result too large to show
```

fricas [C] time = 0.63, size = 7645, normalized size = 9.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="fricas")
```

```
[Out] 1/13824*(216*b^4*d^2*f^2*x^2 + 27*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^
4*d*e*f + b^4*f^2 + 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^8 + 27*(
8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^2 + 4*(4*b^4*d^2*e*
f - b^4*d*f^2)*x)*sinh(d*x + c)^8 + 216*b^4*d^2*e^2 - 64*(9*a*b^3*d^2*f^2*x
^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3*f^2 + 6*(3*a*b^3*d^2*e*f - a
*b^3*d*f^2)*x)*cosh(d*x + c)^7 - 8*(72*a*b^3*d^2*f^2*x^2 + 72*a*b^3*d^2*e^2
 - 48*a*b^3*d*e*f + 16*a*b^3*f^2 + 48*(3*a*b^3*d^2*e*f - a*b^3*d*f^2)*x - 2
7*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^2 + 4*(4*b^4*d^2
*e*f - b^4*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^7 + 108*b^4*d*e*f + 432*(
2*(2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(2*a^2*b^2 + b^4)*d^2*e^2 - 2*(2*a^2*b^
2 + b^4)*d*e*f + (2*a^2*b^2 + b^4)*f^2 + 2*(2*(2*a^2*b^2 + b^4)*d^2*e*f - (
2*a^2*b^2 + b^4)*d*f^2)*x)*cosh(d*x + c)^6 + 4*(216*(2*a^2*b^2 + b^4)*d^2*f
^2*x^2 + 216*(2*a^2*b^2 + b^4)*d^2*e^2 - 216*(2*a^2*b^2 + b^4)*d*e*f + 108*
(2*a^2*b^2 + b^4)*f^2 + 189*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*
f + b^4*f^2 + 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^2 + 216*(2*(2*
a^2*b^2 + b^4)*d^2*e*f - (2*a^2*b^2 + b^4)*d*f^2)*x - 112*(9*a*b^3*d^2*f^2*
x^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3*f^2 + 6*(3*a*b^3*d^2*e*f -
a*b^3*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^6 + 27*b^4*f^2 - 1728*((4*a^3*
b + 3*a*b^3)*d^2*f^2*x^2 + (4*a^3*b + 3*a*b^3)*d^2*e^2 - 2*(4*a^3*b + 3*a*b
^3)*d*e*f + 2*(4*a^3*b + 3*a*b^3)*f^2 + 2*((4*a^3*b + 3*a*b^3)*d^2*e*f - (4
*a^3*b + 3*a*b^3)*d*f^2)*x)*cosh(d*x + c)^5 - 24*(72*(4*a^3*b + 3*a*b^3)*d^
2*f^2*x^2 + 72*(4*a^3*b + 3*a*b^3)*d^2*e^2 - 144*(4*a^3*b + 3*a*b^3)*d*e*f
- 63*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^2 + 4*(4*b^4*
d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^3 + 144*(4*a^3*b + 3*a*b^3)*f^2 + 56*
(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3*f^2 + 6*(3
*a*b^3*d^2*e*f - a*b^3*d*f^2)*x)*cosh(d*x + c)^2 + 144*((4*a^3*b + 3*a*b^3)
*d^2*e*f - (4*a^3*b + 3*a*b^3)*d*f^2)*x - 108*(2*(2*a^2*b^2 + b^4)*d^2*f^2*
x^2 + 2*(2*a^2*b^2 + b^4)*d^2*e^2 - 2*(2*a^2*b^2 + b^4)*d*e*f + (2*a^2*b^2
+ b^4)*f^2 + 2*(2*(2*a^2*b^2 + b^4)*d^2*e*f - (2*a^2*b^2 + b^4)*d*f^2)*x)*c
osh(d*x + c))*sinh(d*x + c)^5 - 4608*((a^4 + a^2*b^2)*d^3*f^2*x^3 + 3*(a^4
+ a^2*b^2)*d^3*e*f*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*x + 6*(a^4 + a^2*b^2)*c*
d^2*e^2 - 6*(a^4 + a^2*b^2)*c^2*d*e*f + 2*(a^4 + a^2*b^2)*c^3*f^2)*cosh(d*x
 + c)^4 - 2*(2304*(a^4 + a^2*b^2)*d^3*f^2*x^3 + 6912*(a^4 + a^2*b^2)*d^3*e*
f*x^2 + 6912*(a^4 + a^2*b^2)*d^3*e^2*x + 13824*(a^4 + a^2*b^2)*c*d^2*e^2 -
13824*(a^4 + a^2*b^2)*c^2*d*e*f + 4608*(a^4 + a^2*b^2)*c^3*f^2 - 945*(8*b^4
*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^2 + 4*(4*b^4*d^2*e*f - b
^4*d*f^2)*x)*cosh(d*x + c)^4 + 1120*(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2
- 6*a*b^3*d*e*f + 2*a*b^3*f^2 + 6*(3*a*b^3*d^2*e*f - a*b^3*d*f^2)*x)*cosh(d
*x + c)^3 - 3240*(2*(2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(2*a^2*b^2 + b^4)*d^2
*e^2 - 2*(2*a^2*b^2 + b^4)*d*e*f + (2*a^2*b^2 + b^4)*f^2 + 2*(2*(2*a^2*b^2
+ b^4)*d^2*e*f - (2*a^2*b^2 + b^4)*d*f^2)*x)*cosh(d*x + c)^2 + 4320*((4*a^3
*b + 3*a*b^3)*d^2*f^2*x^2 + (4*a^3*b + 3*a*b^3)*d^2*e^2 - 2*(4*a^3*b + 3*a*
```

b^3)*d*e*f + 2*(4*a^3*b + 3*a*b^3)*f^2 + 2*((4*a^3*b + 3*a*b^3)*d^2*e*f - (
4*a^3*b + 3*a*b^3)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^4 + 1728*((4*a^3*
b + 3*a*b^3)*d^2*f^2*x^2 + (4*a^3*b + 3*a*b^3)*d^2*e^2 + 2*(4*a^3*b + 3*a*b
^3)*d*e*f + 2*(4*a^3*b + 3*a*b^3)*f^2 + 2*((4*a^3*b + 3*a*b^3)*d^2*e*f + (4
*a^3*b + 3*a*b^3)*d*f^2)*x)*cosh(d*x + c)^3 + 8*(216*(4*a^3*b + 3*a*b^3)*d^
2*f^2*x^2 + 189*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^2
+ 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^5 + 216*(4*a^3*b + 3*a*b^3
)*d^2*e^2 - 280*(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*
a*b^3*f^2 + 6*(3*a*b^3*d^2*e*f - a*b^3*d*f^2)*x)*cosh(d*x + c)^4 + 432*(4*a
^3*b + 3*a*b^3)*d*e*f + 1080*(2*(2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(2*a^2*b^
2 + b^4)*d^2*e^2 - 2*(2*a^2*b^2 + b^4)*d*e*f + (2*a^2*b^2 + b^4)*f^2 + 2*(2
*(2*a^2*b^2 + b^4)*d^2*e*f - (2*a^2*b^2 + b^4)*d*f^2)*x)*cosh(d*x + c)^3 +
432*(4*a^3*b + 3*a*b^3)*f^2 - 2160*((4*a^3*b + 3*a*b^3)*d^2*f^2*x^2 + (4*a^
3*b + 3*a*b^3)*d^2*e^2 - 2*(4*a^3*b + 3*a*b^3)*d*e*f + 2*(4*a^3*b + 3*a*b^3
)*f^2 + 2*((4*a^3*b + 3*a*b^3)*d^2*e*f - (4*a^3*b + 3*a*b^3)*d*f^2)*x)*cosh
(d*x + c)^2 + 432*((4*a^3*b + 3*a*b^3)*d^2*e*f + (4*a^3*b + 3*a*b^3)*d*f^2)
x - 2304((a^4 + a^2*b^2)*d^3*f^2*x^3 + 3*(a^4 + a^2*b^2)*d^3*e*f*x^2 + 3*
(a^4 + a^2*b^2)*d^3*e^2*x + 6*(a^4 + a^2*b^2)*c*d^2*e^2 - 6*(a^4 + a^2*b^2)
*c^2*d*e*f + 2*(a^4 + a^2*b^2)*c^3*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 43
2*(2*(2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(2*a^2*b^2 + b^4)*d^2*e^2 + 2*(2*a^2
*b^2 + b^4)*d*e*f + (2*a^2*b^2 + b^4)*f^2 + 2*(2*(2*a^2*b^2 + b^4)*d^2*e*f
+ (2*a^2*b^2 + b^4)*d*f^2)*x)*cosh(d*x + c)^2 + 12*(72*(2*a^2*b^2 + b^4)*d^
2*f^2*x^2 + 63*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^2 +
 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^6 - 112*(9*a*b^3*d^2*f^2*x^
2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3*f^2 + 6*(3*a*b^3*d^2*e*f - a*
b^3*d*f^2)*x)*cosh(d*x + c)^5 + 72*(2*a^2*b^2 + b^4)*d^2*e^2 + 540*(2*(2*a^
2*b^2 + b^4)*d^2*f^2*x^2 + 2*(2*a^2*b^2 + b^4)*d^2*e^2 - 2*(2*a^2*b^2 + b^4
)*d*e*f + (2*a^2*b^2 + b^4)*f^2 + 2*(2*(2*a^2*b^2 + b^4)*d^2*e*f - (2*a^2*b
^2 + b^4)*d*f^2)*x)*cosh(d*x + c)^4 + 72*(2*a^2*b^2 + b^4)*d*e*f - 1440*((4
*a^3*b + 3*a*b^3)*d^2*f^2*x^2 + (4*a^3*b + 3*a*b^3)*d^2*e^2 - 2*(4*a^3*b +
3*a*b^3)*d*e*f + 2*(4*a^3*b + 3*a*b^3)*f^2 + 2*((4*a^3*b + 3*a*b^3)*d^2*e*f
 - (4*a^3*b + 3*a*b^3)*d*f^2)*x)*cosh(d*x + c)^3 + 36*(2*a^2*b^2 + b^4)*f^2
 - 2304*((a^4 + a^2*b^2)*d^3*f^2*x^3 + 3*(a^4 + a^2*b^2)*d^3*e*f*x^2 + 3*(a
^4 + a^2*b^2)*d^3*e^2*x + 6*(a^4 + a^2*b^2)*c*d^2*e^2 - 6*(a^4 + a^2*b^2)*c
^2*d*e*f + 2*(a^4 + a^2*b^2)*c^3*f^2)*cosh(d*x + c)^2 + 72*(2*(2*a^2*b^2 +
b^4)*d^2*e*f + (2*a^2*b^2 + b^4)*d*f^2)*x + 432*((4*a^3*b + 3*a*b^3)*d^2*f^
2*x^2 + (4*a^3*b + 3*a*b^3)*d^2*e^2 + 2*(4*a^3*b + 3*a*b^3)*d*e*f + 2*(4*a^
3*b + 3*a*b^3)*f^2 + 2*((4*a^3*b + 3*a*b^3)*d^2*e*f + (4*a^3*b + 3*a*b^3)*d
*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 108*(4*b^4*d^2*e*f + b^4*d*f^2)*x
 + 64*(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2 + 6*a*b^3*d*e*f + 2*a*b^3*f^2
+ 6*(3*a*b^3*d^2*e*f + a*b^3*d*f^2)*x)*cosh(d*x + c) + 27648*(((a^4 + a^2*b
^2)*d*f^2*x + (a^4 + a^2*b^2)*d*e*f)*cosh(d*x + c)^4 + 4*((a^4 + a^2*b^2)*d
*f^2*x + (a^4 + a^2*b^2)*d*e*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a
^2*b^2)*d*f^2*x + (a^4 + a^2*b^2)*d*e*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 +
4*((a^4 + a^2*b^2)*d*f^2*x + (a^4 + a^2*b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x

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+ c)^3 + ((a^4 + a^2*b^2)*d*f^2*x + (a^4 + a^2*b^2)*d*e*f)*sinh(d*x + c)^4)
*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x +
 c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 27648*(((a^4 + a^2*b^2)*d*f^2*x +
(a^4 + a^2*b^2)*d*e*f)*cosh(d*x + c)^4 + 4*((a^4 + a^2*b^2)*d*f^2*x + (a^4
+ a^2*b^2)*d*e*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d*f^2*
x + (a^4 + a^2*b^2)*d*e*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2*
b^2)*d*f^2*x + (a^4 + a^2*b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4
 + a^2*b^2)*d*f^2*x + (a^4 + a^2*b^2)*d*e*f)*sinh(d*x + c)^4)*dilog((a*cosh
(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2) - b)/b + 1) + 13824*(((a^4 + a^2*b^2)*d^2*e^2 - 2*(a^4 + a^2*b
^2)*c*d*e*f + (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)^4 + 4*((a^4 + a^2*b^2)
*d^2*e^2 - 2*(a^4 + a^2*b^2)*c*d*e*f + (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x +
c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d^2*e^2 - 2*(a^4 + a^2*b^2)*c*d*e*f
 + (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2
*b^2)*d^2*e^2 - 2*(a^4 + a^2*b^2)*c*d*e*f + (a^4 + a^2*b^2)*c^2*f^2)*cosh(d
*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d^2*e^2 - 2*(a^4 + a^2*b^2)*c*d*
e*f + (a^4 + a^2*b^2)*c^2*f^2)*sinh(d*x + c)^4)*log(2*b*cosh(d*x + c) + 2*b
*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 13824*(((a^4 + a^2*b^2)
*d^2*e^2 - 2*(a^4 + a^2*b^2)*c*d*e*f + (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x +
c)^4 + 4*((a^4 + a^2*b^2)*d^2*e^2 - 2*(a^4 + a^2*b^2)*c*d*e*f + (a^4 + a^2*
b^2)*c^2*f^2)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d^2*e^2 -
2*(a^4 + a^2*b^2)*c*d*e*f + (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)^2*sinh(d
*x + c)^2 + 4*((a^4 + a^2*b^2)*d^2*e^2 - 2*(a^4 + a^2*b^2)*c*d*e*f + (a^4 +
 a^2*b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d^2*e^2
 - 2*(a^4 + a^2*b^2)*c*d*e*f + (a^4 + a^2*b^2)*c^2*f^2)*sinh(d*x + c)^4)*lo
g(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a)
+ 13824*(((a^4 + a^2*b^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + 2*(a^
4 + a^2*b^2)*c*d*e*f - (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)^4 + 4*((a^4 +
 a^2*b^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + 2*(a^4 + a^2*b^2)*c*d
*e*f - (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a
^2*b^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + 2*(a^4 + a^2*b^2)*c*d*e
*f - (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a
^2*b^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + 2*(a^4 + a^2*b^2)*c*d*e
*f - (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b
^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + 2*(a^4 + a^2*b^2)*c*d*e*f -
 (a^4 + a^2*b^2)*c^2*f^2)*sinh(d*x + c)^4)*log(-(a*cosh(d*x + c) + a*sinh(d
*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b)
 + 13824*(((a^4 + a^2*b^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + 2*(a
^4 + a^2*b^2)*c*d*e*f - (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)^4 + 4*((a^4
+ a^2*b^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + 2*(a^4 + a^2*b^2)*c*
d*e*f - (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 +
a^2*b^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + 2*(a^4 + a^2*b^2)*c*d*
e*f - (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 +
a^2*b^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + 2*(a^4 + a^2*b^2)*c*d*
e*f - (a^4 + a^2*b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*
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b^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + 2*(a^4 + a^2*b^2)*c*d*e*f
- (a^4 + a^2*b^2)*c^2*f^2)*sinh(d*x + c)^4)*log(-(a*cosh(d*x + c) + a*sinh(
d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b
) - 27648*((a^4 + a^2*b^2)*f^2*cosh(d*x + c)^4 + 4*(a^4 + a^2*b^2)*f^2*cosh
(d*x + c)^3*sinh(d*x + c) + 6*(a^4 + a^2*b^2)*f^2*cosh(d*x + c)^2*sinh(d*x
+ c)^2 + 4*(a^4 + a^2*b^2)*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + a^2*b
^2)*f^2*sinh(d*x + c)^4)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b
*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 27648*((a^4 +
 a^2*b^2)*f^2*cosh(d*x + c)^4 + 4*(a^4 + a^2*b^2)*f^2*cosh(d*x + c)^3*sinh(
d*x + c) + 6*(a^4 + a^2*b^2)*f^2*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^4 +
 a^2*b^2)*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + a^2*b^2)*f^2*sinh(d*x
+ c)^4)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) +
b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 8*(72*a*b^3*d^2*f^2*x^2 + 72*a
*b^3*d^2*e^2 + 27*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^
2 + 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^7 + 48*a*b^3*d*e*f - 56*
(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3*f^2 + 6*(3
*a*b^3*d^2*e*f - a*b^3*d*f^2)*x)*cosh(d*x + c)^6 + 16*a*b^3*f^2 + 324*(2*(2
*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(2*a^2*b^2 + b^4)*d^2*e^2 - 2*(2*a^2*b^2 +
b^4)*d*e*f + (2*a^2*b^2 + b^4)*f^2 + 2*(2*(2*a^2*b^2 + b^4)*d^2*e*f - (2*a^
2*b^2 + b^4)*d*f^2)*x)*cosh(d*x + c)^5 - 1080*((4*a^3*b + 3*a*b^3)*d^2*f^2*
x^2 + (4*a^3*b + 3*a*b^3)*d^2*e^2 - 2*(4*a^3*b + 3*a*b^3)*d*e*f + 2*(4*a^3*
b + 3*a*b^3)*f^2 + 2*((4*a^3*b + 3*a*b^3)*d^2*e*f - (4*a^3*b + 3*a*b^3)*d*f
^2)*x)*cosh(d*x + c)^4 - 2304*((a^4 + a^2*b^2)*d^3*f^2*x^3 + 3*(a^4 + a^2*b
^2)*d^3*e*f*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*x + 6*(a^4 + a^2*b^2)*c*d^2*e^2
 - 6*(a^4 + a^2*b^2)*c^2*d*e*f + 2*(a^4 + a^2*b^2)*c^3*f^2)*cosh(d*x + c)^3
 + 648*((4*a^3*b + 3*a*b^3)*d^2*f^2*x^2 + (4*a^3*b + 3*a*b^3)*d^2*e^2 + 2*(
4*a^3*b + 3*a*b^3)*d*e*f + 2*(4*a^3*b + 3*a*b^3)*f^2 + 2*((4*a^3*b + 3*a*b^
3)*d^2*e*f + (4*a^3*b + 3*a*b^3)*d*f^2)*x)*cosh(d*x + c)^2 + 48*(3*a*b^3*d^
2*e*f + a*b^3*d*f^2)*x + 108*(2*(2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(2*a^2*b^
2 + b^4)*d^2*e^2 + 2*(2*a^2*b^2 + b^4)*d*e*f + (2*a^2*b^2 + b^4)*f^2 + 2*(2
*(2*a^2*b^2 + b^4)*d^2*e*f + (2*a^2*b^2 + b^4)*d*f^2)*x)*cosh(d*x + c))*sin
h(d*x + c))/(b^5*d^3*cosh(d*x + c)^4 + 4*b^5*d^3*cosh(d*x + c)^3*sinh(d*x +
 c) + 6*b^5*d^3*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*b^5*d^3*cosh(d*x + c)*s
inh(d*x + c)^3 + b^5*d^3*sinh(d*x + c)^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \cosh(dx+c)^3 \sinh(dx+c)^2}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)^3*sinh(d*x + c)^2/(b*sinh(d*x + c) + a)
, x)
```

maple [F] time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 (\cosh^3(dx+c)) (\sinh^2(dx+c))}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="maxima")
```

```
[Out] -1/192*e^2*((8*a*b^2*e^(-d*x - c) - 3*b^3 - 12*(2*a^2*b + b^3)*e^(-2*d*x -
2*c) + 24*(4*a^3 + 3*a*b^2)*e^(-3*d*x - 3*c))*e^(4*d*x + 4*c)/(b^4*d) - 192
*(a^4 + a^2*b^2)*(d*x + c)/(b^5*d) - (8*a*b^2*e^(-3*d*x - 3*c) + 3*b^3*e^(-
4*d*x - 4*c) + 24*(4*a^3 + 3*a*b^2)*e^(-d*x - c) + 12*(2*a^2*b + b^3)*e^(-2
*d*x - 2*c))/(b^4*d) - 192*(a^4 + a^2*b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*
d*x - 2*c) - b)/(b^5*d)) + 1/13824*(4608*(a^4*d^3*f^2*e^(4*c) + a^2*b^2*d^3
*f^2*e^(4*c))*x^3 + 13824*(a^4*d^3*e*f*e^(4*c) + a^2*b^2*d^3*e*f*e^(4*c))*x
^2 + 27*(8*b^4*d^2*f^2*x^2*e^(8*c) + 4*(4*d^2*e*f - d*f^2)*b^4*x*e^(8*c) -
(4*d*e*f - f^2)*b^4*e^(8*c))*e^(4*d*x) - 64*(9*a*b^3*d^2*f^2*x^2*e^(7*c) +
6*(3*d^2*e*f - d*f^2)*a*b^3*x*e^(7*c) - 2*(3*d*e*f - f^2)*a*b^3*e^(7*c))*e^
(3*d*x) - 432*(2*(2*d*e*f - f^2)*a^2*b^2*e^(6*c) + (2*d*e*f - f^2)*b^4*e^(6
*c) - 2*(2*a^2*b^2*d^2*f^2*e^(6*c) + b^4*d^2*f^2*e^(6*c))*x^2 - 2*(2*(2*d^2
*e*f - d*f^2)*a^2*b^2*e^(6*c) + (2*d^2*e*f - d*f^2)*b^4*e^(6*c))*x)*e^(2*d*
x) + 1728*(8*(d*e*f - f^2)*a^3*b*e^(5*c) + 6*(d*e*f - f^2)*a*b^3*e^(5*c) -
(4*a^3*b*d^2*f^2*e^(5*c) + 3*a*b^3*d^2*f^2*e^(5*c))*x^2 - 2*(4*(d^2*e*f - d
*f^2)*a^3*b*e^(5*c) + 3*(d^2*e*f - d*f^2)*a*b^3*e^(5*c))*x)*e^(d*x) + 1728*
(8*(d*e*f + f^2)*a^3*b*e^(3*c) + 6*(d*e*f + f^2)*a*b^3*e^(3*c) + (4*a^3*b*d
^2*f^2*e^(3*c) + 3*a*b^3*d^2*f^2*e^(3*c))*x^2 + 2*(4*(d^2*e*f + d*f^2)*a^3*
b*e^(3*c) + 3*(d^2*e*f + d*f^2)*a*b^3*e^(3*c))*x)*e^(-d*x) + 432*(2*(2*d*e*
f + f^2)*a^2*b^2*e^(2*c) + (2*d*e*f + f^2)*b^4*e^(2*c) + 2*(2*a^2*b^2*d^2*f
^2*e^(2*c) + b^4*d^2*f^2*e^(2*c))*x^2 + 2*(2*(2*d^2*e*f + d*f^2)*a^2*b^2*e^
(2*c) + (2*d^2*e*f + d*f^2)*b^4*e^(2*c))*x)*e^(-2*d*x) + 64*(9*a*b^3*d^2*f^
2*x^2*e^c + 6*(3*d^2*e*f + d*f^2)*a*b^3*x*e^c + 2*(3*d*e*f + f^2)*a*b^3*e^c
```

```
)*e^(-3*d*x) + 27*(8*b^4*d^2*f^2*x^2 + 4*(4*d^2*e*f + d*f^2)*b^4*x + (4*d*e
*f + f^2)*b^4)*e^(-4*d*x))*e^(-4*c)/(b^5*d^3) - integrate(-2*((a^4*b*f^2 +
a^2*b^3*f^2)*x^2 + 2*(a^4*b*e*f + a^2*b^3*e*f)*x - ((a^5*f^2*e^c + a^3*b^2*
f^2*e^c)*x^2 + 2*(a^5*e*f*e^c + a^3*b^2*e*f*e^c)*x)*e^(d*x))/(b^6*e^(2*d*x
+ 2*c) + 2*a*b^5*e^(d*x + c) - b^6), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)^3\sinh(c+d\,x)^2\left(e+f\,x\right)^2}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^3*sinh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)**3*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.374 $\int \frac{(e+fx)\cosh^3(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=499

$$\frac{a^3f\cosh(c+dx)}{b^4d^2}-\frac{a^3(e+fx)\sinh(c+dx)}{b^4d}-\frac{a^2f\sinh(c+dx)\cosh(c+dx)}{4b^3d^2}+\frac{a^2(e+fx)\sinh^2(c+dx)}{2b^3d}+\frac{a^2fx}{4b^3d}+-$$

```
[Out] 1/4*a^2*f*x/b^3/d-3/32*f*x/b/d-1/2*a^2*(a^2+b^2)*(f*x+e)^2/b^5/f+a^3*f*cosh
(d*x+c)/b^4/d^2+2/3*a*f*cosh(d*x+c)/b^2/d^2+1/9*a*f*cosh(d*x+c)^3/b^2/d^2+1
/4*(f*x+e)*cosh(d*x+c)^4/b/d+a^2*(a^2+b^2)*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^
2+b^2)^(1/2)))/b^5/d+a^2*(a^2+b^2)*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/b^5/d+a^2*(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b
^5/d^2+a^2*(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^5/d^2
-a^3*(f*x+e)*sinh(d*x+c)/b^4/d-2/3*a*(f*x+e)*sinh(d*x+c)/b^2/d-1/4*a^2*f*co
sh(d*x+c)*sinh(d*x+c)/b^3/d^2-3/32*f*cosh(d*x+c)*sinh(d*x+c)/b/d^2-1/3*a*(f
*x+e)*cosh(d*x+c)^2*sinh(d*x+c)/b^2/d-1/16*f*cosh(d*x+c)^3*sinh(d*x+c)/b/d^
2+1/2*a^2*(f*x+e)*sinh(d*x+c)^2/b^3/d
```

Rubi [A] time = 0.68, antiderivative size = 499, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 13, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.382, Rules used = {5579, 5447, 2635, 8, 3310, 3296, 2638, 5565, 5446, 5561, 2190, 2279, 2391}

$$\frac{a^2f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^5d^2}+\frac{a^2f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^5d^2}+\frac{a^3f\cosh(c+dx)}{b^4d^2}-\frac{a^2f\sinh(c+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^3*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*f*x)/(4*b^3*d) - (3*f*x)/(32*b*d) - (a^2*(a^2 + b^2)*(e + f*x)^2)/(2*b
^5*f) + (a^3*f*Cosh[c + d*x])/(b^4*d^2) + (2*a*f*Cosh[c + d*x])/(3*b^2*d^2)
 + (a*f*Cosh[c + d*x]^3)/(9*b^2*d^2) + ((e + f*x)*Cosh[c + d*x]^4)/(4*b*d)
+ (a^2*(a^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])]
)/(b^5*d) + (a^2*(a^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2])])/(b^5*d) + (a^2*(a^2 + b^2)*f*PolyLog[2, -((b*E^(c + d*x))/(a -
Sqrt[a^2 + b^2]))])/(b^5*d^2) + (a^2*(a^2 + b^2)*f*PolyLog[2, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))])/(b^5*d^2) - (a^3*(e + f*x)*Sinh[c + d*x])/(b^
4*d) - (2*a*(e + f*x)*Sinh[c + d*x])/(3*b^2*d) - (a^2*f*Cosh[c + d*x]*Sinh[
c + d*x])/(4*b^3*d^2) - (3*f*Cosh[c + d*x]*Sinh[c + d*x])/(32*b*d^2) - (a*(
e + f*x)*Cosh[c + d*x]^2*Sinh[c + d*x])/(3*b^2*d) - (f*Cosh[c + d*x]^3*Sinh
[c + d*x])/(16*b*d^2) + (a^2*(e + f*x)*Sinh[c + d*x]^2)/(2*b^3*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
```

```
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh^3(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh^3(c+dx)\sinh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\cosh^3(c+dx)\sinh(}{a+b\sinh(c+dx)}}{b}$$

$$= \frac{(e+fx)\cosh^4(c+dx)}{4bd} - \frac{a\int (e+fx)\cosh^3(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx}{a+b}}{}$$

$$= \frac{af\cosh^3(c+dx)}{9b^2d^2} + \frac{(e+fx)\cosh^4(c+dx)}{4bd} - \frac{a(e+fx)\cosh^2(c+}{3b^2d}$$

$$= -\frac{a^2\left(a^2+b^2\right)(e+fx)^2}{2b^5f} + \frac{af\cosh^3(c+dx)}{9b^2d^2} + \frac{(e+fx)\cosh^4(c+d}{4bd}$$

$$= -\frac{3fx}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+fx)^2}{2b^5f} + \frac{a^3f\cosh(c+dx)}{b^4d^2} + \frac{2af\cosh(c+}{3b^2d^2}$$

$$= \frac{a^2fx}{4b^3d} - \frac{3fx}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+fx)^2}{2b^5f} + \frac{a^3f\cosh(c+dx)}{b^4d^2} + \frac{2af\,\mathrm{co}}{3}$$

$$= \frac{a^2fx}{4b^3d} - \frac{3fx}{32bd} - \frac{a^2\left(a^2+b^2\right)(e+fx)^2}{2b^5f} + \frac{a^3f\cosh(c+dx)}{b^4d^2} + \frac{2af\,\mathrm{co}}{3}$$

Mathematica [A] time = 2.95, size = 853, normalized size = 1.71

$$\frac{-144de\log(a+b\sinh(c+dx))b^4 + 72f\left(dx\left(dx-2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)-2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)\right)-2\mathrm{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]^3*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]

[Out] (-144*b^4*d*e*Log[a + b*Sinh[c + d*x]] + 72*b^4*f*(d*x*(d*x - 2*Log[1 + (b*
E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a
^2 + b^2])]) - 2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*Pol
yLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) + 72*b^2*d*e*((4*a^2 + b
^2)*Log[a + b*Sinh[c + d*x]] - 4*a*b*Sinh[c + d*x] + 2*b^2*Sinh[c + d*x]^2)
 + 24*d*e*(3*(16*a^4 + 12*a^2*b^2 + b^4)*Log[a + b*Sinh[c + d*x]] - 12*a*b*
(4*a^2 + 3*b^2)*Sinh[c + d*x] + 6*b^2*(4*a^2 + 3*b^2)*Sinh[c + d*x]^2 - 16*
```

```
a*b^3*Sinh[c + d*x]^3 + 12*b^4*Sinh[c + d*x]^4) + 36*b^2*f*(8*a*b*Cosh[c +
d*x] + 2*b^2*d*x*Cosh[2*(c + d*x)] + 2*(4*a^2 + b^2)*(-1/2*(c + d*x)^2 + (c
 + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + (c + d*x)*Log[1 +
(b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - c*Log[a + b*Sinh[c + d*x]] + PolyL
og[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + PolyLog[2, -((b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2]))]) - 8*a*b*d*x*Sinh[c + d*x] - b^2*Sinh[2*(c + d*x)
]) + f*(576*a*b*(2*a^2 + b^2)*Cosh[c + d*x] + 72*b^2*(4*a^2 + b^2)*d*x*Cosh
[2*(c + d*x)] + 32*a*b^3*Cosh[3*(c + d*x)] + 36*b^4*d*x*Cosh[4*(c + d*x)] +
 72*(16*a^4 + 12*a^2*b^2 + b^4)*(-1/2*(c + d*x)^2 + (c + d*x)*Log[1 + (b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2])] + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a +
Sqrt[a^2 + b^2])] - c*Log[a + b*Sinh[c + d*x]] + PolyLog[2, (b*E^(c + d*x))
/(-a + Sqrt[a^2 + b^2])] + PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
]))]) - 576*a*b*(2*a^2 + b^2)*d*x*Sinh[c + d*x] - 36*b^2*(4*a^2 + b^2)*Sinh
[2*(c + d*x)] - 96*a*b^3*d*x*Sinh[3*(c + d*x)] - 9*b^4*Sinh[4*(c + d*x)]))/
(1152*b^5*d^2)
```

fricas [B] time = 0.60, size = 3795, normalized size = 7.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/2304*(9*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c)^8 + 9*(4*b^4*d*f*
x + 4*b^4*d*e - b^4*f)*sinh(d*x + c)^8 - 32*(3*a*b^3*d*f*x + 3*a*b^3*d*e -
a*b^3*f)*cosh(d*x + c)^7 - 8*(12*a*b^3*d*f*x + 12*a*b^3*d*e - 4*a*b^3*f - 9
*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c))*sinh(d*x + c)^7 + 36*b^4*
d*f*x + 72*(2*(2*a^2*b^2 + b^4)*d*f*x + 2*(2*a^2*b^2 + b^4)*d*e - (2*a^2*b^
2 + b^4)*f)*cosh(d*x + c)^6 + 4*(36*(2*a^2*b^2 + b^4)*d*f*x + 36*(2*a^2*b^2
 + b^4)*d*e + 63*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c)^2 - 18*(2*
a^2*b^2 + b^4)*f - 56*(3*a*b^3*d*f*x + 3*a*b^3*d*e - a*b^3*f)*cosh(d*x + c)
)*sinh(d*x + c)^6 + 36*b^4*d*e - 288*((4*a^3*b + 3*a*b^3)*d*f*x + (4*a^3*b
+ 3*a*b^3)*d*e - (4*a^3*b + 3*a*b^3)*f)*cosh(d*x + c)^5 - 24*(12*(4*a^3*b +
 3*a*b^3)*d*f*x - 21*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c)^3 + 12
*(4*a^3*b + 3*a*b^3)*d*e + 28*(3*a*b^3*d*f*x + 3*a*b^3*d*e - a*b^3*f)*cosh(
d*x + c)^2 - 12*(4*a^3*b + 3*a*b^3)*f - 18*(2*(2*a^2*b^2 + b^4)*d*f*x + 2*(
2*a^2*b^2 + b^4)*d*e - (2*a^2*b^2 + b^4)*f)*cosh(d*x + c))*sinh(d*x + c)^5
+ 9*b^4*f - 1152*((a^4 + a^2*b^2)*d^2*f*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*x + 4
*(a^4 + a^2*b^2)*c*d*e - 2*(a^4 + a^2*b^2)*c^2*f)*cosh(d*x + c)^4 - 2*(576*
(a^4 + a^2*b^2)*d^2*f*x^2 + 1152*(a^4 + a^2*b^2)*d^2*e*x - 315*(4*b^4*d*f*x
 + 4*b^4*d*e - b^4*f)*cosh(d*x + c)^4 + 2304*(a^4 + a^2*b^2)*c*d*e - 1152*(
a^4 + a^2*b^2)*c^2*f + 560*(3*a*b^3*d*f*x + 3*a*b^3*d*e - a*b^3*f)*cosh(d*x
 + c)^3 - 540*(2*(2*a^2*b^2 + b^4)*d*f*x + 2*(2*a^2*b^2 + b^4)*d*e - (2*a^2
*b^2 + b^4)*f)*cosh(d*x + c)^2 + 720*((4*a^3*b + 3*a*b^3)*d*f*x + (4*a^3*b
```

+ 3*a*b^3)*d*e - (4*a^3*b + 3*a*b^3)*f)*cosh(d*x + c))*sinh(d*x + c)^4 + 28
8*((4*a^3*b + 3*a*b^3)*d*f*x + (4*a^3*b + 3*a*b^3)*d*e + (4*a^3*b + 3*a*b^3
)*f)*cosh(d*x + c)^3 + 8*(63*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c
)^5 - 140*(3*a*b^3*d*f*x + 3*a*b^3*d*e - a*b^3*f)*cosh(d*x + c)^4 + 36*(4*a
^3*b + 3*a*b^3)*d*f*x + 180*(2*(2*a^2*b^2 + b^4)*d*f*x + 2*(2*a^2*b^2 + b^4
)*d*e - (2*a^2*b^2 + b^4)*f)*cosh(d*x + c)^3 + 36*(4*a^3*b + 3*a*b^3)*d*e -
 360*((4*a^3*b + 3*a*b^3)*d*f*x + (4*a^3*b + 3*a*b^3)*d*e - (4*a^3*b + 3*a*
b^3)*f)*cosh(d*x + c)^2 + 36*(4*a^3*b + 3*a*b^3)*f - 576*((a^4 + a^2*b^2)*d
^2*f*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*x + 4*(a^4 + a^2*b^2)*c*d*e - 2*(a^4 + a
^2*b^2)*c^2*f)*cosh(d*x + c))*sinh(d*x + c)^3 + 72*(2*(2*a^2*b^2 + b^4)*d*f
x + 2(2*a^2*b^2 + b^4)*d*e + (2*a^2*b^2 + b^4)*f)*cosh(d*x + c)^2 + 12*(2
1*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c)^6 - 56*(3*a*b^3*d*f*x + 3
*a*b^3*d*e - a*b^3*f)*cosh(d*x + c)^5 + 90*(2*(2*a^2*b^2 + b^4)*d*f*x + 2*(
2*a^2*b^2 + b^4)*d*e - (2*a^2*b^2 + b^4)*f)*cosh(d*x + c)^4 + 12*(2*a^2*b^2
 + b^4)*d*f*x - 240*((4*a^3*b + 3*a*b^3)*d*f*x + (4*a^3*b + 3*a*b^3)*d*e -
(4*a^3*b + 3*a*b^3)*f)*cosh(d*x + c)^3 + 12*(2*a^2*b^2 + b^4)*d*e - 576*((a
^4 + a^2*b^2)*d^2*f*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*x + 4*(a^4 + a^2*b^2)*c*d
e - 2(a^4 + a^2*b^2)*c^2*f)*cosh(d*x + c)^2 + 6*(2*a^2*b^2 + b^4)*f + 72*
((4*a^3*b + 3*a*b^3)*d*f*x + (4*a^3*b + 3*a*b^3)*d*e + (4*a^3*b + 3*a*b^3)*
f)*cosh(d*x + c))*sinh(d*x + c)^2 + 32*(3*a*b^3*d*f*x + 3*a*b^3*d*e + a*b^3
*f)*cosh(d*x + c) + 2304*((a^4 + a^2*b^2)*f*cosh(d*x + c)^4 + 4*(a^4 + a^2*
b^2)*f*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^4 + a^2*b^2)*f*cosh(d*x + c)^2*
sinh(d*x + c)^2 + 4*(a^4 + a^2*b^2)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4
+ a^2*b^2)*f*sinh(d*x + c)^4)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b
*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2304*
((a^4 + a^2*b^2)*f*cosh(d*x + c)^4 + 4*(a^4 + a^2*b^2)*f*cosh(d*x + c)^3*si
nh(d*x + c) + 6*(a^4 + a^2*b^2)*f*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^4
+ a^2*b^2)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + a^2*b^2)*f*sinh(d*x + c
)^4)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2304*(((a^4 + a^2*b^2)*d*e - (
a^4 + a^2*b^2)*c*f)*cosh(d*x + c)^4 + 4*((a^4 + a^2*b^2)*d*e - (a^4 + a^2*b
^2)*c*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d*e - (a^4 + a^
2*b^2)*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2*b^2)*d*e - (a^4
 + a^2*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d*e - (a^
4 + a^2*b^2)*c*f)*sinh(d*x + c)^4)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c
) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2304*(((a^4 + a^2*b^2)*d*e - (a^4 +
a^2*b^2)*c*f)*cosh(d*x + c)^4 + 4*((a^4 + a^2*b^2)*d*e - (a^4 + a^2*b^2)*c*
f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d*e - (a^4 + a^2*b^2)
*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2*b^2)*d*e - (a^4 + a^2
*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d*e - (a^4 + a^
2*b^2)*c*f)*sinh(d*x + c)^4)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*
b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2304*(((a^4 + a^2*b^2)*d*f*x + (a^4 + a^2*
b^2)*c*f)*cosh(d*x + c)^4 + 4*((a^4 + a^2*b^2)*d*f*x + (a^4 + a^2*b^2)*c*f)
*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4 + a^2*b^2)*d*f*x + (a^4 + a^2*b^2)
*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4 + a^2*b^2)*d*f*x + (a^4 + a

```
^2*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + a^2*b^2)*d*f*x + (a^4
+ a^2*b^2)*c*f)*sinh(d*x + c)^4)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) +
(b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2304*((
(a^4 + a^2*b^2)*d*f*x + (a^4 + a^2*b^2)*c*f)*cosh(d*x + c)^4 + 4*((a^4 + a^
2*b^2)*d*f*x + (a^4 + a^2*b^2)*c*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4
 + a^2*b^2)*d*f*x + (a^4 + a^2*b^2)*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 +
4*((a^4 + a^2*b^2)*d*f*x + (a^4 + a^2*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)
^3 + ((a^4 + a^2*b^2)*d*f*x + (a^4 + a^2*b^2)*c*f)*sinh(d*x + c)^4)*log(-(a
*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b) + 8*(9*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x
 + c)^7 + 12*a*b^3*d*f*x - 28*(3*a*b^3*d*f*x + 3*a*b^3*d*e - a*b^3*f)*cosh(
d*x + c)^6 + 12*a*b^3*d*e + 54*(2*(2*a^2*b^2 + b^4)*d*f*x + 2*(2*a^2*b^2 +
b^4)*d*e - (2*a^2*b^2 + b^4)*f)*cosh(d*x + c)^5 + 4*a*b^3*f - 180*((4*a^3*b
 + 3*a*b^3)*d*f*x + (4*a^3*b + 3*a*b^3)*d*e - (4*a^3*b + 3*a*b^3)*f)*cosh(d
*x + c)^4 - 576*((a^4 + a^2*b^2)*d^2*f*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*x + 4*
(a^4 + a^2*b^2)*c*d*e - 2*(a^4 + a^2*b^2)*c^2*f)*cosh(d*x + c)^3 + 108*((4*
a^3*b + 3*a*b^3)*d*f*x + (4*a^3*b + 3*a*b^3)*d*e + (4*a^3*b + 3*a*b^3)*f)*c
osh(d*x + c)^2 + 18*(2*(2*a^2*b^2 + b^4)*d*f*x + 2*(2*a^2*b^2 + b^4)*d*e +
(2*a^2*b^2 + b^4)*f)*cosh(d*x + c))*sinh(d*x + c))/(b^5*d^2*cosh(d*x + c)^4
 + 4*b^5*d^2*cosh(d*x + c)^3*sinh(d*x + c) + 6*b^5*d^2*cosh(d*x + c)^2*sinh
(d*x + c)^2 + 4*b^5*d^2*cosh(d*x + c)*sinh(d*x + c)^3 + b^5*d^2*sinh(d*x +
c)^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\cosh\left(dx+c\right)^{3}\sinh\left(dx+c\right)^{2}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)^3*sinh(d*x + c)^2/(b*sinh(d*x + c) + a),
x)
```

maple [B] time = 0.26, size = 1217, normalized size = 2.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/d^2/b^3*a^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*
c-2/d/b^3*f*a^2*c*x+1/d/b^3*a^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a
```

```
^2+b^2)^(1/2)))*x+1/d^2/b^3*a^2*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a
^2+b^2)^(1/2)))*c+1/d/b^3*a^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a
^2+b^2)^(1/2)))*x-1/d^2/b^3*a^2*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2
/d^2/b^3*a^2*f*c*ln(exp(d*x+c))+a^2*e*x/b^3-1/2*a^2*f*x^2/b^3-1/2*a^4*f*x^2
/b^5+1/d*a^4/b^5*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))
*x+1/d^2*a^4/b^5*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))
*c+1/d*a^4/b^5*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))
*x+1/d^2*a^4/b^5*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)
))*c-1/d^2*a^4/b^5*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d^2*a^4/b^5*
f*c*ln(exp(d*x+c))-2/d*a^4/b^5*f*c*x+1/8*a*(4*a^2+3*b^2)*(d*f*x+d*e+f)/b^4/
d^2*exp(-d*x-c)+a^4*e*x/b^5-1/72*a*(3*d*f*x+3*d*e-f)/b^2/d^2*exp(3*d*x+3*c)
-1/d^2*a^4/b^5*f*c^2+1/d^2*a^4/b^5*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)
/(a+(a^2+b^2)^(1/2)))+1/d^2*a^4/b^5*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-
a)/(-a+(a^2+b^2)^(1/2)))+1/d*a^4/b^5*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b
)-2/d*a^4/b^5*e*ln(exp(d*x+c))+1/32*(2*a^2+b^2)*(2*d*f*x+2*d*e+f)/b^3/d^2*e
xp(-2*d*x-2*c)+1/72*a*(3*d*f*x+3*d*e+f)/b^2/d^2*exp(-3*d*x-3*c)+1/256*(4*d*
f*x+4*d*e-f)/b/d^2*exp(4*d*x+4*c)+1/32*(4*a^2*d*f*x+2*b^2*d*f*x+4*a^2*d*e+2
*b^2*d*e-2*a^2*f-b^2*f)/b^3/d^2*exp(2*d*x+2*c)+1/256*(4*d*f*x+4*d*e+f)/b/d^
2*exp(-4*d*x-4*c)-1/8*a*(4*a^2*d*f*x+3*b^2*d*f*x+4*a^2*d*e+3*b^2*d*e-4*a^2*
f-3*b^2*f)/b^4/d^2*exp(d*x+c)-1/d^2/b^3*f*a^2*c^2+1/d^2/b^3*a^2*f*dilog((b*
exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/d^2/b^3*a^2*f*dilog((-
b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d/b^3*a^2*e*ln(b*ex
p(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/d/b^3*a^2*e*ln(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{192}e\left(\frac{\left(8\,ab^2e^{(-dx-c)}-3\,b^3-12\left(2\,a^2b+b^3\right)e^{(-2\,dx-2\,c)}+24\left(4\,a^3+3\,ab^2\right)e^{(-3\,dx-3\,c)}\right)e^{(4\,dx+4\,c)}}{b^4d}-\frac{192\left(a^4+a^2b^2\right)(\cdots}{b^5d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/192*e*((8*a*b^2*e^(-d*x - c) - 3*b^3 - 12*(2*a^2*b + b^3)*e^(-2*d*x - 2*
c) + 24*(4*a^3 + 3*a*b^2)*e^(-3*d*x - 3*c))*e^(4*d*x + 4*c)/(b^4*d) - 192*(
a^4 + a^2*b^2)*(d*x + c)/(b^5*d) - (8*a*b^2*e^(-3*d*x - 3*c) + 3*b^3*e^(-4*
d*x - 4*c) + 24*(4*a^3 + 3*a*b^2)*e^(-d*x - c) + 12*(2*a^2*b + b^3)*e^(-2*d
*x - 2*c))/(b^4*d) - 192*(a^4 + a^2*b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*
x - 2*c) - b)/(b^5*d)) + 1/2304*f*((1152*(a^4*d^2*e^(4*c) + a^2*b^2*d^2*e^(
4*c))*x^2 + 9*(4*b^4*d*x*e^(8*c) - b^4*e^(8*c))*e^(4*d*x) - 32*(3*a*b^3*d*x
*e^(7*c) - a*b^3*e^(7*c))*e^(3*d*x) - 72*(2*a^2*b^2*e^(6*c) + b^4*e^(6*c) -
 2*(2*a^2*b^2*d*e^(6*c) + b^4*d*e^(6*c))*x)*e^(2*d*x) + 288*(4*a^3*b*e^(5*c
) + 3*a*b^3*e^(5*c) - (4*a^3*b*d*e^(5*c) + 3*a*b^3*d*e^(5*c))*x)*e^(d*x) +
288*(4*a^3*b*e^(3*c) + 3*a*b^3*e^(3*c) + (4*a^3*b*d*e^(3*c) + 3*a*b^3*d*e^(
```

```
3*c))*x)*e^(-d*x) + 72*(2*a^2*b^2*e^(2*c) + b^4*e^(2*c) + 2*(2*a^2*b^2*d*e^
(2*c) + b^4*d*e^(2*c))*x)*e^(-2*d*x) + 32*(3*a*b^3*d*x*e^c + a*b^3*e^c)*e^(
-3*d*x) + 9*(4*b^4*d*x + b^4)*e^(-4*d*x))*e^(-4*c)/(b^5*d^2) - 72*integrate
(64*((a^5*e^c + a^3*b^2*e^c)*x*e^(d*x) - (a^4*b + a^2*b^3)*x)/(b^6*e^(2*d*x
 + 2*c) + 2*a*b^5*e^(d*x + c) - b^6), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+dx)^3\sinh(c+dx)^2\left(e+fx\right)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^3*sinh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**3*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.375 $\int \frac{\cosh^3(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=113

$$\frac{a^2\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{b^5d}-\frac{a\left(a^2+b^2\right)\sinh(c+dx)}{b^4d}+\frac{\left(a^2+b^2\right)\sinh^2(c+dx)}{2b^3d}-\frac{a\sinh^3(c+dx)}{3b^2d}+\frac{\sinh^4(c+dx)}{4bd}$$

```
[Out] a^2*(a^2+b^2)*ln(a+b*sinh(d*x+c))/b^5/d-a*(a^2+b^2)*sinh(d*x+c)/b^4/d+1/2*(
a^2+b^2)*sinh(d*x+c)^2/b^3/d-1/3*a*sinh(d*x+c)^3/b^2/d+1/4*sinh(d*x+c)^4/b/
d
```

Rubi [A] time = 0.16, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {2837, 12, 894}

$$\frac{\left(a^2+b^2\right)\sinh^2(c+dx)}{2b^3d}-\frac{a\left(a^2+b^2\right)\sinh(c+dx)}{b^4d}+\frac{a^2\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{b^5d}-\frac{a\sinh^3(c+dx)}{3b^2d}+\frac{\sinh^4(c+dx)}{4bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]^3*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*(a^2 + b^2)*Log[a + b*Sinh[c + d*x]])/(b^5*d) - (a*(a^2 + b^2)*Sinh[c
+ d*x])/(b^4*d) + ((a^2 + b^2)*Sinh[c + d*x]^2)/(2*b^3*d) - (a*Sinh[c + d*x
]^3)/(3*b^2*d) + Sinh[c + d*x]^4/(4*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
```

```
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\cosh^3(c+dx)\sinh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\text{Subst}\left(\int \frac{x^2\left(-b^2-x^2\right)}{b^2(a+x)}\,dx, x, b\sinh(c+dx)\right)}{b^3 d}$$
$$= -\frac{\text{Subst}\left(\int \frac{x^2\left(-b^2-x^2\right)}{a+x}\,dx, x, b\sinh(c+dx)\right)}{b^5 d}$$
$$= -\frac{\text{Subst}\left(\int \left(a\left(a^2+b^2\right)-\left(a^2+b^2\right)x+ax^2-x^3-\frac{a^2\left(a^2+b^2\right)}{a+x}\right)dx, x, b\sinh(c\right.}{b^5 d}$$
$$= \frac{a^2\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{b^5 d} - \frac{a\left(a^2+b^2\right)\sinh(c+dx)}{b^4 d} + \frac{\left(a^2+b^2\right.}{}$$

Mathematica [A] time = 0.23, size = 98, normalized size = 0.87

$$\frac{6b^2\left(a^2+b^2\right)\sinh^2(c+dx)-12ab\left(a^2+b^2\right)\sinh(c+dx)+12a^2\left(a^2+b^2\right)\log(a+b\sinh(c+dx))-4ab^3\sinh^3}{12b^5 d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]^3*Sinh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (12*a^2*(a^2 + b^2)*Log[a + b*Sinh[c + d*x]] - 12*a*b*(a^2 + b^2)*Sinh[c +
d*x] + 6*b^2*(a^2 + b^2)*Sinh[c + d*x]^2 - 4*a*b^3*Sinh[c + d*x]^3 + 3*b^4*
Sinh[c + d*x]^4)/(12*b^5*d)
```

fricas [B] time = 0.58, size = 1069, normalized size = 9.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="frica
s")
```

```
[Out] 1/192*(3*b^4*cosh(d*x + c)^8 + 3*b^4*sinh(d*x + c)^8 - 8*a*b^3*cosh(d*x + c
)^7 + 8*(3*b^4*cosh(d*x + c) - a*b^3)*sinh(d*x + c)^7 - 192*(a^4 + a^2*b^2)
*d*x*cosh(d*x + c)^4 + 12*(2*a^2*b^2 + b^4)*cosh(d*x + c)^6 + 4*(21*b^4*cos
h(d*x + c)^2 - 14*a*b^3*cosh(d*x + c) + 6*a^2*b^2 + 3*b^4)*sinh(d*x + c)^6
```

```
- 24*(4*a^3*b + 3*a*b^3)*cosh(d*x + c)^5 + 24*(7*b^4*cosh(d*x + c)^3 - 7*a*
b^3*cosh(d*x + c)^2 - 4*a^3*b - 3*a*b^3 + 3*(2*a^2*b^2 + b^4)*cosh(d*x + c)
)*sinh(d*x + c)^5 + 8*a*b^3*cosh(d*x + c) + 2*(105*b^4*cosh(d*x + c)^4 - 14
0*a*b^3*cosh(d*x + c)^3 - 96*(a^4 + a^2*b^2)*d*x + 90*(2*a^2*b^2 + b^4)*cos
h(d*x + c)^2 - 60*(4*a^3*b + 3*a*b^3)*cosh(d*x + c))*sinh(d*x + c)^4 + 3*b^
4 + 24*(4*a^3*b + 3*a*b^3)*cosh(d*x + c)^3 + 8*(21*b^4*cosh(d*x + c)^5 - 35
*a*b^3*cosh(d*x + c)^4 + 12*a^3*b + 9*a*b^3 - 96*(a^4 + a^2*b^2)*d*x*cosh(d
*x + c) + 30*(2*a^2*b^2 + b^4)*cosh(d*x + c)^3 - 30*(4*a^3*b + 3*a*b^3)*cos
h(d*x + c)^2)*sinh(d*x + c)^3 + 12*(2*a^2*b^2 + b^4)*cosh(d*x + c)^2 + 12*(
7*b^4*cosh(d*x + c)^6 - 14*a*b^3*cosh(d*x + c)^5 - 96*(a^4 + a^2*b^2)*d*x*c
osh(d*x + c)^2 + 15*(2*a^2*b^2 + b^4)*cosh(d*x + c)^4 + 2*a^2*b^2 + b^4 - 2
0*(4*a^3*b + 3*a*b^3)*cosh(d*x + c)^3 + 6*(4*a^3*b + 3*a*b^3)*cosh(d*x + c)
)*sinh(d*x + c)^2 + 192*((a^4 + a^2*b^2)*cosh(d*x + c)^4 + 4*(a^4 + a^2*b^2
)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^4 + a^2*b^2)*cosh(d*x + c)^2*sinh(d*
x + c)^2 + 4*(a^4 + a^2*b^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + a^2*b^2
)*sinh(d*x + c)^4)*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x +
c))) + 8*(3*b^4*cosh(d*x + c)^7 - 7*a*b^3*cosh(d*x + c)^6 - 96*(a^4 + a^2*b
^2)*d*x*cosh(d*x + c)^3 + 9*(2*a^2*b^2 + b^4)*cosh(d*x + c)^5 - 15*(4*a^3*b
 + 3*a*b^3)*cosh(d*x + c)^4 + a*b^3 + 9*(4*a^3*b + 3*a*b^3)*cosh(d*x + c)^2
 + 3*(2*a^2*b^2 + b^4)*cosh(d*x + c))*sinh(d*x + c))/(b^5*d*cosh(d*x + c)^4
 + 4*b^5*d*cosh(d*x + c)^3*sinh(d*x + c) + 6*b^5*d*cosh(d*x + c)^2*sinh(d*x
 + c)^2 + 4*b^5*d*cosh(d*x + c)*sinh(d*x + c)^3 + b^5*d*sinh(d*x + c)^4)
```

giac [A] time = 0.27, size = 202, normalized size = 1.79

$$\frac{\frac{3\,b^3\left(e^{(dx+c)}-e^{(-dx-c)}\right)^4-8\,ab^2\left(e^{(dx+c)}-e^{(-dx-c)}\right)^3+24\,a^2b\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+24\,b^3\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2-96\,a^3\left(e^{(dx+c)}-e^{(-dx-c)}\right)-96\,ab^2\left(e^{(dx+c)}-e^{(-dx-c)}\right)}{b^4}}{192\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac"
)
```

```
[Out] 1/192*((3*b^3*(e^(d*x + c) - e^(-d*x - c))^4 - 8*a*b^2*(e^(d*x + c) - e^(-d
*x - c))^3 + 24*a^2*b*(e^(d*x + c) - e^(-d*x - c))^2 + 24*b^3*(e^(d*x + c)
- e^(-d*x - c))^2 - 96*a^3*(e^(d*x + c) - e^(-d*x - c)) - 96*a*b^2*(e^(d*x
+ c) - e^(-d*x - c)))/b^4 + 192*(a^4 + a^2*b^2)*log(abs(b*(e^(d*x + c) - e^
(-d*x - c)) + 2*a))/b^5)/d
```

maple [B] time = 0.08, size = 614, normalized size = 5.43

$$\frac{\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)a^2}{d\,b^3}+\frac{a}{d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)a^2}{d\,b^3}+\frac{}{d\,b^2\left(\mathrm{ta}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/d/b^3*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)*a^2+1/d/b^2/(
tanh(1/2*d*x+1/2*c)-1)*a-1/d/b^3*ln(tanh(1/2*d*x+1/2*c)-1)*a^2+1/d/b^2/(tan
h(1/2*d*x+1/2*c)+1)*a-1/d/b^3*ln(tanh(1/2*d*x+1/2*c)+1)*a^2+1/2/d/b^2/(tanh
(1/2*d*x+1/2*c)-1)^2*a+1/2/d/b^3/(tanh(1/2*d*x+1/2*c)-1)*a^2-1/2/d/b^2/(tan
h(1/2*d*x+1/2*c)+1)^2*a-1/2/d/b^3/(tanh(1/2*d*x+1/2*c)+1)*a^2+1/3/d/b^2/(ta
nh(1/2*d*x+1/2*c)-1)^3*a+1/2/d/b^3/(tanh(1/2*d*x+1/2*c)-1)^2*a^2+1/d/b^4/(t
anh(1/2*d*x+1/2*c)-1)*a^3-1/d*a^4/b^5*ln(tanh(1/2*d*x+1/2*c)-1)+1/3/d/b^2/(
tanh(1/2*d*x+1/2*c)+1)^3*a+1/2/d/b^3/(tanh(1/2*d*x+1/2*c)+1)^2*a^2+1/d/b^4/
(tanh(1/2*d*x+1/2*c)+1)*a^3-1/d*a^4/b^5*ln(tanh(1/2*d*x+1/2*c)+1)+1/d*a^4/b
^5*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)+1/4/d/b/(tanh(1/2*
d*x+1/2*c)-1)^4+1/4/d/b/(tanh(1/2*d*x+1/2*c)+1)^4+5/8/d/b/(tanh(1/2*d*x+1/2
*c)-1)^2+5/8/d/b/(tanh(1/2*d*x+1/2*c)+1)^2+1/2/d/b/(tanh(1/2*d*x+1/2*c)-1)^
3-1/2/d/b/(tanh(1/2*d*x+1/2*c)+1)^3+3/8/d/b/(tanh(1/2*d*x+1/2*c)-1)-3/8/d/b
/(tanh(1/2*d*x+1/2*c)+1)
```

maxima [B] time = 0.34, size = 234, normalized size = 2.07

$$-\frac{\left(8\,ab^2e^{(-dx-c)} - 3\,b^3 - 12\left(2\,a^2b + b^3\right)e^{(-2\,dx-2\,c)} + 24\left(4\,a^3 + 3\,ab^2\right)e^{(-3\,dx-3\,c)}\right)e^{(4\,dx+4\,c)}}{192\,b^4d} + \frac{\left(a^4 + a^2b^2\right)(dx + c)}{b^5d} + \frac{8}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxim
a")
```

```
[Out] -1/192*(8*a*b^2*e^(-d*x - c) - 3*b^3 - 12*(2*a^2*b + b^3)*e^(-2*d*x - 2*c)
+ 24*(4*a^3 + 3*a*b^2)*e^(-3*d*x - 3*c))*e^(4*d*x + 4*c)/(b^4*d) + (a^4 + a
^2*b^2)*(d*x + c)/(b^5*d) + 1/192*(8*a*b^2*e^(-3*d*x - 3*c) + 3*b^3*e^(-4*d
*x - 4*c) + 24*(4*a^3 + 3*a*b^2)*e^(-d*x - c) + 12*(2*a^2*b + b^3)*e^(-2*d*
x - 2*c))/(b^4*d) + (a^4 + a^2*b^2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2
*c) - b)/(b^5*d)
```

mupad [B] time = 0.59, size = 238, normalized size = 2.11

$$\frac{e^{-4\,c-4\,d\,x}}{64\,b\,d} - \frac{x\,\left(a^4 + a^2\,b^2\right)}{b^5} + \frac{e^{4\,c+4\,d\,x}}{64\,b\,d} + \frac{a\,e^{-3\,c-3\,d\,x}}{24\,b^2\,d} - \frac{a\,e^{3\,c+3\,d\,x}}{24\,b^2\,d} + \frac{\ln\left(2\,a\,e^{d\,x}\,e^{c} - b + b\,e^{2\,c}\,e^{2\,d\,x}\right)\,\left(a^4 + a^2\,b^2\right)}{b^5\,d} - \frac{e^{c+d\,x}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] exp(- 4*c - 4*d*x)/(64*b*d) - (x*(a^4 + a^2*b^2))/b^5 + exp(4*c + 4*d*x)/(6
4*b*d) + (a*exp(- 3*c - 3*d*x))/(24*b^2*d) - (a*exp(3*c + 3*d*x))/(24*b^2*d
```

```
) + (log(2*a*exp(d*x)*exp(c) - b + b*exp(2*c)*exp(2*d*x))*(a^4 + a^2*b^2))/
(b^5*d) - (exp(c + d*x)*(3*a*b^2 + 4*a^3))/(8*b^4*d) + (exp(- c - d*x)*(3*a
*b^2 + 4*a^3))/(8*b^4*d) + (exp(- 2*c - 2*d*x)*(2*a^2 + b^2))/(16*b^3*d) +
(exp(2*c + 2*d*x)*(2*a^2 + b^2))/(16*b^3*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**3*sinh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.376 $\int \frac{\cosh^3(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=39

$$\text{Int}\left(\frac{\sinh^2(c+dx)\cosh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)^3*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh^3(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]^3*Sinh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]^3*Sinh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x
])), x]
```

Rubi steps

$$\int \frac{\cosh^3(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\cosh^3(c+dx)\sinh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]^3*Sinh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]
)),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)^3\sinh(dx+c)^2}{afx+ae+(bfx+be)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] integral(cosh(d*x + c)^3*sinh(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(
d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh\left(dx+c\right)^{3} \sinh\left(dx+c\right)^{2}}{\left(fx+e\right)\left(b\sinh\left(dx+c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate(cosh(d*x + c)^3*sinh(d*x + c)^2/((f*x + e)*(b*sinh(d*x + c) + a))
, x)
```

maple [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(\cosh^{3}\left(dx+c\right)\right)\left(\sinh^{2}\left(dx+c\right)\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)^3*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{e^{\left(-4\,c+\frac{4\,de}{f}\right)}E_{1}\left(\frac{4\left(fx+e\right)d}{f}\right)}{16\,bf}+\frac{ae^{\left(-3\,c+\frac{3\,de}{f}\right)}E_{1}\left(\frac{3\left(fx+e\right)d}{f}\right)}{8\,b^{2}f}+\frac{ae^{\left(3\,c-\frac{3\,de}{f}\right)}E_{1}\left(-\frac{3\left(fx+e\right)d}{f}\right)}{8\,b^{2}f}-\frac{e^{\left(4\,c-\frac{4\,de}{f}\right)}E_{1}\left(-\frac{4\left(fx+e\right)d}{f}\right)}{16\,bf}+\frac{\left(2\,a^{2}+b^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] 1/16*e^(-4*c + 4*d*e/f)*exp_integral_e(1, 4*(f*x + e)*d/f)/(b*f) + 1/8*a*e^
(-3*c + 3*d*e/f)*exp_integral_e(1, 3*(f*x + e)*d/f)/(b^2*f) + 1/8*a*e^(3*c
- 3*d*e/f)*exp_integral_e(1, -3*(f*x + e)*d/f)/(b^2*f) - 1/16*e^(4*c - 4*d*
```

```
e/f)*exp_integral_e(1, -4*(f*x + e)*d/f)/(b*f) + 1/8*(2*a^2 + b^2)*e^(-2*c
+ 2*d*e/f)*exp_integral_e(1, 2*(f*x + e)*d/f)/(b^3*f) - 1/8*(2*a^2*e^(2*c)
+ b^2*e^(2*c))*e^(-2*d*e/f)*exp_integral_e(1, -2*(f*x + e)*d/f)/(b^3*f) + 1
/8*(4*a^3 + 3*a*b^2)*e^(-c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b^4*f
) + 1/8*(4*a^3*e^c + 3*a*b^2*e^c)*e^(-d*e/f)*exp_integral_e(1, -(f*x + e)*d
/f)/(b^4*f) + (a^4 + a^2*b^2)*log(f*x + e)/(b^5*f) - 1/32*integrate(64*(a^4
*b + a^2*b^3 - (a^5*e^c + a^3*b^2*e^c)*e^(d*x))/(b^6*f*x + b^6*e - (b^6*f*x
*e^(2*c) + b^6*e*e^(2*c))*e^(2*d*x) - 2*(a*b^5*f*x*e^c + a*b^5*e*e^c)*e^(d*
x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh\left(c+d\,x\right)^3\,\sinh\left(c+d\,x\right)^2}{\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)^2)/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)^3*sinh(c + d*x)^2)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**3*sinh(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.377 $\int \frac{(e+fx)^3 \sinh(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1218

$$-\frac{(e+fx)^4}{4bf}+\frac{2a^3\tan^{-1}\left(e^{c+dx}\right)(e+fx)^3}{b^2\left(a^2+b^2\right)d}-\frac{2a\tan^{-1}\left(e^{c+dx}\right)(e+fx)^3}{b^2d}+\frac{a^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)(e+fx)^3}{b\left(a^2+b^2\right)d}+\frac{a^2\log\left(\frac{e^{c}}{a+\sqrt{}}\right.}{b}$$

```
[Out] -a^2*(f*x+e)^3*ln(1+exp(2*d*x+2*c))/b/(a^2+b^2)/d+a^2*(f*x+e)^3*ln(1+b*exp(
d*x+c)/(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d+a^2*(f*x+e)^3*ln(1+b*exp(d*x+c)/(
a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d+6*a^2*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2
+b^2)^(1/2)))/b/(a^2+b^2)/d^4+6*a^2*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2
)^(1/2)))/b/(a^2+b^2)/d^4-2*a*(f*x+e)^3*arctan(exp(d*x+c))/b^2/d+3/2*f*(f*x
+e)^2*polylog(2,-exp(2*d*x+2*c))/b/d^2-3/2*f^2*(f*x+e)*polylog(3,-exp(2*d*x
+2*c))/b/d^3+2*a^3*(f*x+e)^3*arctan(exp(d*x+c))/b^2/(a^2+b^2)/d-3/4*a^2*f^3
*polylog(4,-exp(2*d*x+2*c))/b/(a^2+b^2)/d^4-6*I*a*f^3*polylog(4,I*exp(d*x+c
))/b^2/d^4+6*I*a*f^2*(f*x+e)*polylog(3,I*exp(d*x+c))/b^2/d^3+6*I*a^3*f^3*po
lylog(4,I*exp(d*x+c))/b^2/(a^2+b^2)/d^4-3*I*a^3*f*(f*x+e)^2*polylog(2,-I*ex
p(d*x+c))/b^2/(a^2+b^2)/d^2-6*I*a^3*f^2*(f*x+e)*polylog(3,I*exp(d*x+c))/b^2
/(a^2+b^2)/d^3+3*I*a*f*(f*x+e)^2*polylog(2,-I*exp(d*x+c))/b^2/d^2+3/2*a^2*f
^2*(f*x+e)*polylog(3,-exp(2*d*x+2*c))/b/(a^2+b^2)/d^3+6*I*a*f^3*polylog(4,-
I*exp(d*x+c))/b^2/d^4-3*I*a*f*(f*x+e)^2*polylog(2,I*exp(d*x+c))/b^2/d^2-6*I
*a*f^2*(f*x+e)*polylog(3,-I*exp(d*x+c))/b^2/d^3-6*I*a^3*f^3*polylog(4,-I*ex
p(d*x+c))/b^2/(a^2+b^2)/d^4-3/2*a^2*f*(f*x+e)^2*polylog(2,-exp(2*d*x+2*c))/
b/(a^2+b^2)/d^2+3/4*f^3*polylog(4,-exp(2*d*x+2*c))/b/d^4-1/4*(f*x+e)^4/b/f+
3*I*a^3*f*(f*x+e)^2*polylog(2,I*exp(d*x+c))/b^2/(a^2+b^2)/d^2+6*I*a^3*f^2*(
f*x+e)*polylog(3,-I*exp(d*x+c))/b^2/(a^2+b^2)/d^3+3*a^2*f*(f*x+e)^2*polylog
(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d^2+3*a^2*f*(f*x+e)^2*pol
ylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d^2-6*a^2*f^2*(f*x+e)
*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d^3-6*a^2*f^2*(f*
x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d^3+(f*x+e)^3
*ln(1+exp(2*d*x+2*c))/b/d
```

Rubi [A] time = 1.69, antiderivative size = 1218, normalized size of antiderivative = 1.00, number of steps used = 46, number of rules used = 12, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {5581, 3718, 2190, 2531, 6609, 2282, 6589, 5567, 4180, 5573, 5561, 6742}

$$-\frac{(e+fx)^4}{4bf}+\frac{2a^3\tan^{-1}\left(e^{c+dx}\right)(e+fx)^3}{b^2\left(a^2+b^2\right)d}-\frac{2a\tan^{-1}\left(e^{c+dx}\right)(e+fx)^3}{b^2d}+\frac{a^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)(e+fx)^3}{b\left(a^2+b^2\right)d}+\frac{a^2\log\left(\frac{e^{c}}{a+\sqrt{}}\right.}{b}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sinh[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(e + f*x)^4/(4*b*f) - (2*a*(e + f*x)^3*ArcTan[E^(c + d*x)])/(b^2*d) + (2*a
^3*(e + f*x)^3*ArcTan[E^(c + d*x)])/(b^2*(a^2 + b^2)*d) + (a^2*(e + f*x)^3*
Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*(a^2 + b^2)*d) + (a^2*(e
 + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b*(a^2 + b^2)*d)
 + ((e + f*x)^3*Log[1 + E^(2*(c + d*x))])/(b*d) - (a^2*(e + f*x)^3*Log[1 +
E^(2*(c + d*x))])/(b*(a^2 + b^2)*d) + ((3*I)*a*f*(e + f*x)^2*PolyLog[2, (-I
)*E^(c + d*x)])/(b^2*d^2) - ((3*I)*a^3*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c +
 d*x)])/(b^2*(a^2 + b^2)*d^2) - ((3*I)*a*f*(e + f*x)^2*PolyLog[2, I*E^(c +
d*x)])/(b^2*d^2) + ((3*I)*a^3*f*(e + f*x)^2*PolyLog[2, I*E^(c + d*x)])/(b^2
*(a^2 + b^2)*d^2) + (3*a^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a -
Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^2) + (3*a^2*f*(e + f*x)^2*PolyLog[2, -
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^2) + (3*f*(e + f
*x)^2*PolyLog[2, -E^(2*(c + d*x))])/(2*b*d^2) - (3*a^2*f*(e + f*x)^2*PolyLo
g[2, -E^(2*(c + d*x))])/(2*b*(a^2 + b^2)*d^2) - ((6*I)*a*f^2*(e + f*x)*Poly
Log[3, (-I)*E^(c + d*x)])/(b^2*d^3) + ((6*I)*a^3*f^2*(e + f*x)*PolyLog[3, (
-I)*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^3) + ((6*I)*a*f^2*(e + f*x)*PolyLog[3,
 I*E^(c + d*x)])/(b^2*d^3) - ((6*I)*a^3*f^2*(e + f*x)*PolyLog[3, I*E^(c + d
*x)])/(b^2*(a^2 + b^2)*d^3) - (6*a^2*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d
*x))/(a - Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^3) - (6*a^2*f^2*(e + f*x)*Po
lyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^3) - (
3*f^2*(e + f*x)*PolyLog[3, -E^(2*(c + d*x))])/(2*b*d^3) + (3*a^2*f^2*(e + f
*x)*PolyLog[3, -E^(2*(c + d*x))])/(2*b*(a^2 + b^2)*d^3) + ((6*I)*a*f^3*Poly
Log[4, (-I)*E^(c + d*x)])/(b^2*d^4) - ((6*I)*a^3*f^3*PolyLog[4, (-I)*E^(c +
 d*x)])/(b^2*(a^2 + b^2)*d^4) - ((6*I)*a*f^3*PolyLog[4, I*E^(c + d*x)])/(b^
2*d^4) + ((6*I)*a^3*f^3*PolyLog[4, I*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^4) +
(6*a^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*(a^2 +
b^2)*d^4) + (6*a^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]
)/(b*(a^2 + b^2)*d^4) + (3*f^3*PolyLog[4, -E^(2*(c + d*x))])/(4*b*d^4) - (3
*a^2*f^3*PolyLog[4, -E^(2*(c + d*x))])/(4*b*(a^2 + b^2)*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5581

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n, x], x] - Di
st[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n)/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3 \sinh(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\tanh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{a\int (e+fx)^3 \operatorname{sech}(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^3\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{b^2}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{(e+fx)^3\log\left(1+e^{2(c+dx)}\right)}{bd}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{a^2(e+fx)^4}{4b\left(a^2+b^2\right)f} - \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{(e+fx)^3}{}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{a^2(e+fx)^4}{4b\left(a^2+b^2\right)f} - \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{a^2(e+fx}{}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2a(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

Mathematica [B] time = 22.73, size = 3261, normalized size = 2.68

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sinh[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x
]

[Out] (-8*b*d^4*e^3*E^(2*c)*x - 12*b*d^4*e^2*E^(2*c)*f*x^2 - 8*b*d^4*e*E^(2*c)*f^
2*x^3 - 2*b*d^4*E^(2*c)*f^3*x^4 - 8*a*d^3*e^3*ArcTan[E^(c + d*x)] - 8*a*d^3
*e^3*E^(2*c)*ArcTan[E^(c + d*x)] - (12*I)*a*d^3*e^2*f*x*Log[1 - I*E^(c + d*
x)] - (12*I)*a*d^3*e^2*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] - (12*I)*a*d^3*e*
f^2*x^2*Log[1 - I*E^(c + d*x)] - (12*I)*a*d^3*e*E^(2*c)*f^2*x^2*Log[1 - I*E
^(c + d*x)] - (4*I)*a*d^3*f^3*x^3*Log[1 - I*E^(c + d*x)] - (4*I)*a*d^3*E^(2
*c)*f^3*x^3*Log[1 - I*E^(c + d*x)] + (12*I)*a*d^3*e^2*f*x*Log[1 + I*E^(c +
d*x)] + (12*I)*a*d^3*e^2*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] + (12*I)*a*d^3*
e*f^2*x^2*Log[1 + I*E^(c + d*x)] + (12*I)*a*d^3*e*E^(2*c)*f^2*x^2*Log[1 + I
*E^(c + d*x)] + (4*I)*a*d^3*f^3*x^3*Log[1 + I*E^(c + d*x)] + (4*I)*a*d^3*E^
(2*c)*f^3*x^3*Log[1 + I*E^(c + d*x)] + 4*b*d^3*e^3*Log[1 + E^(2*(c + d*x))]
 + 4*b*d^3*e^3*E^(2*c)*Log[1 + E^(2*(c + d*x))] + 12*b*d^3*e^2*f*x*Log[1 +
E^(2*(c + d*x))] + 12*b*d^3*e^2*E^(2*c)*f*x*Log[1 + E^(2*(c + d*x))] + 12*b
*d^3*e*f^2*x^2*Log[1 + E^(2*(c + d*x))] + 12*b*d^3*e*E^(2*c)*f^2*x^2*Log[1
+ E^(2*(c + d*x))] + 4*b*d^3*f^3*x^3*Log[1 + E^(2*(c + d*x))] + 4*b*d^3*E^(
2*c)*f^3*x^3*Log[1 + E^(2*(c + d*x))] + (12*I)*a*d^2*(1 + E^(2*c))*f*(e + f
*x)^2*PolyLog[2, (-I)*E^(c + d*x)] - (12*I)*a*d^2*(1 + E^(2*c))*f*(e + f*x)
^2*PolyLog[2, I*E^(c + d*x)] + 6*b*d^2*e^2*f*PolyLog[2, -E^(2*(c + d*x))] +
 6*b*d^2*e^2*E^(2*c)*f*PolyLog[2, -E^(2*(c + d*x))] + 12*b*d^2*e*f^2*x*Poly
Log[2, -E^(2*(c + d*x))] + 12*b*d^2*e*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(c + d
*x))] + 6*b*d^2*f^3*x^2*PolyLog[2, -E^(2*(c + d*x))] + 6*b*d^2*E^(2*c)*f^3*
x^2*PolyLog[2, -E^(2*(c + d*x))] - (24*I)*a*d*e*f^2*PolyLog[3, (-I)*E^(c +
d*x)] - (24*I)*a*d*e*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] - (24*I)*a*d*
f^3*x*PolyLog[3, (-I)*E^(c + d*x)] - (24*I)*a*d*E^(2*c)*f^3*x*PolyLog[3, (-
I)*E^(c + d*x)] + (24*I)*a*d*e*f^2*PolyLog[3, I*E^(c + d*x)] + (24*I)*a*d*e
*E^(2*c)*f^2*PolyLog[3, I*E^(c + d*x)] + (24*I)*a*d*f^3*x*PolyLog[3, I*E^(c
 + d*x)] + (24*I)*a*d*E^(2*c)*f^3*x*PolyLog[3, I*E^(c + d*x)] - 6*b*d*e*f^2
*PolyLog[3, -E^(2*(c + d*x))] - 6*b*d*e*E^(2*c)*f^2*PolyLog[3, -E^(2*(c + d
*x))] - 6*b*d*f^3*x*PolyLog[3, -E^(2*(c + d*x))] - 6*b*d*E^(2*c)*f^3*x*Poly
Log[3, -E^(2*(c + d*x))] + (24*I)*a*f^3*PolyLog[4, (-I)*E^(c + d*x)] + (24*
I)*a*E^(2*c)*f^3*PolyLog[4, (-I)*E^(c + d*x)] - (24*I)*a*f^3*PolyLog[4, I*E
^(c + d*x)] - (24*I)*a*E^(2*c)*f^3*PolyLog[4, I*E^(c + d*x)] + 3*b*f^3*Poly
Log[4, -E^(2*(c + d*x))] + 3*b*E^(2*c)*f^3*PolyLog[4, -E^(2*(c + d*x))])/(4
*(a^2 + b^2)*d^4*(1 + E^(2*c))) - (a^2*(4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*x
^2 + 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*f^3*x^4 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*
E^(2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d)
 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a
^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (2*e^3*Log[b - 2*a*E^(c + d*x) - b*E^(
2*(c + d*x))])/d - (2*e^3*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d
*x)))])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*
```

```
E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[
(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c -
 Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c +
d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*
c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[
1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x*
Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*
E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])
/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*
c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^
2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt
[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(
a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*Po
lyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (
6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt
[(a^2 + b^2)*E^(2*c)]))])/d^2 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a
*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((
b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*Pol
yLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (1
2*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^
(2*c)]))])/d^3 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^
2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x)
)/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^
(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x
*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3
+ (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]
))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^
2 + b^2)*E^(2*c)]))])/d^4 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c +
 Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c
 + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4))/(2*b*(a^2 + b^2)*(-1
+ E^(2*c))) + ((4*a^2*e^3*x - 4*b^2*e^3*x + 6*a^2*e^2*f*x^2 - 6*b^2*e^2*f*x
^2 + 4*a^2*e*f^2*x^3 - 4*b^2*e*f^2*x^3 + a^2*f^3*x^4 - b^2*f^3*x^4 + 4*a^2*
e^3*x*Cosh[2*c] + 4*b^2*e^3*x*Cosh[2*c] + 6*a^2*e^2*f*x^2*Cosh[2*c] + 6*b^2
*e^2*f*x^2*Cosh[2*c] + 4*a^2*e*f^2*x^3*Cosh[2*c] + 4*b^2*e*f^2*x^3*Cosh[2*c
] + a^2*f^3*x^4*Cosh[2*c] + b^2*f^3*x^4*Cosh[2*c])*Csch[c]*Sech[c])/(8*b*(a
^2 + b^2))
```

fricas [C] time = 0.67, size = 1968, normalized size = 1.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

[Out] -1/4*((a^2 + b^2)*d^4*f^3*x^4 + 4*(a^2 + b^2)*d^4*e*f^2*x^3 + 6*(a^2 + b^2)*d^4*e^2*f*x^2 + 4*(a^2 + b^2)*d^4*e^3*x - 24*a^2*f^3*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 24*a^2*f^3*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(a^2*d^2*f^3*x^2 + 2*a^2*d^2*e*f^2*x + a^2*d^2*e^2*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 12*(a^2*d^2*f^3*x^2 + 2*a^2*d^2*e*f^2*x + a^2*d^2*e^2*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (-12*I*a*b*d^2*f^3*x^2 + 12*b^2*d^2*f^3*x^2 - 24*I*a*b*d^2*e*f^2*x + 24*b^2*d^2*e*f^2*x - 12*I*a*b*d^2*e^2*f + 12*b^2*d^2*e^2*f)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) - (12*I*a*b*d^2*f^3*x^2 + 12*b^2*d^2*f^3*x^2 + 24*I*a*b*d^2*e*f^2*x + 24*b^2*d^2*e*f^2*x + 12*I*a*b*d^2*e^2*f + 12*b^2*d^2*e^2*f)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) - 4*(a^2*d^3*e^3 - 3*a^2*c*d^2*e^2*f + 3*a^2*c^2*d*e*f^2 - a^2*c^3*f^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 4*(a^2*d^3*e^3 - 3*a^2*c*d^2*e^2*f + 3*a^2*c^2*d*e*f^2 - a^2*c^3*f^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 4*(a^2*d^3*f^3*x^3 + 3*a^2*d^3*e*f^2*x^2 + 3*a^2*d^3*e^2*f*x + 3*a^2*c*d^2*e^2*f - 3*a^2*c^2*d*e*f^2 + a^2*c^3*f^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 4*(a^2*d^3*f^3*x^3 + 3*a^2*d^3*e*f^2*x^2 + 3*a^2*d^3*e^2*f*x + 3*a^2*c*d^2*e^2*f - 3*a^2*c^2*d*e*f^2 + a^2*c^3*f^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (-4*I*a*b*d^3*e^3 + 4*b^2*d^3*e^3 + 12*I*a*b*c*d^2*e^2*f - 12*b^2*c*d^2*e^2*f - 12*I*a*b*c^2*d*e*f^2 + 12*b^2*c^2*d*e*f^2 + 4*I*a*b*c^3*f^3 - 4*b^2*c^3*f^3)*log(cosh(d*x + c) + sinh(d*x + c) + I) - (4*I*a*b*d^3*e^3 + 4*b^2*d^3*e^3 - 12*I*a*b*c*d^2*e^2*f - 12*b^2*c*d^2*e^2*f + 12*I*a*b*c^2*d*e*f^2 + 12*b^2*c^2*d*e*f^2 - 4*I*a*b*c^3*f^3 - 4*b^2*c^3*f^3)*log(cosh(d*x + c) + sinh(d*x + c) - I) - (4*I*a*b*d^3*f^3*x^3 + 4*b^2*d^3*f^3*x^3 + 12*I*a*b*d^3*e*f^2*x^2 + 12*b^2*d^3*e*f^2*x^2 + 12*I*a*b*d^3*e^2*f*x + 12*b^2*d^3*e^2*f*x + 12*I*a*b*c*d^2*e^2*f + 12*b^2*c*d^2*e^2*f - 12*I*a*b*c^2*d*e*f^2 - 12*b^2*c^2*d*e*f^2 + 4*I*a*b*c^3*f^3 + 4*b^2*c^3*f^3)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) - (-4*I*a*b*d^3*f^3*x^3 + 4*b^2*d^3*f^3*x^3 - 12*I*a*b*d^3*e*f^2*x^2 + 12*b^2*d^3*e*f^2*x^2 - 12*I*a*b*d^3*e^2*f*x + 12*b^2*d^3*e^2*f*x - 12*I*a*b*c*d^2*e^2*f + 12*b^2*c*d^2*e^2*f + 12*I*a*b*c^2*d*e*f^2 - 12*b^2*c^2*d*e*f^2 - 4*I*a*b*c^3*f^3 + 4*b^2*c^3*f^3)*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) + 24*(I*a*b*f^3 - b^2*f^3)*polylog(4, I*cosh(d*x + c) + I*sinh(d*x + c)) + 24*(-I*a*b*f^3 - b^2*f^3)*polylog(4, -I*cosh(d*x + c) - I*sinh(d*x + c)) + 24*(a^2*d*f^3*x + a^2*d*e*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*(a^2*d*f^3*x + a^2*d*e*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - (24*I*a*b*d*f^3*x - 24*b^2*d*f^3*x + 24*I*a*b*d*e*f^2 - 24*b^2*d*e*f^2)*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) - (-24*I*a*b*d*f^3*x -

```
24*b^2*d*f^3*x - 24*I*a*b*d*e*f^2 - 24*b^2*d*e*f^2)*polylog(3, -I*cosh(d*x
+ c) - I*sinh(d*x + c)))/((a^2*b + b^3)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [F] time = 1.79, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \sinh \left(dx+c\right) \tanh \left(dx+c\right)}{a+b \sinh \left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\frac{a^{2} \log \left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^{2}b+b^{3}\right)d}+\frac{2\,a \arctan \left(e^{(-dx-c)}\right)}{\left(a^{2}+b^{2}\right)d}+\frac{b \log \left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d}+\frac{dx+c}{bd}\right)+\frac{f^{3}x^{4}+4\,ef^{2}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] e^3*(a^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^2*b + b^3)*d)
+ 2*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + b*log(e^(-2*d*x - 2*c) + 1)/((
a^2 + b^2)*d) + (d*x + c)/(b*d)) + 1/4*(f^3*x^4 + 4*e*f^2*x^3 + 6*e^2*f*x^2
)/b - integrate(2*(a^2*b*f^3*x^3 + 3*a^2*b*e*f^2*x^2 + 3*a^2*b*e^2*f*x - (a
^3*f^3*x^3*e^c + 3*a^3*e*f^2*x^2*e^c + 3*a^3*e^2*f*x*e^c)*e^(d*x))/(a^2*b^2
 + b^4 - (a^2*b^2*e^(2*c) + b^4*e^(2*c))*e^(2*d*x) - 2*(a^3*b*e^c + a*b^3*e
^c)*e^(d*x)), x) - integrate(2*(b*f^3*x^3 + 3*b*e*f^2*x^2 + 3*b*e^2*f*x + (
a*f^3*x^3*e^c + 3*a*e*f^2*x^2*e^c + 3*a*e^2*f*x*e^c)*e^(d*x))/(a^2 + b^2 +
(a^2*e^(2*c) + b^2*e^(2*c))*e^(2*d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh(c+d\,x)\,\tanh(c+d\,x)\,\left(e+f\,x\right)^3}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*tanh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((sinh(c + d*x)*tanh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^3\sinh(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**3*sinh(c + d*x)*tanh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.378 $\int \frac{(e+fx)^2 \sinh(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=861

$$\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^3}{b^2\left(a^2+b^2\right)d}-\frac{2if(e+fx)\mathrm{Li}_2\left(-ie^{c+dx}\right)a^3}{b^2\left(a^2+b^2\right)d^2}+\frac{2if(e+fx)\mathrm{Li}_2\left(ie^{c+dx}\right)a^3}{b^2\left(a^2+b^2\right)d^2}+\frac{2if^2\mathrm{Li}_3\left(-ie^{c+dx}\right)a^3}{b^2\left(a^2+b^2\right)d^3}-\frac{2if^2\mathrm{L}}{b^2\left(a\right.}$$

```
[Out] -1/3*(f*x+e)^3/b/f-2*a*(f*x+e)^2*arctan(exp(d*x+c))/b^2/d+2*a^3*(f*x+e)^2*a
rctan(exp(d*x+c))/b^2/(a^2+b^2)/d+(f*x+e)^2*ln(1+exp(2*d*x+2*c))/b/d-a^2*(f
*x+e)^2*ln(1+exp(2*d*x+2*c))/b/(a^2+b^2)/d+a^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/
(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d+a^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+
b^2)^(1/2)))/b/(a^2+b^2)/d+2*I*a^3*f*(f*x+e)*polylog(2,I*exp(d*x+c))/b^2/(a
^2+b^2)/d^2+2*I*a*f^2*polylog(3,I*exp(d*x+c))/b^2/d^3-2*I*a*f^2*polylog(3,-
I*exp(d*x+c))/b^2/d^3-2*I*a^3*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b^2/(a^2+b
^2)/d^2+f*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/b/d^2-a^2*f*(f*x+e)*polylog(2,
-exp(2*d*x+2*c))/b/(a^2+b^2)/d^2+2*a^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a
-(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d^2+2*a^2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/
(a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d^2+2*I*a*f*(f*x+e)*polylog(2,-I*exp(d*x+c
))/b^2/d^2-2*I*a^3*f^2*polylog(3,I*exp(d*x+c))/b^2/(a^2+b^2)/d^3+2*I*a^3*f^
2*polylog(3,-I*exp(d*x+c))/b^2/(a^2+b^2)/d^3-2*I*a*f*(f*x+e)*polylog(2,I*ex
p(d*x+c))/b^2/d^2-1/2*f^2*polylog(3,-exp(2*d*x+2*c))/b/d^3+1/2*a^2*f^2*poly
log(3,-exp(2*d*x+2*c))/b/(a^2+b^2)/d^3-2*a^2*f^2*polylog(3,-b*exp(d*x+c)/(a
-(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d^3-2*a^2*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^
2+b^2)^(1/2)))/b/(a^2+b^2)/d^3
```

Rubi [A] time = 1.37, antiderivative size = 861, normalized size of antiderivative = 1.00, number of steps used = 38, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {5581, 3718, 2190, 2531, 2282, 6589, 5567, 4180, 5573, 5561, 6742}

$$\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^3}{b^2\left(a^2+b^2\right)d}-\frac{2if(e+fx)\mathrm{PolyLog}\left(2,-ie^{c+dx}\right)a^3}{b^2\left(a^2+b^2\right)d^2}+\frac{2if(e+fx)\mathrm{PolyLog}\left(2,ie^{c+dx}\right)a^3}{b^2\left(a^2+b^2\right)d^2}+\frac{2if^2\mathrm{PolyLo}}{b^2\left(a\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sinh[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(e + f*x)^3/(3*b*f) - (2*a*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b^2*d) + (2*a
^3*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b^2*(a^2 + b^2)*d) + (a^2*(e + f*x)^2*
Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*(a^2 + b^2)*d) + (a^2*(e
 + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b*(a^2 + b^2)*d)
 + ((e + f*x)^2*Log[1 + E^(2*(c + d*x))])/(b*d) - (a^2*(e + f*x)^2*Log[1 +
```

```
E^(2*(c + d*x))])/(b*(a^2 + b^2)*d) + ((2*I)*a*f*(e + f*x)*PolyLog[2, (-I)*
E^(c + d*x)])/(b^2*d^2) - ((2*I)*a^3*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x
)])/(b^2*(a^2 + b^2)*d^2) - ((2*I)*a*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])
/(b^2*d^2) + ((2*I)*a^3*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b^2*(a^2 +
b^2)*d^2) + (2*a^2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2]))])/(b*(a^2 + b^2)*d^2) + (2*a^2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^2) + (f*(e + f*x)*PolyLog[2,
 -E^(2*(c + d*x))])/(b*d^2) - (a^2*f*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))]
)/(b*(a^2 + b^2)*d^2) - ((2*I)*a*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(b^2*d^3
) + ((2*I)*a^3*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^3) + ((
2*I)*a*f^2*PolyLog[3, I*E^(c + d*x)])/(b^2*d^3) - ((2*I)*a^3*f^2*PolyLog[3,
 I*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^3) - (2*a^2*f^2*PolyLog[3, -((b*E^(c +
d*x))/(a - Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^3) - (2*a^2*f^2*PolyLog[3,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)*d^3) - (f^2*PolyL
og[3, -E^(2*(c + d*x))])/(2*b*d^3) + (a^2*f^2*PolyLog[3, -E^(2*(c + d*x))])
/(2*b*(a^2 + b^2)*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
```

```
FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5581

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n, x], x] - Di
st[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n)/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\sinh(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\tanh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{a\int (e+fx)^2\mathrm{sech}(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^2\mathrm{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{b^2}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{(e+fx)^2\log\left(1+e^{2(c+dx)}\right)}{bd}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{a^2(e+fx)^3}{3b\left(a^2+b^2\right)f} - \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{(e+fx)^2}{}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{a^2(e+fx)^3}{3b\left(a^2+b^2\right)f} - \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{a^2(e+fx}{}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2a(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

Mathematica [A] time = 10.66, size = 997, normalized size = 1.16

$$-2a^2f^2x^3d^3 - 2b^2f^2x^3d^3 - 6a^2efx^2d^3 - 6b^2efx^2d^3 - 6a^2e^2xd^3 - 6b^2e^2xd^3 - 12abe^2\tan^{-1}\left(e^{c+dx}\right)d^2 - 6iabf^2x^2\mathrm{lo}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sinh[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (-6*a^2*d^3*e^2*x - 6*b^2*d^3*e^2*x - 6*a^2*d^3*e*f*x^2 - 6*b^2*d^3*e*f*x^2
 - 2*a^2*d^3*f^2*x^3 - 2*b^2*d^3*f^2*x^3 - 12*a*b*d^2*e^2*ArcTan[E^(c + d*x
)] - (12*I)*a*b*d^2*e*f*x*Log[1 - I*E^(c + d*x)] - (6*I)*a*b*d^2*f^2*x^2*Lo
g[1 - I*E^(c + d*x)] + (12*I)*a*b*d^2*e*f*x*Log[1 + I*E^(c + d*x)] + (6*I)*
a*b*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] + 6*b^2*d^2*e^2*Log[1 + E^(2*(c + d*
x))] + 12*b^2*d^2*e*f*x*Log[1 + E^(2*(c + d*x))] + 6*b^2*d^2*f^2*x^2*Log[1
+ E^(2*(c + d*x))] + 6*a^2*d^2*e^2*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*
x))] + 12*a^2*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)
*E^(2*c)])] + 6*a^2*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^
2 + b^2)*E^(2*c)])] + 12*a^2*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + S
qrt[(a^2 + b^2)*E^(2*c)])] + 6*a^2*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a
*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + (12*I)*a*b*d*f*(e + f*x)*PolyLog[2, (-
I)*E^(c + d*x)] - (12*I)*a*b*d*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)] + 6*b^
2*d*e*f*PolyLog[2, -E^(2*(c + d*x))] + 6*b^2*d*f^2*x*PolyLog[2, -E^(2*(c +
d*x))] + 12*a^2*d*e*f*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b
^2)*E^(2*c)]))] + 12*a^2*d*f^2*x*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sq
rt[(a^2 + b^2)*E^(2*c)]))] + 12*a^2*d*e*f*PolyLog[2, -((b*E^(2*c + d*x))/(a
*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] + 12*a^2*d*f^2*x*PolyLog[2, -((b*E^(2*c
 + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] - (12*I)*a*b*f^2*PolyLog[3,
(-I)*E^(c + d*x)] + (12*I)*a*b*f^2*PolyLog[3, I*E^(c + d*x)] - 3*b^2*f^2*Po
lyLog[3, -E^(2*(c + d*x))] - 12*a^2*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E
^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 12*a^2*f^2*PolyLog[3, -((b*E^(2*c + d*x
))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/(6*b*(a^2 + b^2)*d^3)
```

fricas [C] time = 0.93, size = 1250, normalized size = 1.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -1/3*((a^2 + b^2)*d^3*f^2*x^3 + 3*(a^2 + b^2)*d^3*e*f*x^2 + 3*(a^2 + b^2)*d
^3*e^2*x + 6*a^2*f^2*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cos
h(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*a^2*f^2*polylog
(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2))/b) - 6*(a^2*d*f^2*x + a^2*d*e*f)*dilog((a*cosh(d*x
 + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2) - b)/b + 1) - 6*(a^2*d*f^2*x + a^2*d*e*f)*dilog((a*cosh(d*x + c) +
 a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2
```

```
) - b)/b + 1) - (-6*I*a*b*d*f^2*x + 6*b^2*d*f^2*x - 6*I*a*b*d*e*f + 6*b^2*d
*e*f)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) - (6*I*a*b*d*f^2*x + 6*b^2*d
*f^2*x + 6*I*a*b*d*e*f + 6*b^2*d*e*f)*dilog(-I*cosh(d*x + c) - I*sinh(d*x +
 c)) - 3*(a^2*d^2*e^2 - 2*a^2*c*d*e*f + a^2*c^2*f^2)*log(2*b*cosh(d*x + c)
+ 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 3*(a^2*d^2*e^2 - 2
*a^2*c*d*e*f + a^2*c^2*f^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b
*sqrt((a^2 + b^2)/b^2) + 2*a) - 3*(a^2*d^2*f^2*x^2 + 2*a^2*d^2*e*f*x + 2*a^
2*c*d*e*f - a^2*c^2*f^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(
d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 3*(a^2*d^2*f^2*
x^2 + 2*a^2*d^2*e*f*x + 2*a^2*c*d*e*f - a^2*c^2*f^2)*log(-(a*cosh(d*x + c)
+ a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2) - b)/b) - (-3*I*a*b*d^2*e^2 + 3*b^2*d^2*e^2 + 6*I*a*b*c*d*e*f - 6*b^2*c*
d*e*f - 3*I*a*b*c^2*f^2 + 3*b^2*c^2*f^2)*log(cosh(d*x + c) + sinh(d*x + c)
+ I) - (3*I*a*b*d^2*e^2 + 3*b^2*d^2*e^2 - 6*I*a*b*c*d*e*f - 6*b^2*c*d*e*f +
 3*I*a*b*c^2*f^2 + 3*b^2*c^2*f^2)*log(cosh(d*x + c) + sinh(d*x + c) - I) -
(3*I*a*b*d^2*f^2*x^2 + 3*b^2*d^2*f^2*x^2 + 6*I*a*b*d^2*e*f*x + 6*b^2*d^2*e*
f*x + 6*I*a*b*c*d*e*f + 6*b^2*c*d*e*f - 3*I*a*b*c^2*f^2 - 3*b^2*c^2*f^2)*lo
g(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) - (-3*I*a*b*d^2*f^2*x^2 + 3*b^2*d^
2*f^2*x^2 - 6*I*a*b*d^2*e*f*x + 6*b^2*d^2*e*f*x - 6*I*a*b*c*d*e*f + 6*b^2*c
*d*e*f + 3*I*a*b*c^2*f^2 - 3*b^2*c^2*f^2)*log(-I*cosh(d*x + c) - I*sinh(d*x
 + c) + 1) + 6*(-I*a*b*f^2 + b^2*f^2)*polylog(3, I*cosh(d*x + c) + I*sinh(d
*x + c)) + 6*(I*a*b*f^2 + b^2*f^2)*polylog(3, -I*cosh(d*x + c) - I*sinh(d*x
 + c)))/((a^2*b + b^3)*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [F] time = 1.10, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \sinh \left(dx+c\right) \tanh \left(dx+c\right)}{a+b \sinh \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^2\left(\frac{a^2\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^2b+b^3\right)d}+\frac{2\,a\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}+\frac{b\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}+\frac{dx+c}{bd}\right)+\frac{f^2x^3+3\,ef}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] e^2*(a^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^2*b + b^3)*d)
+ 2*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + b*log(e^(-2*d*x - 2*c) + 1)/((
a^2 + b^2)*d) + (d*x + c)/(b*d)) + 1/3*(f^2*x^3 + 3*e*f*x^2)/b - integrate(
2*(a^2*b*f^2*x^2 + 2*a^2*b*e*f*x - (a^3*f^2*x^2*e^c + 2*a^3*e*f*x*e^c)*e^(d
*x))/(a^2*b^2 + b^4 - (a^2*b^2*e^(2*c) + b^4*e^(2*c))*e^(2*d*x) - 2*(a^3*b*
e^c + a*b^3*e^c)*e^(d*x)), x) - integrate(2*(b*f^2*x^2 + 2*b*e*f*x + (a*f^2
*x^2*e^c + 2*a*e*f*x*e^c)*e^(d*x))/(a^2 + b^2 + (a^2*e^(2*c) + b^2*e^(2*c))
*e^(2*d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh\left(c+d\,x\right)\,\tanh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{a+b\,\sinh\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*tanh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((sinh(c + d*x)*tanh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{2}\sinh\left(c+dx\right)\tanh\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*sinh(c + d*x)*tanh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.379 $\int \frac{(e+fx)\sinh(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=516

$$\frac{a^2f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2\left(a^2+b^2\right)}+\frac{a^2f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{bd^2\left(a^2+b^2\right)}-\frac{a^2f\text{Li}_2\left(-e^{2(c+dx)}\right)}{2bd^2\left(a^2+b^2\right)}+\frac{a^2(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{bd\left(a^2+b^2\right)}+\frac{a^2(e+fx)\log\left(\frac{}{\sqrt{}}\right.}{bd\left(a^2+\right.}$$

```
[Out] -1/2*(f*x+e)^2/b/f-2*a*(f*x+e)*arctan(exp(d*x+c))/b^2/d+2*a^3*(f*x+e)*arcta
n(exp(d*x+c))/b^2/(a^2+b^2)/d+(f*x+e)*ln(1+exp(2*d*x+2*c))/b/d-a^2*(f*x+e)*
ln(1+exp(2*d*x+2*c))/b/(a^2+b^2)/d+a^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^
2)^(1/2)))/b/(a^2+b^2)/d+a^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))
/b/(a^2+b^2)/d+I*a*f*polylog(2,-I*exp(d*x+c))/b^2/d^2-I*a^3*f*polylog(2,-I*
exp(d*x+c))/b^2/(a^2+b^2)/d^2-I*a*f*polylog(2,I*exp(d*x+c))/b^2/d^2+I*a^3*f
*polylog(2,I*exp(d*x+c))/b^2/(a^2+b^2)/d^2+1/2*f*polylog(2,-exp(2*d*x+2*c))
/b/d^2-1/2*a^2*f*polylog(2,-exp(2*d*x+2*c))/b/(a^2+b^2)/d^2+a^2*f*polylog(2
,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d^2+a^2*f*polylog(2,-b*exp(
d*x+c)/(a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)/d^2
```

Rubi [A] time = 0.78, antiderivative size = 516, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {5581, 3718, 2190, 2279, 2391, 5567, 4180, 5573, 5561, 6742}

$$-\frac{ia^3f\text{PolyLog}\left(2,-ie^{c+dx}\right)}{b^2d^2\left(a^2+b^2\right)}+\frac{ia^3f\text{PolyLog}\left(2,ie^{c+dx}\right)}{b^2d^2\left(a^2+b^2\right)}+\frac{a^2f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2\left(a^2+b^2\right)}+\frac{a^2f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^2\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sinh[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(e + f*x)^2/(2*b*f) - (2*a*(e + f*x)*ArcTan[E^(c + d*x)])/(b^2*d) + (2*a^3
*(e + f*x)*ArcTan[E^(c + d*x)])/(b^2*(a^2 + b^2)*d) + (a^2*(e + f*x)*Log[1
+ (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*(a^2 + b^2)*d) + (a^2*(e + f*x
)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b*(a^2 + b^2)*d) + ((e +
 f*x)*Log[1 + E^(2*(c + d*x))])/(b*d) - (a^2*(e + f*x)*Log[1 + E^(2*(c + d*
x))])/(b*(a^2 + b^2)*d) + (I*a*f*PolyLog[2, (-I)*E^(c + d*x)])/(b^2*d^2) -
(I*a^3*f*PolyLog[2, (-I)*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^2) - (I*a*f*PolyL
og[2, I*E^(c + d*x)])/(b^2*d^2) + (I*a^3*f*PolyLog[2, I*E^(c + d*x)])/(b^2*
(a^2 + b^2)*d^2) + (a^2*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]
))])/(b*(a^2 + b^2)*d^2) + (a^2*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2]))])/(b*(a^2 + b^2)*d^2) + (f*PolyLog[2, -E^(2*(c + d*x))])/(2*b*d^
2) - (a^2*f*PolyLog[2, -E^(2*(c + d*x))])/(2*b*(a^2 + b^2)*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5581

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n, x], x] - Di
st[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n)/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\sinh(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\tanh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^2}{2bf} - \frac{a\int (e+fx)\text{sech}(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{b^2}$$

$$= -\frac{(e+fx)^2}{2bf} - \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{(e+fx)\log\left(1+e^{2(c+dx)}\right)}{bd}$$

$$= -\frac{(e+fx)^2}{2bf} - \frac{a^2(e+fx)^2}{2b\left(a^2+b^2\right)f} - \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{(e+fx)\,\mathrm{l}}{}$$

$$= -\frac{(e+fx)^2}{2bf} - \frac{a^2(e+fx)^2}{2b\left(a^2+b^2\right)f} - \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{a^2(e+fx}{b}$$

$$= -\frac{(e+fx)^2}{2bf} - \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^2}{2bf} - \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^2}{2bf} - \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{(e+fx)^2}{2bf} - \frac{2a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2\left(a^2+b^2\right)d}$$

Mathematica [A] time = 2.80, size = 438, normalized size = 0.85

$$\frac{a^2\left(f\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)+de\log(a+b\sinh(c+dx))-cf\log(a+b\sinh(c+dx))\right.}{b}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Sinh[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-(b*d*e*(c + d*x)) + b*c*f*(c + d*x) - (b*f*(c + d*x)^2)/2 - 2*a*d*e*ArcTa
n[Cosh[c + d*x] + Sinh[c + d*x]] + 2*a*c*f*ArcTan[Cosh[c + d*x] + Sinh[c +
d*x]] - 2*a*f*(c + d*x)*ArcTan[Cosh[c + d*x] + Sinh[c + d*x]] + b*d*e*Log[1
 + Cosh[2*(c + d*x)] + Sinh[2*(c + d*x)]] - b*c*f*Log[1 + Cosh[2*(c + d*x)]
 + Sinh[2*(c + d*x)]] + b*f*(c + d*x)*Log[1 + Cosh[2*(c + d*x)] + Sinh[2*(c
 + d*x)]] + (a^2*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b*E^(c + d*x)
)/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2])] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c + d*x]] +
f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/b + I*a*f*PolyLog[2, (-I)*(Cosh[c + d*
x] + Sinh[c + d*x])] - I*a*f*PolyLog[2, I*(Cosh[c + d*x] + Sinh[c + d*x])]
+ (b*f*PolyLog[2, -Cosh[2*(c + d*x)] - Sinh[2*(c + d*x)]])/2)/((a^2 + b^2)*
d^2)
```

fricas [A] time = 0.61, size = 684, normalized size = 1.33

$$-\frac{\left(a^2+b^2\right)d^2fx^2+2\left(a^2+b^2\right)d^2ex-2\,a^2f\,\mathrm{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}-b}{b}+1\right)-2\,a^2f}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] -1/2*((a^2 + b^2)*d^2*f*x^2 + 2*(a^2 + b^2)*d^2*e*x - 2*a^2*f*dilog((a*cosh
(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2) - b)/b + 1) - 2*a^2*f*dilog((a*cosh(d*x + c) + a*sinh(d*x + c)
 - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) +
2*(I*a*b*f - b^2*f)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + 2*(-I*a*b*f
- b^2*f)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) - 2*(a^2*d*e - a^2*c*f)*
log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a
) - 2*(a^2*d*e - a^2*c*f)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*s
qrt((a^2 + b^2)/b^2) + 2*a) - 2*(a^2*d*f*x + a^2*c*f)*log(-(a*cosh(d*x + c)
 + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2) - b)/b) - 2*(a^2*d*f*x + a^2*c*f)*log(-(a*cosh(d*x + c) + a*sinh(d*x +
c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (-
2*I*a*b*d*e + 2*b^2*d*e + 2*I*a*b*c*f - 2*b^2*c*f)*log(cosh(d*x + c) + sinh
(d*x + c) + I) - (2*I*a*b*d*e + 2*b^2*d*e - 2*I*a*b*c*f - 2*b^2*c*f)*log(co
sh(d*x + c) + sinh(d*x + c) - I) - (2*I*a*b*d*f*x + 2*b^2*d*f*x + 2*I*a*b*c
*f + 2*b^2*c*f)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) - (-2*I*a*b*d*f*
x + 2*b^2*d*f*x - 2*I*a*b*c*f + 2*b^2*c*f)*log(-I*cosh(d*x + c) - I*sinh(d*
x + c) + 1))/((a^2*b + b^3)*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] Timed out
```

maple [B] time = 0.33, size = 3882, normalized size = 7.52

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/2*f*x^2/b+e*x/b+2/d^2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*b*c+2/d*f/(2*a^
2+2*b^2)*ln(1-I*exp(d*x+c))*b*x+2/d^2*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*b*
c+1/d^2*f*c*b/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/d^2*f*c
/(2*a^2+2*b^2)*b*ln(1+exp(2*d*x+2*c))+4/d^2*f*c/(2*a^2+2*b^2)*a*arctan(exp(
d*x+c))-1/d*f*b/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2
+b^2)^(1/2)))*x-1/d^2*f*b/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a
)/(-a+(a^2+b^2)^(1/2)))*c-1/d*f*b/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^
(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*f*b/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a
^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/d*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+
c))*b*x-1/d^2/b*f*c^2-2/d/b*e*ln(exp(d*x+c))+b/d*f/(a^2+b^2)^(3/2)*ln((-b*e
xp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a*x+b/d^2*f/(a^2+b^2)^(3
/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a*c+2*I/d^2*
a*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c-2*I/d*a*f/(2*a^2+2*b^2)*ln(1-I*exp(d
*x+c))*x-2*I/d^2*a*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*c+2*I/d*a*f/(2*a^2+2*
b^2)*ln(1+I*exp(d*x+c))*x+1/2*b/d^2*f/(a^2+b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)
^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/2*b/d*f/(a^2+b^2)*ln((b*exp(d*x+c)+(a^2
+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/2*b/d^2*f/(a^2+b^2)*ln((b*exp(d*x+c
)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-2*b/d*e/(a^2+b^2)^(3/2)*arctanh
(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a+1/b/d*e/(a^2+b^2)*ln(b*exp(2*d
*x+2*c)+2*a*exp(d*x+c)-b)*a^2-2/b/d*e/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b*exp(
d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^3-1/2*b/d^2*f*c/(a^2+b^2)*ln(b*exp(2*d*x+2*c
)+2*a*exp(d*x+c)-b)-1/b/d^2*f/(a^2+b^2)^(3/2)*dilog((b*exp(d*x+c)+(a^2+b^2)
^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a^3-2/d/b*f*c*x+2/d^2/b*f*c*ln(exp(d*x+c))-1
/d*e*b/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d*e/(2*a^2+2*b
^2)*b*ln(1+exp(2*d*x+2*c))-4/d*e/(2*a^2+2*b^2)*a*arctan(exp(d*x+c))-1/d^2*f
*b/(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2
)))-1/d^2*f*b/(2*a^2+2*b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+
```

b^2)^(1/2)))+2/d^2*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))*b+2/d^2*f/(2*a^2+2
*b^2)*dilog(1-I*exp(d*x+c))*b+2/d/(a^2+b^2)^(1/2)*a*b*e/(2*a^2+2*b^2)*arcta
nh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/b/d^2*a*f*c/(2*a^2+2*b^2)*(a
^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/b/d^2*a^3
*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(
a^2+b^2)^(1/2)))*c-2/b/d*a^3*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln((-b*exp(d*x
+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+2*b/d*a*f/(2*a^2+2*b^2)/(a^2
+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+2*b/
d^2*a*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(
a+(a^2+b^2)^(1/2)))*c+2/b/d*a^3*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln((b*exp(d
*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+2/b/d^2*a^3*f/(2*a^2+2*b^2)
/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c
-2/b/d^2*a^3*f*c/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+
2*a)/(a^2+b^2)^(1/2))-2*b/d*a*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln((-b*exp(d*
x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-2*b/d^2*a*f/(2*a^2+2*b^2)/(
a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c
+1/b/d^2*f/(a^2+b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1
/2)))*a^2+1/b/d^2*f/(a^2+b^2)^(3/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)
/(-a+(a^2+b^2)^(1/2)))*a^3+1/b/d^2*f/(a^2+b^2)*dilog((-b*exp(d*x+c)+(a^2+b^
2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a^2-b/d^2*f/(a^2+b^2)^(3/2)*dilog((b*exp(
d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a+b/d^2*f/(a^2+b^2)^(3/2)*di
log((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a+1/2*b/d*f/(a^
2+b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+2*I/d^2
*a*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))-2*I/d^2*a*f/(2*a^2+2*b^2)*dilog(1-
I*exp(d*x+c))-2/d^2/(a^2+b^2)^(1/2)*a*b*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*
exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/2*b/d^2*f/(a^2+b^2)*dilog((-b*exp(d*x+c)
+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/2*b/d^2*f/(a^2+b^2)*dilog((b*ex
p(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/2*b/d*e/(a^2+b^2)*ln(b*e
xp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-1/b/d^2*f*c/(a^2+b^2)*ln(b*exp(2*d*x+2*c)+2
*a*exp(d*x+c)-b)*a^2-2/b/d^2*a^3*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*dilog((-b*
exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+2/b/d^2*a^3*f/(2*a^2+2*
b^2)/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1
/2)))+2/b/d^2*f*c/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2
)^(1/2))*a^3+2*b/d^2*a*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+
(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+2*b/d^2*f*c/(a^2+b^2)^(3/2)*arctanh
(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a-2*b/d^2*a*f/(2*a^2+2*b^2)/(a^2
+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1
/b/d*f/(a^2+b^2)^(3/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/
2)))*a^3*x-1/b/d^2*f/(a^2+b^2)^(3/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a
+(a^2+b^2)^(1/2)))*a^3*c+1/b/d*f/(a^2+b^2)^(3/2)*ln((-b*exp(d*x+c)+(a^2+b^2
)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a^3*x+1/b/d^2*f/(a^2+b^2)^(3/2)*ln((-b*exp
(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a^3*c+1/b/d*f/(a^2+b^2)*ln
((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a^2*x+1/b/d^2*f/(a
^2+b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a^2*c+1/
b/d*f/(a^2+b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a^

```
2*x+1/b/d^2*f/(a^2+b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1
/2)))*a^2*c+2/b/d*a*e/(2*a^2+2*b^2)*(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*
x+c)+2*a)/(a^2+b^2)^(1/2))+2/b/d*a^3*e/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*arctan
h(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-b/d*f/(a^2+b^2)^(3/2)*ln((b*exp
(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a*x-b/d^2*f/(a^2+b^2)^(3/2)
*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}f\left(\frac{x^2}{b} - \int -\frac{4\left(a^3xe^{(dx+c)} - a^2bx\right)}{a^2b^2 + b^4 - \left(a^2b^2e^{(2c)} + b^4e^{(2c)}\right)e^{(2dx)} - 2\left(a^3be^c + ab^3e^c\right)e^{(dx)}}\,dx - \int \frac{4\left(axe^{(dx+c)} + bx\right)}{a^2 + b^2 + \left(a^2e^{(2c)} + b^2e^{(2c)}\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] 1/2*f*(x^2/b - integrate(-4*(a^3*x*e^(d*x + c) - a^2*b*x)/(a^2*b^2 + b^4 -
(a^2*b^2*e^(2*c) + b^4*e^(2*c))*e^(2*d*x) - 2*(a^3*b*e^c + a*b^3*e^c)*e^(d*
x)), x) - integrate(4*(a*x*e^(d*x + c) + b*x)/(a^2 + b^2 + (a^2*e^(2*c) + b
^2*e^(2*c))*e^(2*d*x)), x)) + e*(a^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x -
2*c) - b)/((a^2*b + b^3)*d) + 2*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + b*
log(e^(-2*d*x - 2*c) + 1)/((a^2 + b^2)*d) + (d*x + c)/(b*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh(c+d\,x)\,\tanh(c+d\,x)\,\left(e+f\,x\right)}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*tanh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((sinh(c + d*x)*tanh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\sinh(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*sinh(c + d*x)*tanh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.380 $\int \frac{\sinh(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=74

$$\frac{a^2\log(a+b\sinh(c+dx))}{bd\left(a^2+b^2\right)}-\frac{a\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)}+\frac{b\log(\cosh(c+dx))}{d\left(a^2+b^2\right)}$$

```
[Out] -a*arctan(sinh(d*x+c))/(a^2+b^2)/d+b*ln(cosh(d*x+c))/(a^2+b^2)/d+a^2*ln(a+b
*sinh(d*x+c))/b/(a^2+b^2)/d
```

Rubi [A] time = 0.16, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {2837, 12, 1629, 635, 203, 260}

$$\frac{a^2\log(a+b\sinh(c+dx))}{bd\left(a^2+b^2\right)}-\frac{a\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)}+\frac{b\log(\cosh(c+dx))}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sinh[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)*d)) + (b*Log[Cosh[c + d*x]])/((a^2
 + b^2)*d) + (a^2*Log[a + b*Sinh[c + d*x]])/(b*(a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
```

```
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 1629

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol]
:> Int[ExpandIntegrand[(d + e*x)^m*Pq*(a + c*x^2)^p, x], x] /; FreeQ[{a, c,
 d, e, m}, x] && PolyQ[Pq, x] && IGtQ[p, -2]
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sinh(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx &= -\frac{b\,\text{Subst}\left(\int \frac{x^2}{b^2(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{d}\\
&= -\frac{\text{Subst}\left(\int \frac{x^2}{(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{bd}\\
&= -\frac{\text{Subst}\left(\int \left(-\frac{a^2}{\left(a^2+b^2\right)(a+x)}+\frac{b^2(a-x)}{\left(a^2+b^2\right)\left(b^2+x^2\right)}\right)dx, x, b\sinh(c+dx)\right)}{bd}\\
&= \frac{a^2\log(a+b\sinh(c+dx))}{b\left(a^2+b^2\right)d}-\frac{b\,\text{Subst}\left(\int \frac{a-x}{b^2+x^2}\,dx, x, b\sinh(c+dx)\right)}{\left(a^2+b^2\right)d}\\
&= \frac{a^2\log(a+b\sinh(c+dx))}{b\left(a^2+b^2\right)d}+\frac{b\,\text{Subst}\left(\int \frac{x}{b^2+x^2}\,dx, x, b\sinh(c+dx)\right)}{\left(a^2+b^2\right)d}-\frac{(ab)\,\text{S}}{}\\
&= -\frac{a\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d}+\frac{b\log(\cosh(c+dx))}{\left(a^2+b^2\right)d}+\frac{a^2\log(a+b\sinh(c+dx))}{b\left(a^2+b^2\right)d}
\end{aligned}$$

Mathematica [C] time = 0.08, size = 78, normalized size = 1.05

$$\frac{2a^2\log(a+b\sinh(c+dx))+b(b+ia)\log(-\sinh(c+dx)+i)+b(b-ia)\log(\sinh(c+dx)+i)}{2bd\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sinh[c + d*x]*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(I*a + b)*Log[I - Sinh[c + d*x]] + b*((-I)*a + b)*Log[I + Sinh[c + d*x]]
 + 2*a^2*Log[a + b*Sinh[c + d*x]])/(2*b*(a^2 + b^2)*d)
```

fricas [A] time = 0.54, size = 111, normalized size = 1.50

$$-\frac{\left(a^2+b^2\right)dx+2\,ab\arctan\left(\cosh\left(dx+c\right)+\sinh\left(dx+c\right)\right)-a^2\log\left(\frac{2\,(b\sinh(dx+c)+a)}{\cosh(dx+c)-\sinh(dx+c)}\right)-b^2\log\left(\frac{2\,\cosh(dx+c}{\cosh(dx+c)-\sinh(}\right.}{\left(a^2b+b^3\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -((a^2 + b^2)*d*x + 2*a*b*arctan(cosh(d*x + c) + sinh(d*x + c)) - a^2*log(2
*(b*sinh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) - b^2*log(2*cosh(d*
x + c)/(cosh(d*x + c) - sinh(d*x + c))))/((a^2*b + b^3)*d)
```

giac [A] time = 0.31, size = 95, normalized size = 1.28

$$\frac{\frac{a^2\log\left(\left|be^{(2\,dx+2\,c)}+2\,ae^{(dx+c)}-b\right|\right)}{a^2b+b^3}-\frac{dx}{b}-\frac{2\,a\arctan\left(e^{(dx+c)}\right)}{a^2+b^2}+\frac{b\log\left(e^{(2\,dx+2\,c)}+1\right)}{a^2+b^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (a^2*log(abs(b*e^(2*d*x + 2*c) + 2*a*e^(d*x + c) - b))/(a^2*b + b^3) - d*x/
b - 2*a*arctan(e^(d*x + c))/(a^2 + b^2) + b*log(e^(2*d*x + 2*c) + 1)/(a^2 +
 b^2))/d
```

maple [B] time = 0.00, size = 153, normalized size = 2.07

$$-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{db}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{db}+\frac{a^2\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{db\left(a^2+b^2\right)}+\frac{4b\ln\left(\tan\right.}{d\left(4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/d/b*ln(tanh(1/2*d*x+1/2*c)-1)-1/d/b*ln(tanh(1/2*d*x+1/2*c)+1)+1/d*a^2/b/
(a^2+b^2)*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)+4/d/(4*a^2+
```

```
4*b^2)*b*ln(tanh(1/2*d*x+1/2*c)^2+1)-8/d/(4*a^2+4*b^2)*a*arctan(tanh(1/2*d*
x+1/2*c))
```

maxima [A] time = 0.40, size = 110, normalized size = 1.49

$$\frac{a^2 \log\left(-2\,ae^{(-dx-c)} + be^{(-2\,dx-2\,c)} - b\right)}{\left(a^2b + b^3\right)d} + \frac{2\,a\arctan\left(e^{(-dx-c)}\right)}{\left(a^2 + b^2\right)d} + \frac{b\log\left(e^{(-2\,dx-2\,c)} + 1\right)}{\left(a^2 + b^2\right)d} + \frac{dx + c}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] a^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^2*b + b^3)*d) + 2*a
*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + b*log(e^(-2*d*x - 2*c) + 1)/((a^2 +
 b^2)*d) + (d*x + c)/(b*d)
```

mupad [B] time = 1.26, size = 174, normalized size = 2.35

$$\frac{\ln\left(\mathrm{e}^{c+d\,x}+1\mathrm{i}\right)}{b\,d+a\,d\,1\mathrm{i}}-\frac{x}{b}+\frac{a^2\,\ln\left(a^2\,b^3-b^5-a^4\,b+2\,a^5\,\mathrm{e}^{d\,x}\,\mathrm{e}^{c}+b^5\,\mathrm{e}^{2\,c}\,\mathrm{e}^{2\,d\,x}+a^4\,b\,\mathrm{e}^{2\,c}\,\mathrm{e}^{2\,d\,x}-2\,a^3\,b^2\,\mathrm{e}^{d\,x}\,\mathrm{e}^{c}-a^2\,b^3\,\mathrm{e}^{2\,c}}{d\,a^2\,b+d\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*tanh(c + d*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] log(exp(c + d*x) + 1i)/(a*d*1i + b*d) - x/b + (log(exp(c + d*x)*1i + 1)*1i)
/(a*d + b*d*1i) + (a^2*log(a^2*b^3 - b^5 - a^4*b + 2*a^5*exp(d*x)*exp(c) +
b^5*exp(2*c)*exp(2*d*x) + a^4*b*exp(2*c)*exp(2*d*x) - 2*a^3*b^2*exp(d*x)*ex
p(c) - a^2*b^3*exp(2*c)*exp(2*d*x) + 2*a*b^4*exp(d*x)*exp(c)))/(b^3*d + a^2
*b*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh\left(c + dx\right)\tanh\left(c + dx\right)}{a + b\sinh\left(c + dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(sinh(c + d*x)*tanh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.381 $\int \frac{\sinh(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{\sinh(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Sinh[c + d*x]*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Sinh[c + d*x]*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),
 x]
```

Rubi steps

$$\int \frac{\sinh(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\sinh(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Sinh[c + d*x]*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x
]
```

```
[Out] $Aborted
```

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sinh(dx+c)\tanh(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] integral(sinh(d*x + c)*tanh(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x
+ c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] Timed out
```

maple [A] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{\sinh \left(dx+c\right) \tanh \left(dx+c\right)}{\left(fx+e\right) \left(a+b\sinh \left(dx+c\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\log\left(fx+e\right)}{bf} - \frac{1}{2}\int -\frac{4\left(a^3e^{(dx+c)}-a^2b\right)}{a^2b^2e+b^4e+\left(a^2b^2f+b^4f\right)x-\left(a^2b^2ee^{(2\,c)}+b^4ee^{(2\,c)}+\left(a^2b^2fe^{(2\,c)}+b^4fe^{(2\,c)}\right)x\right)e^{(2\,dx)}-2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] log(f*x + e)/(b*f) - 1/2*integrate(-4*(a^3*e^(d*x + c) - a^2*b)/(a^2*b^2*e
+ b^4*e + (a^2*b^2*f + b^4*f)*x - (a^2*b^2*e*e^(2*c) + b^4*e*e^(2*c) + (a^2
*b^2*f*e^(2*c) + b^4*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^3*b*e*e^c + a*b^3*e*e^c
 + (a^3*b*f*e^c + a*b^3*f*e^c)*x)*e^(d*x)), x) - 1/2*integrate(4*(a*e^(d*x
+ c) + b)/(a^2*e + b^2*e + (a^2*f + b^2*f)*x + (a^2*e*e^(2*c) + b^2*e*e^(2*
c) + (a^2*f*e^(2*c) + b^2*f*e^(2*c))*x)*e^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sinh\left(c+d\,x\right)\,\tanh\left(c+d\,x\right)}{\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*tanh(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((sinh(c + d*x)*tanh(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh(c+dx)\tanh(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(sinh(c + d*x)*tanh(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.382 $\int \frac{(e+fx)^3 \tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1118

$$\frac{(e+fx)^3a^3}{b^2\left(a^2+b^2\right)d}-\frac{3f(e+fx)^2\log\left(1+e^{2(c+dx)}\right)a^3}{b^2\left(a^2+b^2\right)d^2}-\frac{3f^2(e+fx)\text{Li}_2\left(-e^{2(c+dx)}\right)a^3}{b^2\left(a^2+b^2\right)d^3}+\frac{3f^3\text{Li}_3\left(-e^{2(c+dx)}\right)a^3}{2b^2\left(a^2+b^2\right)d^4}+\frac{(e+fx)^3}{b^2(}$$

```
[Out] 3*a*f*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/b^2/d^2+3*a^2*f*(f*x+e)^2*polylog(2,-b
*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-3*a^2*f*(f*x+e)^2*poly
log(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-6*a^2*f^2*(f*x
+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^3+6*a^2*
f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^
3-3/2*a*f^3*polylog(3,-exp(2*d*x+2*c))/b^2/d^4-a*(f*x+e)^3*tanh(d*x+c)/b^2/
d-6*I*f^3*polylog(3,I*exp(d*x+c))/b/d^4+a^3*(f*x+e)^3/b^2/(a^2+b^2)/d+6*f*(
f*x+e)^2*arctan(exp(d*x+c))/b/d^2+3*a*f^2*(f*x+e)*polylog(2,-exp(2*d*x+2*c)
)/b^2/d^3+6*I*f^3*polylog(3,-I*exp(d*x+c))/b/d^4+3/2*a^3*f^3*polylog(3,-exp
(2*d*x+2*c))/b^2/(a^2+b^2)/d^4+a^2*(f*x+e)^3*sech(d*x+c)/b/(a^2+b^2)/d+a^3*
(f*x+e)^3*tanh(d*x+c)/b^2/(a^2+b^2)/d-6*I*f^2*(f*x+e)*polylog(2,-I*exp(d*x+
c))/b/d^3+6*I*a^2*f^3*polylog(3,I*exp(d*x+c))/b/(a^2+b^2)/d^4-6*I*a^2*f^2*(
f*x+e)*polylog(2,I*exp(d*x+c))/b/(a^2+b^2)/d^3-6*a^2*f*(f*x+e)^2*arctan(exp
(d*x+c))/b/(a^2+b^2)/d^2+6*I*f^2*(f*x+e)*polylog(2,I*exp(d*x+c))/b/d^3-3*a^
3*f^2*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/b^2/(a^2+b^2)/d^3-6*I*a^2*f^3*poly
log(3,-I*exp(d*x+c))/b/(a^2+b^2)/d^4-(f*x+e)^3*sech(d*x+c)/b/d-a*(f*x+e)^3/
b^2/d+6*I*a^2*f^2*(f*x+e)*polylog(2,-I*exp(d*x+c))/b/(a^2+b^2)/d^3-3*a^3*f*
(f*x+e)^2*ln(1+exp(2*d*x+2*c))/b^2/(a^2+b^2)/d^2+6*a^2*f^3*polylog(4,-b*exp
(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^4-6*a^2*f^3*polylog(4,-b*exp
(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^4+a^2*(f*x+e)^3*ln(1+b*exp(d
*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d-a^2*(f*x+e)^3*ln(1+b*exp(d*x+c
)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d
```

Rubi [A] time = 1.98, antiderivative size = 1118, normalized size of antiderivative = 1.00, number of steps used = 45, number of rules used = 15, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.536, Rules used = {5567, 5451, 4180, 2531, 2282, 6589, 5583, 4184, 3718, 2190, 5573, 3322, 2264, 6609, 6742}

$$\frac{(e+fx)^3a^3}{b^2\left(a^2+b^2\right)d}-\frac{3f(e+fx)^2\log\left(1+e^{2(c+dx)}\right)a^3}{b^2\left(a^2+b^2\right)d^2}-\frac{3f^2(e+fx)\text{PolyLog}\left(2,-e^{2(c+dx)}\right)a^3}{b^2\left(a^2+b^2\right)d^3}+\frac{3f^3\text{PolyLog}\left(3,-e^{2(c+d}\right.}{2b^2\left(a^2+b^2\right)d^4}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*(e + f*x)^3)/(b^2*d)) + (a^3*(e + f*x)^3)/(b^2*(a^2 + b^2)*d) + (6*f*(
e + f*x)^2*ArcTan[E^(c + d*x)])/(b*d^2) - (6*a^2*f*(e + f*x)^2*ArcTan[E^(c
+ d*x)])/(b*(a^2 + b^2)*d^2) + (a^2*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a
- Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) - (a^2*(e + f*x)^3*Log[1 + (b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) + (3*a*f*(e + f*x)
^2*Log[1 + E^(2*(c + d*x))])/(b^2*d^2) - (3*a^3*f*(e + f*x)^2*Log[1 + E^(2*
(c + d*x))])/(b^2*(a^2 + b^2)*d^2) - ((6*I)*f^2*(e + f*x)*PolyLog[2, (-I)*E
^(c + d*x)])/(b*d^3) + ((6*I)*a^2*f^2*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)
])/(b*(a^2 + b^2)*d^3) + ((6*I)*f^2*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b
*d^3) - ((6*I)*a^2*f^2*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b*(a^2 + b^2)*
d^3) + (3*a^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^
2]))])/((a^2 + b^2)^(3/2)*d^2) - (3*a^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c
+ d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) + (3*a*f^2*(e + f*
x)*PolyLog[2, -E^(2*(c + d*x))])/(b^2*d^3) - (3*a^3*f^2*(e + f*x)*PolyLog[2
, -E^(2*(c + d*x))])/(b^2*(a^2 + b^2)*d^3) + ((6*I)*f^3*PolyLog[3, (-I)*E^(
c + d*x)])/(b*d^4) - ((6*I)*a^2*f^3*PolyLog[3, (-I)*E^(c + d*x)])/(b*(a^2 +
 b^2)*d^4) - ((6*I)*f^3*PolyLog[3, I*E^(c + d*x)])/(b*d^4) + ((6*I)*a^2*f^3
*PolyLog[3, I*E^(c + d*x)])/(b*(a^2 + b^2)*d^4) - (6*a^2*f^2*(e + f*x)*Poly
Log[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^3) +
 (6*a^2*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])
/((a^2 + b^2)^(3/2)*d^3) - (3*a*f^3*PolyLog[3, -E^(2*(c + d*x))])/(2*b^2*d^
4) + (3*a^3*f^3*PolyLog[3, -E^(2*(c + d*x))])/(2*b^2*(a^2 + b^2)*d^4) + (6*
a^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^
(3/2)*d^4) - (6*a^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
])/((a^2 + b^2)^(3/2)*d^4) - ((e + f*x)^3*Sech[c + d*x])/(b*d) + (a^2*(e +
f*x)^3*Sech[c + d*x])/(b*(a^2 + b^2)*d) - (a*(e + f*x)^3*Tanh[c + d*x])/(b^
2*d) + (a^3*(e + f*x)^3*Tanh[c + d*x])/(b^2*(a^2 + b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\operatorname{sech}(c+dx)\tanh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\operatorname{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^3\operatorname{sech}(c+dx)}{bd} - \frac{a\int (e+fx)^3\operatorname{sech}^2(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^3\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}}{b^2}$$

$$= \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{(e+fx)^3\operatorname{sech}(c+dx)}{bd} - \frac{a(e+fx)^3\tanh(c+dx)}{b^2d} +$$

$$= -\frac{a(e+fx)^3}{b^2d} + \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{6if^2(e+fx)\operatorname{Li}_2\left(-ie^{c+dx}\right)}{bd^3} + \frac{6if^2(e+}{}$$

$$= -\frac{a(e+fx)^3}{b^2d} + \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd^2} + \frac{3af(e+fx)^2\log\left(1+e^{2(c+dx)}\right)}{b^2d^2} - \frac{6if}{}$$

$$= -\frac{a(e+fx)^3}{b^2d} + \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd^2} + \frac{a^2(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{a^2(}{}$$

$$= -\frac{a(e+fx)^3}{b^2d} + \frac{a^3(e+fx)^3}{b^2\left(a^2+b^2\right)d} + \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{6a^2f(e+fx)^2\tan^{-1}}{b\left(a^2+b^2\right)d^2}$$

$$= -\frac{a(e+fx)^3}{b^2d} + \frac{a^3(e+fx)^3}{b^2\left(a^2+b^2\right)d} + \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{6a^2f(e+fx)^2\tan^{-1}}{b\left(a^2+b^2\right)d^2}$$

$$= -\frac{a(e+fx)^3}{b^2d} + \frac{a^3(e+fx)^3}{b^2\left(a^2+b^2\right)d} + \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{6a^2f(e+fx)^2\tan^{-1}}{b\left(a^2+b^2\right)d^2}$$

$$= -\frac{a(e+fx)^3}{b^2d} + \frac{a^3(e+fx)^3}{b^2\left(a^2+b^2\right)d} + \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{6a^2f(e+fx)^2\tan^{-1}}{b\left(a^2+b^2\right)d^2}$$

$$= -\frac{a(e+fx)^3}{b^2d} + \frac{a^3(e+fx)^3}{b^2\left(a^2+b^2\right)d} + \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{6a^2f(e+fx)^2\tan^{-1}}{b\left(a^2+b^2\right)d^2}$$

Mathematica [A] time = 13.31, size = 1118, normalized size = 1.00

$$\frac{\left(-2e^3\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^3+f^3x^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3+3ef^2x^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3+3e^2fx\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (f*(-12*a*d^3*e^2*E^(2*c)*x - 12*a*d^3*e*E^(2*c)*f*x^2 - 4*a*d^3*E^(2*c)*f^
2*x^3 + 12*b*d^2*e^2*(1 + E^(2*c))*ArcTan[E^(c + d*x)] + 6*a*d^2*e^2*(1 + E
^(2*c))*Log[1 + E^(2*(c + d*x))] + (12*I)*b*d*e*(1 + E^(2*c))*f*(d*x*(Log[1
 - I*E^(c + d*x)] - Log[1 + I*E^(c + d*x)]) - PolyLog[2, (-I)*E^(c + d*x)]
+ PolyLog[2, I*E^(c + d*x)]) + 6*a*d*e*(1 + E^(2*c))*f*(2*d*x*Log[1 + E^(2*
(c + d*x))] + PolyLog[2, -E^(2*(c + d*x))]) + (6*I)*b*(1 + E^(2*c))*f^2*(d^
2*x^2*Log[1 - I*E^(c + d*x)] - d^2*x^2*Log[1 + I*E^(c + d*x)] - 2*d*x*PolyL
og[2, (-I)*E^(c + d*x)] + 2*d*x*PolyLog[2, I*E^(c + d*x)] + 2*PolyLog[3, (-
I)*E^(c + d*x)] - 2*PolyLog[3, I*E^(c + d*x)]) + 3*a*(1 + E^(2*c))*f^2*(2*d
^2*x^2*Log[1 + E^(2*(c + d*x))] + 2*d*x*PolyLog[2, -E^(2*(c + d*x))] - Poly
Log[3, -E^(2*(c + d*x))])))/(2*(a^2 + b^2)*d^4*(1 + E^(2*c))) + (a^2*(-2*d^
3*e^3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 3*d^3*e^2*f*x*Log[1 +
(b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c +
d*x))/(a - Sqrt[a^2 + b^2])] + d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a - Sqr
t[a^2 + b^2])] - 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
)] - 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - d^3*f
^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 3*d^2*f*(e + f*x)^2
*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 3*d^2*f*(e + f*x)^2*P
olyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 6*d*e*f^2*PolyLog[3,
(b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 6*d*f^3*x*PolyLog[3, (b*E^(c + d*
x))/(-a + Sqrt[a^2 + b^2])] + 6*d*e*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + S
qrt[a^2 + b^2]))] + 6*d*f^3*x*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2]))] + 6*f^3*PolyLog[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 6*f^3*
PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/((a^2 + b^2)^(3/2)*d
^4) + (Sech[c]*Sech[c + d*x]*(-(b*e^3*Cosh[c]) - 3*b*e^2*f*x*Cosh[c] - 3*b*
e*f^2*x^2*Cosh[c] - b*f^3*x^3*Cosh[c] - a*e^3*Sinh[d*x] - 3*a*e^2*f*x*Sinh[
d*x] - 3*a*e*f^2*x^2*Sinh[d*x] - a*f^3*x^3*Sinh[d*x]))/((a^2 + b^2)*d)
```

fricas [C] time = 0.78, size = 6525, normalized size = 5.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(4*(a^3 + a*b^2)*d^3*e^3 - 12*(a^3 + a*b^2)*c*d^2*e^2*f + 12*(a^3 + a*b
^2)*c^2*d*e*f^2 - 4*(a^3 + a*b^2)*c^3*f^3 - 4*((a^3 + a*b^2)*d^3*f^3*x^3 +
3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^
2)*c*d^2*e^2*f - 3*(a^3 + a*b^2)*c^2*d*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*cosh(
d*x + c)^2 - 4*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 +
 3*(a^3 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*d^2*e^2*f - 3*(a^3 + a*b^2
)*c^2*d*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*sinh(d*x + c)^2 + 6*(a^2*b*d^2*f^3*x
^2 + 2*a^2*b*d^2*e*f^2*x + a^2*b*d^2*e^2*f + (a^2*b*d^2*f^3*x^2 + 2*a^2*b*d
^2*e*f^2*x + a^2*b*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(a^2*b*d^2*f^3*x^2 + 2*a^
2*b*d^2*e*f^2*x + a^2*b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d^2
*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x + a^2*b*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^
2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
 b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 6*(a^2*b*d^2*f^3*x^2
+ 2*a^2*b*d^2*e*f^2*x + a^2*b*d^2*e^2*f + (a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2*
e*f^2*x + a^2*b*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(a^2*b*d^2*f^3*x^2 + 2*a^2*b
*d^2*e*f^2*x + a^2*b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d^2*f^
3*x^2 + 2*a^2*b*d^2*e*f^2*x + a^2*b*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2 +
 b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*
sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(a^2*b*d^3*e^3 - 3*a^2
*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3 + (a^2*b*d^3*e^3 - 3*a
^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*cosh(d*x + c)^2 + 2
*(a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3
)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^
2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log
(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) +
 2*(a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f
^3 + (a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3
*f^3)*cosh(d*x + c)^2 + 2*(a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^
2*d*e*f^2 - a^2*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d^3*e^3 - 3
*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*sinh(d*x + c)^2)*
sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt(
(a^2 + b^2)/b^2) + 2*a) + 2*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*
a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f
^3 + (a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a
^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*cosh(d*x + c)^2 + 2
*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a^2*b
*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x
+ c) + (a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3
*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*sinh(d*x + c)^2)*
sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x
 + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(a^2*b*d^3*f^3*x
^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*
a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3 + (a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*
x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2
*b*c^3*f^3)*cosh(d*x + c)^2 + 2*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2
```

```
+ 3*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c
^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^
2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a
^2*b*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c)
+ a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2) - b)/b) + 12*(a^2*b*f^3*cosh(d*x + c)^2 + 2*a^2*b*f^3*cosh(d*x + c)*sinh
(d*x + c) + a^2*b*f^3*sinh(d*x + c)^2 + a^2*b*f^3)*sqrt((a^2 + b^2)/b^2)*po
lylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(a^2*b*f^3*cosh(d*x + c)^2 + 2*a^2*b*
f^3*cosh(d*x + c)*sinh(d*x + c) + a^2*b*f^3*sinh(d*x + c)^2 + a^2*b*f^3)*sq
rt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(a^2*b*d*f^3*x
+ a^2*b*d*e*f^2 + (a^2*b*d*f^3*x + a^2*b*d*e*f^2)*cosh(d*x + c)^2 + 2*(a^2*
b*d*f^3*x + a^2*b*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d*f^3*x + a
^2*b*d*e*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x
 + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2))/b) + 12*(a^2*b*d*f^3*x + a^2*b*d*e*f^2 + (a^2*b*d*f^3*x + a^2*b*d
*e*f^2)*cosh(d*x + c)^2 + 2*(a^2*b*d*f^3*x + a^2*b*d*e*f^2)*cosh(d*x + c)*s
inh(d*x + c) + (a^2*b*d*f^3*x + a^2*b*d*e*f^2)*sinh(d*x + c)^2)*sqrt((a^2 +
 b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
 + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 4*((a^2*b + b^3)*d^3*f^3*x^
3 + 3*(a^2*b + b^3)*d^3*e*f^2*x^2 + 3*(a^2*b + b^3)*d^3*e^2*f*x + (a^2*b +
b^3)*d^3*e^3)*cosh(d*x + c) + (12*(a^3 + a*b^2)*d*f^3*x + 12*I*(a^2*b + b^3
)*d*f^3*x + 12*(a^3 + a*b^2)*d*e*f^2 + 12*I*(a^2*b + b^3)*d*e*f^2 + (12*(a^
3 + a*b^2)*d*f^3*x + 12*I*(a^2*b + b^3)*d*f^3*x + 12*(a^3 + a*b^2)*d*e*f^2
+ 12*I*(a^2*b + b^3)*d*e*f^2)*cosh(d*x + c)^2 + (24*(a^3 + a*b^2)*d*f^3*x +
 24*I*(a^2*b + b^3)*d*f^3*x + 24*(a^3 + a*b^2)*d*e*f^2 + 24*I*(a^2*b + b^3)
*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (12*(a^3 + a*b^2)*d*f^3*x + 12*I*(a
^2*b + b^3)*d*f^3*x + 12*(a^3 + a*b^2)*d*e*f^2 + 12*I*(a^2*b + b^3)*d*e*f^2
)*sinh(d*x + c)^2)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + (12*(a^3 + a*
b^2)*d*f^3*x - 12*I*(a^2*b + b^3)*d*f^3*x + 12*(a^3 + a*b^2)*d*e*f^2 - 12*I
*(a^2*b + b^3)*d*e*f^2 + (12*(a^3 + a*b^2)*d*f^3*x - 12*I*(a^2*b + b^3)*d*f
^3*x + 12*(a^3 + a*b^2)*d*e*f^2 - 12*I*(a^2*b + b^3)*d*e*f^2)*cosh(d*x + c)
^2 + (24*(a^3 + a*b^2)*d*f^3*x - 24*I*(a^2*b + b^3)*d*f^3*x + 24*(a^3 + a*b
^2)*d*e*f^2 - 24*I*(a^2*b + b^3)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (12
*(a^3 + a*b^2)*d*f^3*x - 12*I*(a^2*b + b^3)*d*f^3*x + 12*(a^3 + a*b^2)*d*e*
f^2 - 12*I*(a^2*b + b^3)*d*e*f^2)*sinh(d*x + c)^2)*dilog(-I*cosh(d*x + c) -
 I*sinh(d*x + c)) + (6*(a^3 + a*b^2)*d^2*e^2*f + 6*I*(a^2*b + b^3)*d^2*e^2*
f - 12*(a^3 + a*b^2)*c*d*e*f^2 - 12*I*(a^2*b + b^3)*c*d*e*f^2 + 6*(a^3 + a*
b^2)*c^2*f^3 + 6*I*(a^2*b + b^3)*c^2*f^3 + (6*(a^3 + a*b^2)*d^2*e^2*f + 6*I
*(a^2*b + b^3)*d^2*e^2*f - 12*(a^3 + a*b^2)*c*d*e*f^2 - 12*I*(a^2*b + b^3)*
c*d*e*f^2 + 6*(a^3 + a*b^2)*c^2*f^3 + 6*I*(a^2*b + b^3)*c^2*f^3)*cosh(d*x +
 c)^2 + (12*(a^3 + a*b^2)*d^2*e^2*f + 12*I*(a^2*b + b^3)*d^2*e^2*f - 24*(a^
3 + a*b^2)*c*d*e*f^2 - 24*I*(a^2*b + b^3)*c*d*e*f^2 + 12*(a^3 + a*b^2)*c^2*
f^3 + 12*I*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)*sinh(d*x + c) + (6*(a^3 + a
```

*b^2)*d^2*e^2*f + 6*I*(a^2*b + b^3)*d^2*e^2*f - 12*(a^3 + a*b^2)*c*d*e*f^2
- 12*I*(a^2*b + b^3)*c*d*e*f^2 + 6*(a^3 + a*b^2)*c^2*f^3 + 6*I*(a^2*b + b^3
)*c^2*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) + I) + (6*(a^
3 + a*b^2)*d^2*e^2*f - 6*I*(a^2*b + b^3)*d^2*e^2*f - 12*(a^3 + a*b^2)*c*d*e
*f^2 + 12*I*(a^2*b + b^3)*c*d*e*f^2 + 6*(a^3 + a*b^2)*c^2*f^3 - 6*I*(a^2*b
+ b^3)*c^2*f^3 + (6*(a^3 + a*b^2)*d^2*e^2*f - 6*I*(a^2*b + b^3)*d^2*e^2*f -
12*(a^3 + a*b^2)*c*d*e*f^2 + 12*I*(a^2*b + b^3)*c*d*e*f^2 + 6*(a^3 + a*b^2
)*c^2*f^3 - 6*I*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)^2 + (12*(a^3 + a*b^2)*
d^2*e^2*f - 12*I*(a^2*b + b^3)*d^2*e^2*f - 24*(a^3 + a*b^2)*c*d*e*f^2 + 24*
I*(a^2*b + b^3)*c*d*e*f^2 + 12*(a^3 + a*b^2)*c^2*f^3 - 12*I*(a^2*b + b^3)*c
^2*f^3)*cosh(d*x + c)*sinh(d*x + c) + (6*(a^3 + a*b^2)*d^2*e^2*f - 6*I*(a^2
*b + b^3)*d^2*e^2*f - 12*(a^3 + a*b^2)*c*d*e*f^2 + 12*I*(a^2*b + b^3)*c*d*e
f^2 + 6(a^3 + a*b^2)*c^2*f^3 - 6*I*(a^2*b + b^3)*c^2*f^3)*sinh(d*x + c)^2
)*log(cosh(d*x + c) + sinh(d*x + c) - I) + (6*(a^3 + a*b^2)*d^2*f^3*x^2 - 6
I(a^2*b + b^3)*d^2*f^3*x^2 + 12*(a^3 + a*b^2)*d^2*e*f^2*x - 12*I*(a^2*b +
b^3)*d^2*e*f^2*x + 12*(a^3 + a*b^2)*c*d*e*f^2 - 12*I*(a^2*b + b^3)*c*d*e*f
^2 - 6*(a^3 + a*b^2)*c^2*f^3 + 6*I*(a^2*b + b^3)*c^2*f^3 + (6*(a^3 + a*b^2)
*d^2*f^3*x^2 - 6*I*(a^2*b + b^3)*d^2*f^3*x^2 + 12*(a^3 + a*b^2)*d^2*e*f^2*x
- 12*I*(a^2*b + b^3)*d^2*e*f^2*x + 12*(a^3 + a*b^2)*c*d*e*f^2 - 12*I*(a^2*
b + b^3)*c*d*e*f^2 - 6*(a^3 + a*b^2)*c^2*f^3 + 6*I*(a^2*b + b^3)*c^2*f^3)*c
osh(d*x + c)^2 + (12*(a^3 + a*b^2)*d^2*f^3*x^2 - 12*I*(a^2*b + b^3)*d^2*f^3
x^2 + 24(a^3 + a*b^2)*d^2*e*f^2*x - 24*I*(a^2*b + b^3)*d^2*e*f^2*x + 24*(
a^3 + a*b^2)*c*d*e*f^2 - 24*I*(a^2*b + b^3)*c*d*e*f^2 - 12*(a^3 + a*b^2)*c^
2*f^3 + 12*I*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)*sinh(d*x + c) + (6*(a^3 +
a*b^2)*d^2*f^3*x^2 - 6*I*(a^2*b + b^3)*d^2*f^3*x^2 + 12*(a^3 + a*b^2)*d^2*
e*f^2*x - 12*I*(a^2*b + b^3)*d^2*e*f^2*x + 12*(a^3 + a*b^2)*c*d*e*f^2 - 12*
I*(a^2*b + b^3)*c*d*e*f^2 - 6*(a^3 + a*b^2)*c^2*f^3 + 6*I*(a^2*b + b^3)*c^2
*f^3)*sinh(d*x + c)^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) + (6*(a^3
+ a*b^2)*d^2*f^3*x^2 + 6*I*(a^2*b + b^3)*d^2*f^3*x^2 + 12*(a^3 + a*b^2)*d^
2*e*f^2*x + 12*I*(a^2*b + b^3)*d^2*e*f^2*x + 12*(a^3 + a*b^2)*c*d*e*f^2 + 1
2*I*(a^2*b + b^3)*c*d*e*f^2 - 6*(a^3 + a*b^2)*c^2*f^3 - 6*I*(a^2*b + b^3)*c
^2*f^3 + (6*(a^3 + a*b^2)*d^2*f^3*x^2 + 6*I*(a^2*b + b^3)*d^2*f^3*x^2 + 12*
(a^3 + a*b^2)*d^2*e*f^2*x + 12*I*(a^2*b + b^3)*d^2*e*f^2*x + 12*(a^3 + a*b^
2)*c*d*e*f^2 + 12*I*(a^2*b + b^3)*c*d*e*f^2 - 6*(a^3 + a*b^2)*c^2*f^3 - 6*I
*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)^2 + (12*(a^3 + a*b^2)*d^2*f^3*x^2 + 1
2*I*(a^2*b + b^3)*d^2*f^3*x^2 + 24*(a^3 + a*b^2)*d^2*e*f^2*x + 24*I*(a^2*b
+ b^3)*d^2*e*f^2*x + 24*(a^3 + a*b^2)*c*d*e*f^2 + 24*I*(a^2*b + b^3)*c*d*e*
f^2 - 12*(a^3 + a*b^2)*c^2*f^3 - 12*I*(a^2*b + b^3)*c^2*f^3)*cosh(d*x + c)*
sinh(d*x + c) + (6*(a^3 + a*b^2)*d^2*f^3*x^2 + 6*I*(a^2*b + b^3)*d^2*f^3*x^
2 + 12*(a^3 + a*b^2)*d^2*e*f^2*x + 12*I*(a^2*b + b^3)*d^2*e*f^2*x + 12*(a^3
+ a*b^2)*c*d*e*f^2 + 12*I*(a^2*b + b^3)*c*d*e*f^2 - 6*(a^3 + a*b^2)*c^2*f^
3 - 6*I*(a^2*b + b^3)*c^2*f^3)*sinh(d*x + c)^2)*log(-I*cosh(d*x + c) - I*si
nh(d*x + c) + 1) - 12*((a^3 + a*b^2)*f^3 + I*(a^2*b + b^3)*f^3 + ((a^3 + a*
b^2)*f^3 + I*(a^2*b + b^3)*f^3)*cosh(d*x + c)^2 + 2*((a^3 + a*b^2)*f^3 + I*
(a^2*b + b^3)*f^3)*cosh(d*x + c)*sinh(d*x + c) + ((a^3 + a*b^2)*f^3 + I*(a^

```
2*b + b^3)*f^3)*sinh(d*x + c)^2)*polylog(3, I*cosh(d*x + c) + I*sinh(d*x +
c)) - 12*((a^3 + a*b^2)*f^3 - I*(a^2*b + b^3)*f^3 + ((a^3 + a*b^2)*f^3 - I*
(a^2*b + b^3)*f^3)*cosh(d*x + c)^2 + 2*((a^3 + a*b^2)*f^3 - I*(a^2*b + b^3)
*f^3)*cosh(d*x + c)*sinh(d*x + c) + ((a^3 + a*b^2)*f^3 - I*(a^2*b + b^3)*f^
3)*sinh(d*x + c)^2)*polylog(3, -I*cosh(d*x + c) - I*sinh(d*x + c)) - 4*((a^
2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*d^3*e*f^2*x^2 + 3*(a^2*b + b^3)*d^
3*e^2*f*x + (a^2*b + b^3)*d^3*e^3 + 2*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 +
 a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + 3*(a^3 + a*b^2)*c*d^2
*e^2*f - 3*(a^3 + a*b^2)*c^2*d*e*f^2 + (a^3 + a*b^2)*c^3*f^3)*cosh(d*x + c)
)*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^4*cosh(d*x + c)^2 + 2*(a^4 + 2*
a^2*b^2 + b^4)*d^4*cosh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*d^
4*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 1.74, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\left(\tanh^{2}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^3*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-3\,ae^{2}f\left(\frac{2\,(dx+c)}{\left(a^{2}+b^{2}\right)d^{2}}-\frac{\log\left(e^{(2\,dx+2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d^{2}}\right)+6\,bf^{3}\int\frac{x^{2}e^{(dx+c)}}{a^{2}de^{(2\,dx+2\,c)}+b^{2}de^{(2\,dx+2\,c)}+a^{2}d+b^{2}d}\,dx-6\,af^{3}\int\frac{}{a^{2}de^{(}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] -3*a*e^2*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2
+ b^2)*d^2)) + 6*b*f^3*integrate(x^2*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b
```

```
^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 6*a*f^3*integrate(x^2/(a^2*d*e^
(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) + 12*b*e*f^2*int
egrate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d
 + b^2*d), x) - 12*a*e*f^2*integrate(x/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*
d*x + 2*c) + a^2*d + b^2*d), x) + e^3*(a^2*log((b*e^(-d*x - c) - a - sqrt(a
^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^2 + b^2)^(3/2)*d) -
2*(b*e^(-d*x - c) + a)/((a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d)) + 6*
b*e^2*f*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) + 2*(a*f^3*x^3 + 3*a*e*f^2*x^
2 + 3*a*e^2*f*x - (b*f^3*x^3*e^c + 3*b*e*f^2*x^2*e^c + 3*b*e^2*f*x*e^c)*e^(
d*x))/(a^2*d + b^2*d + (a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) + integra
te(-2*(a^2*f^3*x^3*e^c + 3*a^2*e*f^2*x^2*e^c + 3*a^2*e^2*f*x*e^c)*e^(d*x)/(
a^2*b + b^3 - (a^2*b*e^(2*c) + b^3*e^(2*c))*e^(2*d*x) - 2*(a^3*e^c + a*b^2*
e^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh(c+d\,x)^2\,\left(e+f\,x\right)^3}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((tanh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^3\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**3*tanh(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.383 $\int \frac{(e+fx)^2 \tanh^2(c+dx)}{a+b\sinh(c+dx)} dx$

Optimal. Leaf size=772

$$\frac{2ia^2f^2\text{Li}_2\left(-ie^{c+dx}\right)}{bd^3\left(a^2+b^2\right)}-\frac{2ia^2f^2\text{Li}_2\left(ie^{c+dx}\right)}{bd^3\left(a^2+b^2\right)}-\frac{2a^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)^{3/2}}+\frac{2a^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^3\left(a^2+b^2\right)^{3/2}}+\frac{2a^2f(e+fx)\text{Li}_2\left(-\frac{}{a-}\right.}{d^2\left(a^2+b^2\right)^{3/2}}$$

```
[Out] -a*(f*x+e)^2/b^2/d+a^3*(f*x+e)^2/b^2/(a^2+b^2)/d+4*f*(f*x+e)*arctan(exp(d*x
+c))/b/d^2-4*a^2*f*(f*x+e)*arctan(exp(d*x+c))/b/(a^2+b^2)/d^2+2*a*f*(f*x+e)
*ln(1+exp(2*d*x+2*c))/b^2/d^2-2*a^3*f*(f*x+e)*ln(1+exp(2*d*x+2*c))/b^2/(a^2
+b^2)/d^2+a^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3
/2)/d-a^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/
d+2*I*f^2*polylog(2,I*exp(d*x+c))/b/d^3-2*I*f^2*polylog(2,-I*exp(d*x+c))/b/
d^3+2*I*a^2*f^2*polylog(2,-I*exp(d*x+c))/b/(a^2+b^2)/d^3-2*I*a^2*f^2*polylo
g(2,I*exp(d*x+c))/b/(a^2+b^2)/d^3+a*f^2*polylog(2,-exp(2*d*x+2*c))/b^2/d^3-
a^3*f^2*polylog(2,-exp(2*d*x+2*c))/b^2/(a^2+b^2)/d^3+2*a^2*f*(f*x+e)*polylo
g(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-2*a^2*f*(f*x+e)*
polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-2*a^2*f^2*
polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^3+2*a^2*f^2*
polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^3-(f*x+e)^2*
sech(d*x+c)/b/d+a^2*(f*x+e)^2*sech(d*x+c)/b/(a^2+b^2)/d-a*(f*x+e)^2*tanh(d*
x+c)/b^2/d+a^3*(f*x+e)^2*tanh(d*x+c)/b^2/(a^2+b^2)/d
```

Rubi [A] time = 1.53, antiderivative size = 772, normalized size of antiderivative = 1.00, number of steps used = 37, number of rules used = 16, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {5567, 5451, 4180, 2279, 2391, 5583, 4184, 3718, 2190, 5573, 3322, 2264, 2531, 2282, 6589, 6742}

$$\frac{2a^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{2a^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{a^3f^2\text{PolyLog}\left(2,-e^{2(c+dx)}\right)}{b^2d^3\left(a^2+b^2\right)}+\frac{2ia^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*(e + f*x)^2)/(b^2*d)) + (a^3*(e + f*x)^2)/(b^2*(a^2 + b^2)*d) + (4*f*(
e + f*x)*ArcTan[E^(c + d*x)])/(b*d^2) - (4*a^2*f*(e + f*x)*ArcTan[E^(c + d*
x)])/(b*(a^2 + b^2)*d^2) + (a^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sq
rt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) - (a^2*(e + f*x)^2*Log[1 + (b*E^(c +
 d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^(3/2)*d) + (2*a*f*(e + f*x)*Log
[1 + E^(2*(c + d*x))])/(b^2*d^2) - (2*a^3*f*(e + f*x)*Log[1 + E^(2*(c + d*x
```

))])/(b^2*(a^2 + b^2)*d^2) - ((2*I)*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(b*d^3) + ((2*I)*a^2*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(b*(a^2 + b^2)*d^3) + ((2*I)*f^2*PolyLog[2, I*E^(c + d*x)])/(b*d^3) - ((2*I)*a^2*f^2*PolyLog[2, I*E^(c + d*x)])/(b*(a^2 + b^2)*d^3) + (2*a^2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) - (2*a^2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) + (a*f^2*PolyLog[2, -E^(2*(c + d*x))])/(b^2*d^3) - (a^3*f^2*PolyLog[2, -E^(2*(c + d*x))])/(b^2*(a^2 + b^2)*d^3) - (2*a^2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^3) + (2*a^2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^3) - ((e + f*x)^2*Sech[c + d*x])/(b*d) + (a^2*(e + f*x)^2*Sech[c + d*x])/(b*(a^2 + b^2)*d) - (a*(e + f*x)^2*Tanh[c + d*x])/(b^2*d) + (a^3*(e + f*x)^2*Tanh[c + d*x])/(b^2*(a^2 + b^2)*d)

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Dist[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v, 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol] :> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x)))^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x], Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; FunctionOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
```

```
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{sech}(c+dx)\tanh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\text{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^2\text{sech}(c+dx)}{bd} - \frac{a\int (e+fx)^2\text{sech}^2(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^2\text{sech}^2(c+dx}{a+b\sinh(c+dx)}}{b^2}$$

$$= \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{(e+fx)^2\text{sech}(c+dx)}{bd} - \frac{a(e+fx)^2\tanh(c+dx)}{b^2d} +$$

$$= -\frac{a(e+fx)^2}{b^2d} + \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{(e+fx)^2\text{sech}(c+dx)}{bd} - \frac{a(e+fx)^2}{b}$$

$$= -\frac{a(e+fx)^2}{b^2d} + \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd^2} + \frac{2af(e+fx)\log\left(1+e^{2(c+dx)}\right)}{b^2d^2} - \frac{2if}{}$$

$$= -\frac{a(e+fx)^2}{b^2d} + \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd^2} + \frac{a^2(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{a^2}{}$$

$$= -\frac{a(e+fx)^2}{b^2d} + \frac{a^3(e+fx)^2}{b^2\left(a^2+b^2\right)d} + \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{4a^2f(e+fx)\tan^{-1}}{b\left(a^2+b^2\right)d^2}$$

$$= -\frac{a(e+fx)^2}{b^2d} + \frac{a^3(e+fx)^2}{b^2\left(a^2+b^2\right)d} + \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{4a^2f(e+fx)\tan^{-1}}{b\left(a^2+b^2\right)d^2}$$

$$= -\frac{a(e+fx)^2}{b^2d} + \frac{a^3(e+fx)^2}{b^2\left(a^2+b^2\right)d} + \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{4a^2f(e+fx)\tan^{-1}}{b\left(a^2+b^2\right)d^2}$$

$$= -\frac{a(e+fx)^2}{b^2d} + \frac{a^3(e+fx)^2}{b^2\left(a^2+b^2\right)d} + \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd^2} - \frac{4a^2f(e+fx)\tan^{-1}}{b\left(a^2+b^2\right)d^2}$$

Mathematica [A] time = 8.39, size = 908, normalized size = 1.18

$$\left(-2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^2+f^2x^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^2+2efx\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^2-f^2x^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)d\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*(-2*d^2*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 2*d^2*e*f*x
*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2])] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b
^2])] + 2*d*f*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
- 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*
f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*f^2*PolyLog[3, -
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/((a^2 + b^2)^(3/2)*d^3) + (2*a*e
*f*Sech[c]*(Cosh[c]*Log[Cosh[c]*Cosh[d*x] + Sinh[c]*Sinh[d*x]] - d*x*Sinh[c
]))/((a^2 + b^2)*d^2*(Cosh[c]^2 - Sinh[c]^2)) + (4*b*e*f*ArcTan[(Sinh[c] +
Cosh[c]*Tanh[(d*x)/2])/Sqrt[Cosh[c]^2 - Sinh[c]^2]])/((a^2 + b^2)*d^2*Sqrt[
Cosh[c]^2 - Sinh[c]^2]) + (a*f^2*Csch[c]*((d^2*x^2)/E^ArcTanh[Coth[c]] - (I
*Coth[c]*(-(d*x*(-Pi + (2*I)*ArcTanh[Coth[c]])) - Pi*Log[1 + E^(2*d*x)] - 2
*(I*d*x + I*ArcTanh[Coth[c]])*Log[1 - E^((2*I)*(I*d*x + I*ArcTanh[Coth[c]])
)] + Pi*Log[Cosh[d*x]] + (2*I)*ArcTanh[Coth[c]]*Log[I*Sinh[d*x + ArcTanh[Co
th[c]]]] + I*PolyLog[2, E^((2*I)*(I*d*x + I*ArcTanh[Coth[c]]))]))/Sqrt[1 -
Coth[c]^2])*Sech[c])/((a^2 + b^2)*d^3*Sqrt[Csch[c]^2*(-Cosh[c]^2 + Sinh[c]^
2)]) + (2*b*f^2*(((-I)*Csch[c]*(I*(d*x + ArcTanh[Coth[c]])*(Log[1 - E^(-(d*
x) - ArcTanh[Coth[c]])] - Log[1 + E^(-(d*x) - ArcTanh[Coth[c]])]) + I*(Poly
Log[2, -E^(-(d*x) - ArcTanh[Coth[c]])] - PolyLog[2, E^(-(d*x) - ArcTanh[Cot
h[c]])])))/Sqrt[1 - Coth[c]^2] - (2*ArcTan[(Sinh[c] + Cosh[c]*Tanh[(d*x)/2]
)/Sqrt[Cosh[c]^2 - Sinh[c]^2]]*ArcTanh[Coth[c]])/Sqrt[Cosh[c]^2 - Sinh[c]^2
]))/((a^2 + b^2)*d^3) + (Sech[c]*Sech[c + d*x]*(-(b*e^2*Cosh[c]) - 2*b*e*f*
x*Cosh[c] - b*f^2*x^2*Cosh[c] - a*e^2*Sinh[d*x] - 2*a*e*f*x*Sinh[d*x] - a*f
^2*x^2*Sinh[d*x]))/((a^2 + b^2)*d)
```

fricas [C] time = 0.69, size = 3680, normalized size = 4.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(4*(a^3 + a*b^2)*d^2*e^2 - 8*(a^3 + a*b^2)*c*d*e*f + 4*(a^3 + a*b^2)*c^
2*f^2 - 4*((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 +
 a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*cosh(d*x + c)^2 - 4*((a^3 + a*b^2)
*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3 +
 a*b^2)*c^2*f^2)*sinh(d*x + c)^2 + 4*(a^2*b*d*f^2*x + a^2*b*d*e*f + (a^2*b*
d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^2 + 2*(a^2*b*d*f^2*x + a^2*b*d*e*f)*co
sh(d*x + c)*sinh(d*x + c) + (a^2*b*d*f^2*x + a^2*b*d*e*f)*sinh(d*x + c)^2)*
sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*
x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 4*(a^2*b*d*f^
2*x + a^2*b*d*e*f + (a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^2 + 2*(a^2*
b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d*f^2*x + a^2
*b*d*e*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b + 1) - 2*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2 + (a^2*b*d
^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^2*b*d^2*e^
2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d
^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)
/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2)
 + 2*a) + 2*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2 + (a^2*b*d^2*e
^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^2*b*d^2*e^2 -
2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d^2*e
^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2
)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2
*a) + 2*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^
2*f^2 + (a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^
2*f^2)*cosh(d*x + c)^2 + 2*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b
*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d^2*f^2*x^2
+ 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*sinh(d*x + c)^2)*sqr
t((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(a^2*b*d^2*f^2*x^2
+ 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2 + (a^2*b*d^2*f^2*x^2
+ 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)^2 + 2*
(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*c
osh(d*x + c)*sinh(d*x + c) + (a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2
*b*c*d*e*f - a^2*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*
cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2) - b)/b) - 4*(a^2*b*f^2*cosh(d*x + c)^2 + 2*a^2*b*f^2*cosh(
d*x + c)*sinh(d*x + c) + a^2*b*f^2*sinh(d*x + c)^2 + a^2*b*f^2)*sqrt((a^2 +
 b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
 + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 4*(a^2*b*f^2*cosh(d*x + c)^
2 + 2*a^2*b*f^2*cosh(d*x + c)*sinh(d*x + c) + a^2*b*f^2*sinh(d*x + c)^2 + a
^2*b*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x +
c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 4*((a^
2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*d^2*e*f*x + (a^2*b + b^3)*d^2*e^2)
*cosh(d*x + c) + 4*((a^3 + a*b^2)*f^2 + I*(a^2*b + b^3)*f^2 + ((a^3 + a*b^2
```

```
)*f^2 + I*(a^2*b + b^3)*f^2)*cosh(d*x + c)^2 + 2*((a^3 + a*b^2)*f^2 + I*(a^
2*b + b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c) + ((a^3 + a*b^2)*f^2 + I*(a^2*b
 + b^3)*f^2)*sinh(d*x + c)^2)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + 4*
((a^3 + a*b^2)*f^2 - I*(a^2*b + b^3)*f^2 + ((a^3 + a*b^2)*f^2 - I*(a^2*b +
b^3)*f^2)*cosh(d*x + c)^2 + 2*((a^3 + a*b^2)*f^2 - I*(a^2*b + b^3)*f^2)*cos
h(d*x + c)*sinh(d*x + c) + ((a^3 + a*b^2)*f^2 - I*(a^2*b + b^3)*f^2)*sinh(d
*x + c)^2)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + (4*(a^3 + a*b^2)*d*e
*f + 4*I*(a^2*b + b^3)*d*e*f - 4*(a^3 + a*b^2)*c*f^2 - 4*I*(a^2*b + b^3)*c*
f^2 + (4*(a^3 + a*b^2)*d*e*f + 4*I*(a^2*b + b^3)*d*e*f - 4*(a^3 + a*b^2)*c*
f^2 - 4*I*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)^2 + (8*(a^3 + a*b^2)*d*e*f + 8
*I*(a^2*b + b^3)*d*e*f - 8*(a^3 + a*b^2)*c*f^2 - 8*I*(a^2*b + b^3)*c*f^2)*c
osh(d*x + c)*sinh(d*x + c) + (4*(a^3 + a*b^2)*d*e*f + 4*I*(a^2*b + b^3)*d*e
*f - 4*(a^3 + a*b^2)*c*f^2 - 4*I*(a^2*b + b^3)*c*f^2)*sinh(d*x + c)^2)*log(
cosh(d*x + c) + sinh(d*x + c) + I) + (4*(a^3 + a*b^2)*d*e*f - 4*I*(a^2*b +
b^3)*d*e*f - 4*(a^3 + a*b^2)*c*f^2 + 4*I*(a^2*b + b^3)*c*f^2 + (4*(a^3 + a*
b^2)*d*e*f - 4*I*(a^2*b + b^3)*d*e*f - 4*(a^3 + a*b^2)*c*f^2 + 4*I*(a^2*b +
 b^3)*c*f^2)*cosh(d*x + c)^2 + (8*(a^3 + a*b^2)*d*e*f - 8*I*(a^2*b + b^3)*d
*e*f - 8*(a^3 + a*b^2)*c*f^2 + 8*I*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)*sinh(
d*x + c) + (4*(a^3 + a*b^2)*d*e*f - 4*I*(a^2*b + b^3)*d*e*f - 4*(a^3 + a*b^
2)*c*f^2 + 4*I*(a^2*b + b^3)*c*f^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + si
nh(d*x + c) - I) + (4*(a^3 + a*b^2)*d*f^2*x - 4*I*(a^2*b + b^3)*d*f^2*x + 4
*(a^3 + a*b^2)*c*f^2 - 4*I*(a^2*b + b^3)*c*f^2 + (4*(a^3 + a*b^2)*d*f^2*x -
 4*I*(a^2*b + b^3)*d*f^2*x + 4*(a^3 + a*b^2)*c*f^2 - 4*I*(a^2*b + b^3)*c*f^
2)*cosh(d*x + c)^2 + (8*(a^3 + a*b^2)*d*f^2*x - 8*I*(a^2*b + b^3)*d*f^2*x +
 8*(a^3 + a*b^2)*c*f^2 - 8*I*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x +
c) + (4*(a^3 + a*b^2)*d*f^2*x - 4*I*(a^2*b + b^3)*d*f^2*x + 4*(a^3 + a*b^2)
*c*f^2 - 4*I*(a^2*b + b^3)*c*f^2)*sinh(d*x + c)^2)*log(I*cosh(d*x + c) + I*
sinh(d*x + c) + 1) + (4*(a^3 + a*b^2)*d*f^2*x + 4*I*(a^2*b + b^3)*d*f^2*x +
 4*(a^3 + a*b^2)*c*f^2 + 4*I*(a^2*b + b^3)*c*f^2 + (4*(a^3 + a*b^2)*d*f^2*x
 + 4*I*(a^2*b + b^3)*d*f^2*x + 4*(a^3 + a*b^2)*c*f^2 + 4*I*(a^2*b + b^3)*c*
f^2)*cosh(d*x + c)^2 + (8*(a^3 + a*b^2)*d*f^2*x + 8*I*(a^2*b + b^3)*d*f^2*x
 + 8*(a^3 + a*b^2)*c*f^2 + 8*I*(a^2*b + b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x
+ c) + (4*(a^3 + a*b^2)*d*f^2*x + 4*I*(a^2*b + b^3)*d*f^2*x + 4*(a^3 + a*b^
2)*c*f^2 + 4*I*(a^2*b + b^3)*c*f^2)*sinh(d*x + c)^2)*log(-I*cosh(d*x + c) -
 I*sinh(d*x + c) + 1) - 4*((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*d^2*
e*f*x + (a^2*b + b^3)*d^2*e^2 + 2*((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b
^2)*d^2*e*f*x + 2*(a^3 + a*b^2)*c*d*e*f - (a^3 + a*b^2)*c^2*f^2)*cosh(d*x +
 c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)^2 + 2*(a^4 +
 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)
*d^3*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.23, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \left(\tanh^{2}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-2\,aef\left(\frac{2\,(dx+c)}{\left(a^2+b^2\right)d^2}-\frac{\log\left(e^{(2\,dx+2\,c)}+1\right)}{\left(a^2+b^2\right)d^2}\right)+4\,bf^2\int\frac{xe^{(dx+c)}}{a^2de^{(2\,dx+2\,c)}+b^2de^{(2\,dx+2\,c)}+a^2d+b^2d}\,dx-4\,af^2\int\frac{}{a^2de^{(2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*a*e*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2 +
b^2)*d^2)) + 4*b*f^2*integrate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d
*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 4*a*f^2*integrate(x/(a^2*d*e^(2*d*x
 + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) + e^2*(a^2*log((b*e^(-
d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a
^2 + b^2)^(3/2)*d) - 2*(b*e^(-d*x - c) + a)/((a^2 + b^2 + (a^2 + b^2)*e^(-2
*d*x - 2*c))*d)) + 4*b*e*f*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) + 2*(a*f^2
*x^2 + 2*a*e*f*x - (b*f^2*x^2*e^c + 2*b*e*f*x*e^c)*e^(d*x))/(a^2*d + b^2*d
+ (a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) + integrate(-2*(a^2*f^2*x^2*e^
c + 2*a^2*e*f*x*e^c)*e^(d*x)/(a^2*b + b^3 - (a^2*b*e^(2*c) + b^3*e^(2*c))*e
^(2*d*x) - 2*(a^3*e^c + a*b^2*e^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\mathrm{tanh}\left(c+d\,x\right)}^2\,{\left(e+f\,x\right)}^2}{a+b\,\mathrm{sinh}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((tanh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2 \tanh^2\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**2*tanh(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.384 $\int \frac{(e+fx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=385

$$\frac{a^2 f \operatorname{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{a^2 f \operatorname{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{a^2 f \tan^{-1}(\sinh(c+dx))}{bd^2\left(a^2+b^2\right)}+\frac{a^2(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{d\left(a^2+b^2\right)^{3/2}}-\frac{a^2(e+fx)}{d}$$

```
[Out] f*arctan(sinh(d*x+c))/b/d^2-a^2*f*arctan(sinh(d*x+c))/b/(a^2+b^2)/d^2+a*f*l
n(cosh(d*x+c))/b^2/d^2-a^3*f*ln(cosh(d*x+c))/b^2/(a^2+b^2)/d^2+a^2*(f*x+e)*
ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d-a^2*(f*x+e)*ln(1+b
*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d+a^2*f*polylog(2,-b*exp(d
*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-a^2*f*polylog(2,-b*exp(d*x+c
)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^(3/2)/d^2-(f*x+e)*sech(d*x+c)/b/d+a^2*(f*x
+e)*sech(d*x+c)/b/(a^2+b^2)/d-a*(f*x+e)*tanh(d*x+c)/b^2/d+a^3*(f*x+e)*tanh(
d*x+c)/b^2/(a^2+b^2)/d
```

Rubi [A] time = 0.76, antiderivative size = 385, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 13, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5567, 5451, 3770, 5583, 4184, 3475, 5573, 3322, 2264, 2190, 2279, 2391, 6742}

$$\frac{a^2 f \operatorname{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{a^2 f \operatorname{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{d^2\left(a^2+b^2\right)^{3/2}}-\frac{a^2 f \tan^{-1}(\sinh(c+dx))}{bd^2\left(a^2+b^2\right)}-\frac{a^3 f \log(\cosh(c+dx))}{b^2d^2\left(a^2+b^2\right)}+\frac{a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (f*ArcTan[Sinh[c + d*x]])/(b*d^2) - (a^2*f*ArcTan[Sinh[c + d*x]])/(b*(a^2 +
 b^2)*d^2) + (a^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])
/((a^2 + b^2)^(3/2)*d) - (a^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a
^2 + b^2])])/((a^2 + b^2)^(3/2)*d) + (a*f*Log[Cosh[c + d*x]])/(b^2*d^2) - (
a^3*f*Log[Cosh[c + d*x]])/(b^2*(a^2 + b^2)*d^2) + (a^2*f*PolyLog[2, -((b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) - (a^2*f*PolyLo
g[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^(3/2)*d^2) - (
(e + f*x)*Sech[c + d*x])/(b*d) + (a^2*(e + f*x)*Sech[c + d*x])/(b*(a^2 + b^
2)*d) - (a*(e + f*x)*Tanh[c + d*x])/(b^2*d) + (a^3*(e + f*x)*Tanh[c + d*x])
/(b^2*(a^2 + b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
```

```
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\operatorname{sech}(c+dx)\tanh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\operatorname{sech}(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)\operatorname{sech}(c+dx)}{bd} - \frac{a\int (e+fx)\operatorname{sech}^2(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b^2}$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{bd^2} - \frac{(e+fx)\operatorname{sech}(c+dx)}{bd} - \frac{a(e+fx)\tanh(c+dx)}{b^2d} + \frac{a^2\int}{}$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{bd^2} + \frac{af\log(\cosh(c+dx))}{b^2d^2} - \frac{(e+fx)\operatorname{sech}(c+dx)}{bd} - a(e+f$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{bd^2} + \frac{af\log(\cosh(c+dx))}{b^2d^2} - \frac{(e+fx)\operatorname{sech}(c+dx)}{bd} - a(e+f$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{bd^2} + \frac{a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d} - \frac{a^2(e+fx)\log\left(1+\frac{be}{a+\sqrt{}}\right.}{\left(a^2+b^2\right)^{3/2}d}$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{bd^2} - \frac{a^2f\tan^{-1}(\sinh(c+dx))}{b\left(a^2+b^2\right)d^2} + \frac{a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d}$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{bd^2} - \frac{a^2f\tan^{-1}(\sinh(c+dx))}{b\left(a^2+b^2\right)d^2} + \frac{a^2(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{3/2}d}$$

Mathematica [A] time = 2.91, size = 284, normalized size = 0.74

$$\frac{\frac{a^2\left(-2de\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)+f\operatorname{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)-f\operatorname{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)+2cf\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)\right)}{\left(a^2+b^2\right)^{3/2}}}{d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((2*b*f*ArcTan[Tanh[(c + d*x)/2]])/(a^2 + b^2) + (a*f*Log[Cosh[c + d*x]])/(
a^2 + b^2) + (a^2*(-2*d*e*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 2*
```

```
c*f*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + f*(c + d*x)*Log[1 + (b*E
^(c + d*x))/(a - Sqrt[a^2 + b^2])] - f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2])] + f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
 - f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(a^2 + b^2)^(3/
2) - (d*(e + f*x)*Sech[c + d*x]*(b + a*Sinh[c + d*x]))/(a^2 + b^2))/d^2
```

fricas [B] time = 0.55, size = 1337, normalized size = 3.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*(a^3 + a*b^2)*d*f*x*cosh(d*x + c)^2 + 2*(a^3 + a*b^2)*d*f*x*sinh(d*x +
c)^2 - 2*(a^3 + a*b^2)*d*e - (a^2*b*f*cosh(d*x + c)^2 + 2*a^2*b*f*cosh(d*x
+ c)*sinh(d*x + c) + a^2*b*f*sinh(d*x + c)^2 + a^2*b*f)*sqrt((a^2 + b^2)/b^
2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (a^2*b*f*cosh(d*x + c)^2 + 2*a^2
*b*f*cosh(d*x + c)*sinh(d*x + c) + a^2*b*f*sinh(d*x + c)^2 + a^2*b*f)*sqrt(
(a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c
) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (a^2*b*d*e - a^2*b
*c*f + (a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c)^2 + 2*(a^2*b*d*e - a^2*b*c*f)*
cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d*e - a^2*b*c*f)*sinh(d*x + c)^2)*sqrt
((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2
 + b^2)/b^2) + 2*a) - (a^2*b*d*e - a^2*b*c*f + (a^2*b*d*e - a^2*b*c*f)*cosh
(d*x + c)^2 + 2*(a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*
b*d*e - a^2*b*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x
+ c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (a^2*b*d*f*x
+ a^2*b*c*f + (a^2*b*d*f*x + a^2*b*c*f)*cosh(d*x + c)^2 + 2*(a^2*b*d*f*x +
a^2*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d*f*x + a^2*b*c*f)*sinh(d*x
 + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b
*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (a^2*b*d*
f*x + a^2*b*c*f + (a^2*b*d*f*x + a^2*b*c*f)*cosh(d*x + c)^2 + 2*(a^2*b*d*f*
x + a^2*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^2*b*d*f*x + a^2*b*c*f)*sinh
(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c)
- (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*((a
^2*b + b^3)*f*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f*cosh(d*x + c)*sinh(d*x +
c) + (a^2*b + b^3)*f*sinh(d*x + c)^2 + (a^2*b + b^3)*f)*arctan(cosh(d*x + c
) + sinh(d*x + c)) + 2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e)*cosh(d*x +
 c) - ((a^3 + a*b^2)*f*cosh(d*x + c)^2 + 2*(a^3 + a*b^2)*f*cosh(d*x + c)*si
nh(d*x + c) + (a^3 + a*b^2)*f*sinh(d*x + c)^2 + (a^3 + a*b^2)*f)*log(2*cosh
(d*x + c)/(cosh(d*x + c) - sinh(d*x + c))) + 2*(2*(a^3 + a*b^2)*d*f*x*cosh(
d*x + c) + (a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e)*sinh(d*x + c))/((a^4 +
2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d
```

```
*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*d^2*sinh(d*x + c)^2 + (a^4
+ 2*a^2*b^2 + b^4)*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.26, size = 1928, normalized size = 5.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -2/(a^2+b^2)^(5/2)/d^2*a^2*b^2*f*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)
^(1/2))+4/(a^2+b^2)/d^2*a^2*b*f/(2*a^2+2*b^2)*arctan(exp(d*x+c))+4/(a^2+b^2
)^(1/2)/d^2*a^2*f/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^
(1/2))-2/(a^2+b^2)^(3/2)/d^2*b^4*f/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c
)+2*a)/(a^2+b^2)^(1/2))+2/(a^2+b^2)^(1/2)/d^2*b^2*f/(2*a^2+2*b^2)*arctanh(1
/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/(a^2+b^2)/d^2*b^2*f/(2*a^2+2*b^2
)*a*ln(1+exp(2*d*x+2*c))-1/(a^2+b^2)/d^2*b^2*f/(2*a^2+2*b^2)*a*ln(b*exp(2*d
*x+2*c)+2*a*exp(d*x+c)-b)+2/d^2*f*c/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*arctanh(1
/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2+2/(a^2+b^2)^(3/2)/d^2*a^4*f/(2
*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-2
/(a^2+b^2)^(3/2)/d^2*a^4*f/(2*a^2+2*b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2
)+a)/(a+(a^2+b^2)^(1/2)))-2/(a^2+b^2)^(3/2)/d*a^4*e/(2*a^2+2*b^2)*arctanh(1
/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/(a^2+b^2)^(3/2)/d^2*b^2*f/(2*a^2
+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a^2*c+2/(a
^2+b^2)^(3/2)/d^2*b^2*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/
(-a+(a^2+b^2)^(1/2)))*a^2*c+2/(a^2+b^2)^(3/2)/d^2*b^2*f*c/(2*a^2+2*b^2)*arc
tanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2-2/(a^2+b^2)^(3/2)/d*b^2*
f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a^
2*x+2/(a^2+b^2)^(3/2)/d*b^2*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/
2)-a)/(-a+(a^2+b^2)^(1/2)))*a^2*x+2/(a^2+b^2)/d^2*a^3*f/(2*a^2+2*b^2)*ln(1+
exp(2*d*x+2*c))+1/2/(a^2+b^2)^2/d^2*a*b^2*f*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x
+c)-b)+4/(a^2+b^2)/d^2*b^3*f/(2*a^2+2*b^2)*arctan(exp(d*x+c))-2/(a^2+b^2)^(
5/2)/d^2*a^4*f*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/(a^2+b^2
)/d^2*a^3*f/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/(a^2+b^2)
^(3/2)/d*a^4*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^
```

```
2)^(1/2)))*x+2/(a^2+b^2)^(3/2)/d*a^4*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2
+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-2/(a^2+b^2)^(3/2)/d^2*a^4*f/(2*a^2+2
*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/(a^2+b^2
)^(3/2)/d^2*a^4*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a
^2+b^2)^(1/2)))*c+2/(a^2+b^2)^(3/2)/d^2*a^4*f*c/(2*a^2+2*b^2)*arctanh(1/2*(
2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d*e/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ar
ctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2+2*(f*x+e)*(-b*exp(d*x+c
)+a)/d/(a^2+b^2)/(1+exp(2*d*x+2*c))-2/(a^2+b^2)^(3/2)/d^2*b^2*f/(2*a^2+2*b^
2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2+2/(a^2+b^2)^(3/2)/
d^2*b^2*f/(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^
2)^(1/2)))*a^2-2/(a^2+b^2)^(3/2)/d^2*b^2*f/(2*a^2+2*b^2)*dilog((b*exp(d*x+c
)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a^2-2/(a^2+b^2)^(3/2)/d*b^2*e/(2*
a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2-2/(a^2+b^2
)/d^2*a*f*ln(exp(d*x+c))+1/(a^2+b^2)^2/d^2*a^3*f*ln(b*exp(2*d*x+2*c)+2*a*ex
p(d*x+c)-b)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(2\,a^2\int -\frac{xe^{(dx+c)}}{a^2b+b^3-\left(a^2be^{(2\,c)}+b^3e^{(2\,c)}\right)e^{(2\,dx)}-2\left(a^3e^c+ab^2e^c\right)e^{(dx)}}\,dx-\frac{2\left(bxe^{(dx+c)}-ax\right)}{a^2d+b^2d+\left(a^2de^{(2\,c)}+b^2de^{(2\,c)}\right)e^{(2\,dx)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] (2*a^2*integrate(-x*e^(d*x + c)/(a^2*b + b^3 - (a^2*b*e^(2*c) + b^3*e^(2*c)
)*e^(2*d*x) - 2*(a^3*e^c + a*b^2*e^c)*e^(d*x)), x) - 2*(b*x*e^(d*x + c) - a
*x)/(a^2*d + b^2*d + (a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) - 2*a*x/((a
^2 + b^2)*d) + 2*b*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) + a*log(e^(2*d*x +
 2*c) + 1)/((a^2 + b^2)*d^2))*f + e*(a^2*log((b*e^(-d*x - c) - a - sqrt(a^2
 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^2 + b^2)^(3/2)*d) - 2*
(b*e^(-d*x - c) + a)/((a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh\left(c+d\,x\right)^2\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((tanh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)\tanh^{2}\left(c + dx\right)}{a + b\sinh\left(c + dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*tanh(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.385 $\int \frac{\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=90

$$-\frac{2a^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{d\left(a^2+b^2\right)^{3/2}}-\frac{a\tanh(c+dx)}{d\left(a^2+b^2\right)}-\frac{b\text{sech}(c+dx)}{d\left(a^2+b^2\right)}$$

```
[Out] -2*a^2*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))/(a^2+b^2)^(3/2)/d
-b*sech(d*x+c)/(a^2+b^2)/d-a*tanh(d*x+c)/(a^2+b^2)/d
```

Rubi [A] time = 0.11, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2727, 3767, 8, 2606, 2660, 618, 204}

$$-\frac{2a^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{d\left(a^2+b^2\right)^{3/2}}-\frac{a\tanh(c+dx)}{d\left(a^2+b^2\right)}-\frac{b\text{sech}(c+dx)}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Tanh[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*a^2*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/((a^2 + b^2)^(3
/2)*d) - (b*Sech[c + d*x])/((a^2 + b^2)*d) - (a*Tanh[c + d*x])/((a^2 + b^2)
*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 &&  !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2727

```
Int[((g_.)*tan[(e_.) + (f_.)*(x_)])^(p_)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[a/(a^2 - b^2), Int[(g*Tan[e + f*x])^p/Sin[e + f*x]^
2, x], x] + (-Dist[(b*g)/(a^2 - b^2), Int[(g*Tan[e + f*x])^(p - 1)/Cos[e +
f*x], x], x] - Dist[(a^2*g^2)/(a^2 - b^2), Int[(g*Tan[e + f*x])^(p - 2)/(a
+ b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, e, f, g}, x] && NeQ[a^2 - b^2, 0
] && IntegersQ[2*p] && GtQ[p, 1]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rubi steps

$$\int \frac{\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{a\int \operatorname{sech}^2(c+dx)\,dx}{a^2+b^2} + \frac{a^2\int \frac{1}{a+b\sinh(c+dx)}\,dx}{a^2+b^2} + \frac{b\int \operatorname{sech}(c+dx)\tanh(c+dx)\,dx}{a^2+b^2}$$

$$= -\frac{(ia)\operatorname{Subst}(\int 1\,dx, x, -i\tanh(c+dx))}{(a^2+b^2)\,d} - \frac{(2ia^2)\operatorname{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx, x, \tan\left(\frac{1}{2}(ic+\right.\right.}{(a^2+b^2)\,d}$$

$$= -\frac{b\operatorname{sech}(c+dx)}{(a^2+b^2)\,d} - \frac{a\tanh(c+dx)}{(a^2+b^2)\,d} + \frac{(4ia^2)\operatorname{Subst}\left(\int \frac{1}{-4(a^2+b^2)-x^2}\,dx, x, -2ib+2a\tan\right.}{(a^2+b^2)\,d}$$

$$= -\frac{2a^2\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{(a^2+b^2)^{3/2}\,d} - \frac{b\operatorname{sech}(c+dx)}{(a^2+b^2)\,d} - \frac{a\tanh(c+dx)}{(a^2+b^2)\,d}$$

Mathematica [A] time = 0.18, size = 106, normalized size = 1.18

$$-\frac{a\left(2a\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)-\sqrt{-a^2-b^2}\,\tanh(c+dx)\right)-b\sqrt{-a^2-b^2}\operatorname{sech}(c+dx)}{d\left(-a^2-b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tanh[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((-(b*Sqrt[-a^2 - b^2]*Sech[c + d*x]) + a*(2*a*ArcTan[(b - a*Tanh[(c + d*x
)/2])/Sqrt[-a^2 - b^2]] - Sqrt[-a^2 - b^2]*Tanh[c + d*x]))/((-a^2 - b^2)^(3
/2)*d))
```

fricas [B] time = 0.46, size = 351, normalized size = 3.90

$$\frac{2\,a^3+2\,ab^2+\left(a^2\cosh\left(dx+c\right)^2+2\,a^2\cosh\left(dx+c\right)\sinh\left(dx+c\right)+a^2\sinh\left(dx+c\right)^2+a^2\right)\sqrt{a^2+b^2}\,\log\left(\frac{b^2\cos\cdots}{\cdots}\right.}{\left(a^4+2\,a^2b^2+b^4\right)d\cosh\left(dx+c\right)^2+2\left(a^4+2\,a^2b\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*a^3 + 2*a*b^2 + (a^2*cosh(d*x + c)^2 + 2*a^2*cosh(d*x + c)*sinh(d*x + c)
 + a^2*sinh(d*x + c)^2 + a^2)*sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 + b^
```

```
2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c
) + a*b)*sinh(d*x + c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x +
c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*
cosh(d*x + c) + a)*sinh(d*x + c) - b)) - 2*(a^2*b + b^3)*cosh(d*x + c) - 2*
(a^2*b + b^3)*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^2 + 2
*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 +
 b^4)*d*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d)
```

giac [A] time = 1.55, size = 121, normalized size = 1.34

$$-\frac{\frac{a^2\log\left(\frac{\left|-2\,be^{(dx+2\,c)}-2\,ae^c-2\,\sqrt{a^2+b^2}\,e^c\right|}{\left|-2\,be^{(dx+2\,c)}-2\,ae^c+2\,\sqrt{a^2+b^2}\,e^c\right|}\right)}{\left(a^2+b^2\right)^{\frac{3}{2}}}+\frac{2\left(be^{(dx+c)}-a\right)}{\left(a^2+b^2\right)\left(e^{(2\,dx+2\,c)}+1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -(a^2*log(abs(-2*b*e^(d*x + 2*c) - 2*a*e^c - 2*sqrt(a^2 + b^2)*e^c)/abs(-2*
b*e^(d*x + 2*c) - 2*a*e^c + 2*sqrt(a^2 + b^2)*e^c))/(a^2 + b^2)^(3/2) + 2*(
b*e^(d*x + c) - a)/((a^2 + b^2)*(e^(2*d*x + 2*c) + 1)))/d
```

maple [A] time = 0.00, size = 103, normalized size = 1.14

$$\frac{\frac{8a^2\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{\left(4a^2+4b^2\right)\sqrt{a^2+b^2}}+\frac{-2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{\left(a^2+b^2\right)\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/d*(8*a^2/(4*a^2+4*b^2)/(a^2+b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*
c)-2*b)/(a^2+b^2)^(1/2))+2/(a^2+b^2)*(-a*tanh(1/2*d*x+1/2*c)-b)/(tanh(1/2*d
*x+1/2*c)^2+1))
```

maxima [A] time = 0.48, size = 115, normalized size = 1.28

$$\frac{a^2\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\left(a^2+b^2\right)^{\frac{3}{2}}d}-\frac{2\left(be^{(-dx-c)}+a\right)}{\left(a^2+b^2+\left(a^2+b^2\right)e^{(-2\,dx-2\,c)}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] a^2*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a
^2 + b^2)))/((a^2 + b^2)^(3/2)*d) - 2*(b*e^(-d*x - c) + a)/((a^2 + b^2 + (a
^2 + b^2)*e^(-2*d*x - 2*c))*d)
```

mupad [B] time = 0.80, size = 422, normalized size = 4.69

$$\frac{\frac{2a}{d\left(a^2+b^2\right)}-\frac{2b\,e^{c+dx}}{d\left(a^2+b^2\right)}}{e^{2c+2dx}+1}-\frac{2\,\mathrm{atan}\left(\left(\left(e^{dx}\,e^{c}\left(\frac{2a^2}{b^2\,d\,\sqrt{a^4}\,\left(a^2+b^2\right)^2}+\frac{2\left(a^3\,d\,\sqrt{a^4}+a\,b^2\,d\,\sqrt{a^4}\right)}{a\,b^2\,\sqrt{-d^2\left(a^2+b^2\right)^3}\,\left(a^2+b^2\right)\sqrt{-a^6\,d^2-3\,a^4\,b^2\,d^2-3\,a^2\,b^4\,d^2-b^6\,d^2}}\right)-\frac{\cdots}{a\,b^2\cdots}\right.\right.\right.}{\sqrt{-a^{\cdots}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)^2/(a + b*sinh(c + d*x)),x)
```

```
[Out] ((2*a)/(d*(a^2 + b^2)) - (2*b*exp(c + d*x))/(d*(a^2 + b^2)))/(exp(2*c + 2*d
*x) + 1) - (2*atan((exp(d*x)*exp(c)*((2*a^2)/(b^2*d*(a^4)^(1/2)*(a^2 + b^2)
^2) + (2*(a^3*d*(a^4)^(1/2) + a*b^2*d*(a^4)^(1/2)))/(a*b^2*(-d^2*(a^2 + b^2
)^3)^(1/2)*(a^2 + b^2)*(- a^6*d^2 - b^6*d^2 - 3*a^2*b^4*d^2 - 3*a^4*b^2*d^2
)^(1/2))) - (2*(b^3*d*(a^4)^(1/2) + a^2*b*d*(a^4)^(1/2)))/(a*b^2*(-d^2*(a^2
 + b^2)^3)^(1/2)*(a^2 + b^2)*(- a^6*d^2 - b^6*d^2 - 3*a^2*b^4*d^2 - 3*a^4*b
^2*d^2)^(1/2)))*((b^3*(- a^6*d^2 - b^6*d^2 - 3*a^2*b^4*d^2 - 3*a^4*b^2*d^2)
^(1/2))/2 + (a^2*b*(- a^6*d^2 - b^6*d^2 - 3*a^2*b^4*d^2 - 3*a^4*b^2*d^2)^(1
/2))/2))*(a^4)^(1/2))/(- a^6*d^2 - b^6*d^2 - 3*a^2*b^4*d^2 - 3*a^4*b^2*d^2)
^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(tanh(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.386 $\int \frac{\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx$$

Verification is Not applicable to the result.

```
[In] Int[Tanh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Tanh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx = \int \frac{\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Tanh[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\tanh(dx+c)^2}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(tanh(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.68, size = 0, normalized size = 0.00

$$\int \frac{\tanh^2(dx+c)}{\left(fx+e\right)\left(a+b\sinh(dx+c)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$2\,a^2\int -\frac{e^{(dx+c)}}{a^2be+b^3e+\left(a^2bf+b^3f\right)x-\left(a^2bee^{(2\,c)}+b^3ee^{(2\,c)}+\left(a^2bfe^{(2\,c)}+b^3fe^{(2\,c)}\right)x\right)e^{(2\,dx)}-2\left(a^3ee^c+ab^2ee^c+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 2*a^2*integrate(-e^(d*x + c)/(a^2*b*e + b^3*e + (a^2*b*f + b^3*f)*x - (a^2*
b*e*e^(2*c) + b^3*e*e^(2*c) + (a^2*b*f*e^(2*c) + b^3*f*e^(2*c))*x)*e^(2*d*x
) - 2*(a^3*e*e^c + a*b^2*e*e^c + (a^3*f*e^c + a*b^2*f*e^c)*x)*e^(d*x)), x)
- 2*(b*e^(d*x + c) - a)/(a^2*d*e + b^2*d*e + (a^2*d*f + b^2*d*f)*x + (a^2*d
*e*e^(2*c) + b^2*d*e*e^(2*c) + (a^2*d*f*e^(2*c) + b^2*d*f*e^(2*c))*x)*e^(2*
d*x)) - integrate(2*(b*f*e^(d*x + c) - a*f)/(a^2*d*e^2 + b^2*d*e^2 + (a^2*d
*f^2 + b^2*d*f^2)*x^2 + 2*(a^2*d*e*f + b^2*d*e*f)*x + (a^2*d*e^2*e^(2*c) +
b^2*d*e^2*e^(2*c) + (a^2*d*f^2*e^(2*c) + b^2*d*f^2*e^(2*c))*x^2 + 2*(a^2*d*
e*f*e^(2*c) + b^2*d*e*f*e^(2*c))*x)*e^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\tanh\left(c+d\,x\right)}^2}{\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)^2/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(tanh(c + d*x)^2/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy **[A]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh^2(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(tanh(c + d*x)**2/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.387 $\int \frac{(e+fx)^2\mathbf{sech}(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1256

$$\frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^3}{b^2\left(a^2+b^2\right)d}+\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^3}{\left(a^2+b^2\right)^2 d}-\frac{f^2\tan^{-1}(\sinh(c+dx))a^3}{b^2\left(a^2+b^2\right)d^3}-\frac{if(e+fx)\mathrm{Li}_2\left(-ie^{c+dx}\right)a^3}{b^2\left(a^2+b^2\right)d^2}-\cdots$$

```
[Out] a^2*f^2*ln(cosh(d*x+c))/b/(a^2+b^2)/d^3+a^2*b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(
a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d+a^2*b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2
+b^2)^(1/2)))/(a^2+b^2)^2/d-2*a^2*b*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2
)^(1/2)))/(a^2+b^2)^2/d^3-2*a^2*b*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^
(1/2)))/(a^2+b^2)^2/d^3-a^2*b*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/(a^2+b^2)^2/d+
2*a^3*(f*x+e)^2*arctan(exp(d*x+c))/(a^2+b^2)^2/d+a*f^2*arctan(sinh(d*x+c))/
b^2/d^3+f*(f*x+e)*tanh(d*x+c)/b/d^2-a*(f*x+e)^2*arctan(exp(d*x+c))/b^2/d-2*
I*a^3*f^2*polylog(3,I*exp(d*x+c))/(a^2+b^2)^2/d^3-a^3*f^2*arctan(sinh(d*x+c
))/b^2/(a^2+b^2)/d^3+I*a*f^2*polylog(3,I*exp(d*x+c))/b^2/d^3+1/2*a^2*b*f^2*
polylog(3,-exp(2*d*x+2*c))/(a^2+b^2)^2/d^3-a*f*(f*x+e)*sech(d*x+c)/b^2/d^2+
1/2*a^2*(f*x+e)^2*sech(d*x+c)^2/b/(a^2+b^2)/d-1/2*a*(f*x+e)^2*sech(d*x+c)*t
anh(d*x+c)/b^2/d-I*a*f^2*polylog(3,-I*exp(d*x+c))/b^2/d^3+a^3*(f*x+e)^2*arc
tan(exp(d*x+c))/b^2/(a^2+b^2)/d-I*a^3*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b^
2/(a^2+b^2)/d^2+2*I*a^3*f*(f*x+e)*polylog(2,I*exp(d*x+c))/(a^2+b^2)^2/d^2+I
*a^3*f*(f*x+e)*polylog(2,I*exp(d*x+c))/b^2/(a^2+b^2)/d^2+2*I*a^3*f^2*polylo
g(3,-I*exp(d*x+c))/(a^2+b^2)^2/d^3+I*a^3*f^2*polylog(3,-I*exp(d*x+c))/b^2/(
a^2+b^2)/d^3+a^3*f*(f*x+e)*sech(d*x+c)/b^2/(a^2+b^2)/d^2-a^2*f*(f*x+e)*tanh
(d*x+c)/b/(a^2+b^2)/d^2+1/2*a^3*(f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/b^2/(a^2+
b^2)/d-2*I*a^3*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/(a^2+b^2)^2/d^2-I*a*f*(f*
x+e)*polylog(2,I*exp(d*x+c))/b^2/d^2-I*a^3*f^2*polylog(3,I*exp(d*x+c))/b^2/
(a^2+b^2)/d^3+I*a*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b^2/d^2-a^2*b*f*(f*x+e
)*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2)^2/d^2-1/2*(f*x+e)^2*sech(d*x+c)^2/b/
d+2*a^2*b*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^
2/d^2+2*a^2*b*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b
^2)^2/d^2-f^2*ln(cosh(d*x+c))/b/d^3
```

Rubi [A] time = 1.97, antiderivative size = 1256, normalized size of antiderivative = 1.00, number of steps used = 53, number of rules used = 15, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.441$, Rules used = {5583, 5451, 4184, 3475, 4186, 3770, 4180, 2531, 2282, 6589, 5573, 5561, 2190, 6742, 3718}

$$\frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^3}{b^2\left(a^2+b^2\right)d}+\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^3}{\left(a^2+b^2\right)^2 d}-\frac{f^2\tan^{-1}(\sinh(c+dx))a^3}{b^2\left(a^2+b^2\right)d^3}-\frac{if(e+fx)\mathrm{PolyLog}\left(2,-ie^{c+dx}\right)\cdots}{b^2\left(a^2+b^2\right)d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sech[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b^2*d)) + (2*a^3*(e + f*x)^2*ArcTan[
E^(c + d*x)])/((a^2 + b^2)^2*d) + (a^3*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b^
2*(a^2 + b^2)*d) + (a*f^2*ArcTan[Sinh[c + d*x]])/(b^2*d^3) - (a^3*f^2*ArcTa
n[Sinh[c + d*x]])/(b^2*(a^2 + b^2)*d^3) + (a^2*b*(e + f*x)^2*Log[1 + (b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)^2*d) + (a^2*b*(e + f*x)^2*Lo
g[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^2*d) - (a^2*b*(e
 + f*x)^2*Log[1 + E^(2*(c + d*x))])/((a^2 + b^2)^2*d) - (f^2*Log[Cosh[c + d
*x]])/(b*d^3) + (a^2*f^2*Log[Cosh[c + d*x]])/(b*(a^2 + b^2)*d^3) + (I*a*f*(
e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(b^2*d^2) - ((2*I)*a^3*f*(e + f*x)*P
olyLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)^2*d^2) - (I*a^3*f*(e + f*x)*PolyL
og[2, (-I)*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^2) - (I*a*f*(e + f*x)*PolyLog[2
, I*E^(c + d*x)])/(b^2*d^2) + ((2*I)*a^3*f*(e + f*x)*PolyLog[2, I*E^(c + d*
x)])/((a^2 + b^2)^2*d^2) + (I*a^3*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b
^2*(a^2 + b^2)*d^2) + (2*a^2*b*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a
- Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^2) + (2*a^2*b*f*(e + f*x)*PolyLog[2,
 -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^2) - (a^2*b*f*
(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/((a^2 + b^2)^2*d^2) - (I*a*f^2*Poly
Log[3, (-I)*E^(c + d*x)])/(b^2*d^3) + ((2*I)*a^3*f^2*PolyLog[3, (-I)*E^(c +
 d*x)])/((a^2 + b^2)^2*d^3) + (I*a^3*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(b^2
*(a^2 + b^2)*d^3) + (I*a*f^2*PolyLog[3, I*E^(c + d*x)])/(b^2*d^3) - ((2*I)*
a^3*f^2*PolyLog[3, I*E^(c + d*x)])/((a^2 + b^2)^2*d^3) - (I*a^3*f^2*PolyLog
[3, I*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^3) - (2*a^2*b*f^2*PolyLog[3, -((b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^3) - (2*a^2*b*f^2*Poly
Log[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^3) + (a^
2*b*f^2*PolyLog[3, -E^(2*(c + d*x))])/(2*(a^2 + b^2)^2*d^3) - (a*f*(e + f*x
)*Sech[c + d*x])/(b^2*d^2) + (a^3*f*(e + f*x)*Sech[c + d*x])/(b^2*(a^2 + b^
2)*d^2) - ((e + f*x)^2*Sech[c + d*x]^2)/(2*b*d) + (a^2*(e + f*x)^2*Sech[c +
 d*x]^2)/(2*b*(a^2 + b^2)*d) + (f*(e + f*x)*Tanh[c + d*x])/(b*d^2) - (a^2*f
*(e + f*x)*Tanh[c + d*x])/(b*(a^2 + b^2)*d^2) - (a*(e + f*x)^2*Sech[c + d*x
]*Tanh[c + d*x])/(2*b^2*d) + (a^3*(e + f*x)^2*Sech[c + d*x]*Tanh[c + d*x])/
(2*b^2*(a^2 + b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
```

```
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
```

```
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2 \text{sech}(c+dx) \tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2 \text{sech}^2(c+dx)\tanh(c+dx)\,dx}{b} - \frac{a \int \frac{(e+fx)^2 \text{sech}^2(c+dx) \tanh}{a+b\sinh(c+dx)}}{b}$$

$$= -\frac{(e+fx)^2 \text{sech}^2(c+dx)}{2bd} - \frac{a \int (e+fx)^2 \text{sech}^3(c+dx)\,dx}{b^2} + \frac{a^2 \int \frac{(e+}{a}}{}$$

$$= -\frac{af(e+fx)\text{sech}(c+dx)}{b^2d^2} - \frac{(e+fx)^2 \text{sech}^2(c+dx)}{2bd} + \frac{f(e+fx)\tan}{bd^2}$$

$$= -\frac{a(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{af^2 \tan^{-1}(\sinh(c+dx))}{b^2d^3} - \frac{f^2 \log(\cosh}{bd^3}$$

$$= -\frac{a^2b(e+fx)^3}{3\left(a^2+b^2\right)^2 f} - \frac{a(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{af^2 \tan^{-1}(\sinh(c+dx}{b^2d^3}$$

$$= -\frac{a^2b(e+fx)^3}{3\left(a^2+b^2\right)^2 f} - \frac{a(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{af^2 \tan^{-1}(\sinh(c+dx}{b^2d^3}$$

$$= -\frac{a(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a^3(e+fx}{b^2\left(\right.}$$

$$= -\frac{a(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a^3(e+fx}{b^2\left(\right.}$$

$$= -\frac{a(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a^3(e+fx}{b^2\left(\right.}$$

$$= -\frac{a(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a^3(e+fx}{b^2\left(\right.}$$

$$= -\frac{a(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} + \frac{a^3(e+fx}{b^2\left(\right.}$$

Mathematica [B] time = 27.87, size = 3124, normalized size = 2.49

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sech[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/6*(-12*a^2*b*d^3*e^2*E^(2*c)*x - 12*a^2*b*d*E^(2*c)*f^2*x - 12*b^3*d*E^(
2*c)*f^2*x - 12*a^2*b*d^3*e*E^(2*c)*f*x^2 - 4*a^2*b*d^3*E^(2*c)*f^2*x^3 - 6
*a^3*d^2*e^2*ArcTan[E^(c + d*x)] + 6*a*b^2*d^2*e^2*ArcTan[E^(c + d*x)] - 6*
a^3*d^2*e^2*E^(2*c)*ArcTan[E^(c + d*x)] + 6*a*b^2*d^2*e^2*E^(2*c)*ArcTan[E^
(c + d*x)] - 12*a^3*f^2*ArcTan[E^(c + d*x)] - 12*a*b^2*f^2*ArcTan[E^(c + d*
x)] - 12*a^3*E^(2*c)*f^2*ArcTan[E^(c + d*x)] - 12*a*b^2*E^(2*c)*f^2*ArcTan[
E^(c + d*x)] - (6*I)*a^3*d^2*e*f*x*Log[1 - I*E^(c + d*x)] + (6*I)*a*b^2*d^2
*e*f*x*Log[1 - I*E^(c + d*x)] - (6*I)*a^3*d^2*e*E^(2*c)*f*x*Log[1 - I*E^(c
+ d*x)] + (6*I)*a*b^2*d^2*e*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] - (3*I)*a^3*
d^2*f^2*x^2*Log[1 - I*E^(c + d*x)] + (3*I)*a*b^2*d^2*f^2*x^2*Log[1 - I*E^(c
 + d*x)] - (3*I)*a^3*d^2*E^(2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] + (3*I)*a*b
^2*d^2*E^(2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] + (6*I)*a^3*d^2*e*f*x*Log[1 +
 I*E^(c + d*x)] - (6*I)*a*b^2*d^2*e*f*x*Log[1 + I*E^(c + d*x)] + (6*I)*a^3*
d^2*e*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] - (6*I)*a*b^2*d^2*e*E^(2*c)*f*x*Lo
g[1 + I*E^(c + d*x)] + (3*I)*a^3*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] - (3*I)
*a*b^2*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] + (3*I)*a^3*d^2*E^(2*c)*f^2*x^2*L
og[1 + I*E^(c + d*x)] - (3*I)*a*b^2*d^2*E^(2*c)*f^2*x^2*Log[1 + I*E^(c + d*
x)] + 6*a^2*b*d^2*e^2*Log[1 + E^(2*(c + d*x))] + 6*a^2*b*d^2*e^2*E^(2*c)*Lo
g[1 + E^(2*(c + d*x))] + 6*a^2*b*f^2*Log[1 + E^(2*(c + d*x))] + 6*b^3*f^2*L
og[1 + E^(2*(c + d*x))] + 6*a^2*b*E^(2*c)*f^2*Log[1 + E^(2*(c + d*x))] + 6*
b^3*E^(2*c)*f^2*Log[1 + E^(2*(c + d*x))] + 12*a^2*b*d^2*e*f*x*Log[1 + E^(2*
(c + d*x))] + 12*a^2*b*d^2*e*E^(2*c)*f*x*Log[1 + E^(2*(c + d*x))] + 6*a^2*b
*d^2*f^2*x^2*Log[1 + E^(2*(c + d*x))] + 6*a^2*b*d^2*E^(2*c)*f^2*x^2*Log[1 +
 E^(2*(c + d*x))] + (6*I)*a*(a^2 - b^2)*d*(1 + E^(2*c))*f*(e + f*x)*PolyLog
[2, (-I)*E^(c + d*x)] - (6*I)*a*(a^2 - b^2)*d*(1 + E^(2*c))*f*(e + f*x)*Pol
yLog[2, I*E^(c + d*x)] + 6*a^2*b*d*e*f*PolyLog[2, -E^(2*(c + d*x))] + 6*a^2
*b*d*e*E^(2*c)*f*PolyLog[2, -E^(2*(c + d*x))] + 6*a^2*b*d*f^2*x*PolyLog[2,
-E^(2*(c + d*x))] + 6*a^2*b*d*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(c + d*x))] -
(6*I)*a^3*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (6*I)*a*b^2*f^2*PolyLog[3, (-I
)*E^(c + d*x)] - (6*I)*a^3*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (6*I)
*a*b^2*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (6*I)*a^3*f^2*PolyLog[3,
I*E^(c + d*x)] - (6*I)*a*b^2*f^2*PolyLog[3, I*E^(c + d*x)] + (6*I)*a^3*E^(2
*c)*f^2*PolyLog[3, I*E^(c + d*x)] - (6*I)*a*b^2*E^(2*c)*f^2*PolyLog[3, I*E^
(c + d*x)] - 3*a^2*b*f^2*PolyLog[3, -E^(2*(c + d*x))] - 3*a^2*b*E^(2*c)*f^2
*PolyLog[3, -E^(2*(c + d*x))])/((a^2 + b^2)^2*d^3*(1 + E^(2*c))) - (a^2*b*(
6*d^3*e^2*E^(2*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*d^2
```

```
*e^2*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^(2*c)*Log[b
 - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d
*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*
E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 +
 (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2
*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2
*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d
^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c
)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^
(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a
^2 + b^2)*E^(2*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*
c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e +
 f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))]
- 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))
] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*
E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2
)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[
(a^2 + b^2)*E^(2*c)]))]))/(3*(a^2 + b^2)^2*d^3*(-1 + E^(2*c))) + (Csch[c]*S
ech[c]*Sech[c + d*x]^2*(6*a^2*b*e*f + 6*b^3*e*f + 12*a^2*b*d^2*e^2*x + 6*a^
2*b*f^2*x + 6*b^3*f^2*x + 12*a^2*b*d^2*e*f*x^2 + 4*a^2*b*d^2*f^2*x^3 - 6*a^
2*b*e*f*Cosh[2*c] - 6*b^3*e*f*Cosh[2*c] - 6*a^2*b*f^2*x*Cosh[2*c] - 6*b^3*f
^2*x*Cosh[2*c] - 6*a^2*b*e*f*Cosh[2*d*x] - 6*b^3*e*f*Cosh[2*d*x] - 6*a^2*b*
f^2*x*Cosh[2*d*x] - 6*b^3*f^2*x*Cosh[2*d*x] + 3*a^3*d*e^2*Cosh[c - d*x] + 3
*a*b^2*d*e^2*Cosh[c - d*x] + 6*a^3*d*e*f*x*Cosh[c - d*x] + 6*a*b^2*d*e*f*x*
Cosh[c - d*x] + 3*a^3*d*f^2*x^2*Cosh[c - d*x] + 3*a*b^2*d*f^2*x^2*Cosh[c -
d*x] - 3*a^3*d*e^2*Cosh[3*c + d*x] - 3*a*b^2*d*e^2*Cosh[3*c + d*x] - 6*a^3*
d*e*f*x*Cosh[3*c + d*x] - 6*a*b^2*d*e*f*x*Cosh[3*c + d*x] - 3*a^3*d*f^2*x^2
*Cosh[3*c + d*x] - 3*a*b^2*d*f^2*x^2*Cosh[3*c + d*x] + 6*a^2*b*e*f*Cosh[2*c
 + 2*d*x] + 6*b^3*e*f*Cosh[2*c + 2*d*x] + 12*a^2*b*d^2*e^2*x*Cosh[2*c + 2*d
*x] + 6*a^2*b*f^2*x*Cosh[2*c + 2*d*x] + 6*b^3*f^2*x*Cosh[2*c + 2*d*x] + 12*
a^2*b*d^2*e*f*x^2*Cosh[2*c + 2*d*x] + 4*a^2*b*d^2*f^2*x^3*Cosh[2*c + 2*d*x]
 - 6*a^2*b*d*e^2*Sinh[2*c] - 6*b^3*d*e^2*Sinh[2*c] - 12*a^2*b*d*e*f*x*Sinh[
2*c] - 12*b^3*d*e*f*x*Sinh[2*c] - 6*a^2*b*d*f^2*x^2*Sinh[2*c] - 6*b^3*d*f^2
*x^2*Sinh[2*c] - 6*a^3*e*f*Sinh[c - d*x] - 6*a*b^2*e*f*Sinh[c - d*x] - 6*a^
3*f^2*x*Sinh[c - d*x] - 6*a*b^2*f^2*x*Sinh[c - d*x] - 6*a^3*e*f*Sinh[3*c +
d*x] - 6*a*b^2*e*f*Sinh[3*c + d*x] - 6*a^3*f^2*x*Sinh[3*c + d*x] - 6*a*b^2*
f^2*x*Sinh[3*c + d*x]))/(24*(a^2 + b^2)^2*d^2)
```

fricas [C] time = 1.03, size = 10892, normalized size = 8.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

[Out] 1/2*(4*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*c*f^2)*cosh(d*x + c)^4 + 4*((
a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*c*f^2)*sinh(d*x + c)^4 - 4*(a^2*b + b^
3)*d*e*f + 4*(a^2*b + b^3)*c*f^2 - 2*((a^3 + a*b^2)*d^2*f^2*x^2 + (a^3 + a*
b^2)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^3 + a*b^2)*d^2*e*f + (a^3 + a*
b^2)*d*f^2)*x)*cosh(d*x + c)^3 - 2*((a^3 + a*b^2)*d^2*f^2*x^2 + (a^3 + a*b^
2)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^3 + a*b^2)*d^2*e*f + (a^3 + a*b^
2)*d*f^2)*x - 8*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*c*f^2)*cosh(d*x + c)
)*sinh(d*x + c)^3 - 4*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 +
(a^2*b + b^3)*d*e*f - 2*(a^2*b + b^3)*c*f^2 + (2*(a^2*b + b^3)*d^2*e*f - (a
^2*b + b^3)*d*f^2)*x)*cosh(d*x + c)^2 - 2*(2*(a^2*b + b^3)*d^2*f^2*x^2 + 2*
(a^2*b + b^3)*d^2*e^2 + 2*(a^2*b + b^3)*d*e*f - 4*(a^2*b + b^3)*c*f^2 - 12*
((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*c*f^2)*cosh(d*x + c)^2 + 2*(2*(a^2*b
 + b^3)*d^2*e*f - (a^2*b + b^3)*d*f^2)*x + 3*((a^3 + a*b^2)*d^2*f^2*x^2 + (
a^3 + a*b^2)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^3 + a*b^2)*d^2*e*f + (
a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 2*((a^3 + a*b^2)*d^
2*f^2*x^2 + (a^3 + a*b^2)*d^2*e^2 - 2*(a^3 + a*b^2)*d*e*f + 2*((a^3 + a*b^2
)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c) + 4*(a^2*b*d*f^2*x + a^2*
b*d*e*f + (a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^4 + 4*(a^2*b*d*f^2*x
+ a^2*b*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2*b*d*f^2*x + a^2*b*d*e*f
)*sinh(d*x + c)^4 + 2*(a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^2 + 2*(a^
2*b*d*f^2*x + a^2*b*d*e*f + 3*(a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^2
)*sinh(d*x + c)^2 + 4*((a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^3 + (a^2
*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x +
 c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2
)/b^2) - b)/b + 1) + 4*(a^2*b*d*f^2*x + a^2*b*d*e*f + (a^2*b*d*f^2*x + a^2*
b*d*e*f)*cosh(d*x + c)^4 + 4*(a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)*si
nh(d*x + c)^3 + (a^2*b*d*f^2*x + a^2*b*d*e*f)*sinh(d*x + c)^4 + 2*(a^2*b*d*
f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^2 + 2*(a^2*b*d*f^2*x + a^2*b*d*e*f + 3*(
a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^2*b*d
*f^2*x + a^2*b*d*e*f)*cosh(d*x + c)^3 + (a^2*b*d*f^2*x + a^2*b*d*e*f)*cosh(
d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (4*a^2*b*d
*f^2*x + 4*a^2*b*d*e*f - 2*I*(a^3 - a*b^2)*d*f^2*x + (4*a^2*b*d*f^2*x + 4*a
^2*b*d*e*f - 2*I*(a^3 - a*b^2)*d*f^2*x - 2*I*(a^3 - a*b^2)*d*e*f)*cosh(d*x
+ c)^4 + (16*a^2*b*d*f^2*x + 16*a^2*b*d*e*f - 8*I*(a^3 - a*b^2)*d*f^2*x - 8
I(a^3 - a*b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*a^2*b*d*f^2*x +
4*a^2*b*d*e*f - 2*I*(a^3 - a*b^2)*d*f^2*x - 2*I*(a^3 - a*b^2)*d*e*f)*sinh(d
*x + c)^4 - 2*I*(a^3 - a*b^2)*d*e*f + (8*a^2*b*d*f^2*x + 8*a^2*b*d*e*f - 4*
I*(a^3 - a*b^2)*d*f^2*x - 4*I*(a^3 - a*b^2)*d*e*f)*cosh(d*x + c)^2 + (8*a^2
*b*d*f^2*x + 8*a^2*b*d*e*f - 4*I*(a^3 - a*b^2)*d*f^2*x - 4*I*(a^3 - a*b^2)*
d*e*f + (24*a^2*b*d*f^2*x + 24*a^2*b*d*e*f - 12*I*(a^3 - a*b^2)*d*f^2*x - 1
2*I*(a^3 - a*b^2)*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((16*a^2*b*d*f^
2*x + 16*a^2*b*d*e*f - 8*I*(a^3 - a*b^2)*d*f^2*x - 8*I*(a^3 - a*b^2)*d*e*f)
*cosh(d*x + c)^3 + (16*a^2*b*d*f^2*x + 16*a^2*b*d*e*f - 8*I*(a^3 - a*b^2)*d
*f^2*x - 8*I*(a^3 - a*b^2)*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(I*cos

h(d*x + c) + I*sinh(d*x + c)) - (4*a^2*b*d*f^2*x + 4*a^2*b*d*e*f + 2*I*(a^3 - a*b^2)*d*f^2*x + (4*a^2*b*d*f^2*x + 4*a^2*b*d*e*f + 2*I*(a^3 - a*b^2)*d*f^2*x + 2*I*(a^3 - a*b^2)*d*e*f)*cosh(d*x + c)^4 + (16*a^2*b*d*f^2*x + 16*a^2*b*d*e*f + 8*I*(a^3 - a*b^2)*d*f^2*x + 8*I*(a^3 - a*b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*a^2*b*d*f^2*x + 4*a^2*b*d*e*f + 2*I*(a^3 - a*b^2)*d*f^2*x + 2*I*(a^3 - a*b^2)*d*e*f)*sinh(d*x + c)^4 + 2*I*(a^3 - a*b^2)*d*e*f + (8*a^2*b*d*f^2*x + 8*a^2*b*d*e*f + 4*I*(a^3 - a*b^2)*d*f^2*x + 4*I*(a^3 - a*b^2)*d*e*f)*cosh(d*x + c)^2 + (8*a^2*b*d*f^2*x + 8*a^2*b*d*e*f + 4*I*(a^3 - a*b^2)*d*f^2*x + 4*I*(a^3 - a*b^2)*d*e*f + (24*a^2*b*d*f^2*x + 24*a^2*b*d*e*f + 12*I*(a^3 - a*b^2)*d*f^2*x + 12*I*(a^3 - a*b^2)*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((16*a^2*b*d*f^2*x + 16*a^2*b*d*e*f + 8*I*(a^3 - a*b^2)*d*f^2*x + 8*I*(a^3 - a*b^2)*d*e*f)*cosh(d*x + c)^3 + (16*a^2*b*d*f^2*x + 16*a^2*b*d*e*f + 8*I*(a^3 - a*b^2)*d*f^2*x + 8*I*(a^3 - a*b^2)*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + 2*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2 + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^4 + 4*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sinh(d*x + c)^4 + 2*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2 + 3*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^3 + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2 + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^4 + 4*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sinh(d*x + c)^4 + 2*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2 + 3*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c)^3 + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2 + (a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)^4 + 4*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*sinh(d*x + c)^4 + 2*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2 + 3*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)^3 + (a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh

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(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(a^2*b*d^2*f
^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2 + (a^2*b*d^2*f
^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)
^4 + 4*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2
*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*
x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*sinh(d*x + c)^4 + 2*(a^2*b*d^2*f^2*x^2
 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)^2 + 2
*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2 +
 3*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2
)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*
f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c)^3 + (a^2*b*d^2*f^2*x^2
 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2*b*c^2*f^2)*cosh(d*x + c))*sinh
(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*s
inh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (2*a^2*b*d^2*e^2 - 4*a^2*b*c*
d*e*f - I*(a^3 - a*b^2)*d^2*e^2 + 2*I*(a^3 - a*b^2)*c*d*e*f + (2*a^2*b*d^2*
e^2 - 4*a^2*b*c*d*e*f - I*(a^3 - a*b^2)*d^2*e^2 + 2*I*(a^3 - a*b^2)*c*d*e*f
 + 2*(a^2*b*c^2 + a^2*b + b^3)*f^2 - I*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2
)*f^2)*cosh(d*x + c)^4 + (8*a^2*b*d^2*e^2 - 16*a^2*b*c*d*e*f - 4*I*(a^3 - a
*b^2)*d^2*e^2 + 8*I*(a^3 - a*b^2)*c*d*e*f + 8*(a^2*b*c^2 + a^2*b + b^3)*f^2
 - 4*I*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2)*cosh(d*x + c)*sinh(d*x +
c)^3 + (2*a^2*b*d^2*e^2 - 4*a^2*b*c*d*e*f - I*(a^3 - a*b^2)*d^2*e^2 + 2*I*(
a^3 - a*b^2)*c*d*e*f + 2*(a^2*b*c^2 + a^2*b + b^3)*f^2 - I*(2*a^3 + 2*a*b^2
 + (a^3 - a*b^2)*c^2)*f^2)*sinh(d*x + c)^4 + 2*(a^2*b*c^2 + a^2*b + b^3)*f^
2 - I*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2 + (4*a^2*b*d^2*e^2 - 8*a^2*
b*c*d*e*f - 2*I*(a^3 - a*b^2)*d^2*e^2 + 4*I*(a^3 - a*b^2)*c*d*e*f + 4*(a^2*
b*c^2 + a^2*b + b^3)*f^2 - 2*I*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2)*c
osh(d*x + c)^2 + (4*a^2*b*d^2*e^2 - 8*a^2*b*c*d*e*f - 2*I*(a^3 - a*b^2)*d^2
*e^2 + 4*I*(a^3 - a*b^2)*c*d*e*f + 4*(a^2*b*c^2 + a^2*b + b^3)*f^2 - 2*I*(2
*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2 + (12*a^2*b*d^2*e^2 - 24*a^2*b*c*d*
e*f - 6*I*(a^3 - a*b^2)*d^2*e^2 + 12*I*(a^3 - a*b^2)*c*d*e*f + 12*(a^2*b*c^
2 + a^2*b + b^3)*f^2 - 6*I*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2)*cosh(
d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^2*b*d^2*e^2 - 16*a^2*b*c*d*e*f - 4*I*(a
^3 - a*b^2)*d^2*e^2 + 8*I*(a^3 - a*b^2)*c*d*e*f + 8*(a^2*b*c^2 + a^2*b + b^
3)*f^2 - 4*I*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2)*cosh(d*x + c)^3 + (
8*a^2*b*d^2*e^2 - 16*a^2*b*c*d*e*f - 4*I*(a^3 - a*b^2)*d^2*e^2 + 8*I*(a^3 -
 a*b^2)*c*d*e*f + 8*(a^2*b*c^2 + a^2*b + b^3)*f^2 - 4*I*(2*a^3 + 2*a*b^2 +
(a^3 - a*b^2)*c^2)*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + s
inh(d*x + c) + I) - (2*a^2*b*d^2*e^2 - 4*a^2*b*c*d*e*f + I*(a^3 - a*b^2)*d^
2*e^2 - 2*I*(a^3 - a*b^2)*c*d*e*f + (2*a^2*b*d^2*e^2 - 4*a^2*b*c*d*e*f + I*
(a^3 - a*b^2)*d^2*e^2 - 2*I*(a^3 - a*b^2)*c*d*e*f + 2*(a^2*b*c^2 + a^2*b +
b^3)*f^2 + I*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2)*cosh(d*x + c)^4 + (
8*a^2*b*d^2*e^2 - 16*a^2*b*c*d*e*f + 4*I*(a^3 - a*b^2)*d^2*e^2 - 8*I*(a^3 -
 a*b^2)*c*d*e*f + 8*(a^2*b*c^2 + a^2*b + b^3)*f^2 + 4*I*(2*a^3 + 2*a*b^2 +
(a^3 - a*b^2)*c^2)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^2*b*d^2*e^2 -
4*a^2*b*c*d*e*f + I*(a^3 - a*b^2)*d^2*e^2 - 2*I*(a^3 - a*b^2)*c*d*e*f + 2*(
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a^2*b*c^2 + a^2*b + b^3)*f^2 + I*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2)
*sinh(d*x + c)^4 + 2*(a^2*b*c^2 + a^2*b + b^3)*f^2 + I*(2*a^3 + 2*a*b^2 + (
a^3 - a*b^2)*c^2)*f^2 + (4*a^2*b*d^2*e^2 - 8*a^2*b*c*d*e*f + 2*I*(a^3 - a*b
^2)*d^2*e^2 - 4*I*(a^3 - a*b^2)*c*d*e*f + 4*(a^2*b*c^2 + a^2*b + b^3)*f^2 +
 2*I*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2)*cosh(d*x + c)^2 + (4*a^2*b*
d^2*e^2 - 8*a^2*b*c*d*e*f + 2*I*(a^3 - a*b^2)*d^2*e^2 - 4*I*(a^3 - a*b^2)*c
*d*e*f + 4*(a^2*b*c^2 + a^2*b + b^3)*f^2 + 2*I*(2*a^3 + 2*a*b^2 + (a^3 - a*
b^2)*c^2)*f^2 + (12*a^2*b*d^2*e^2 - 24*a^2*b*c*d*e*f + 6*I*(a^3 - a*b^2)*d^
2*e^2 - 12*I*(a^3 - a*b^2)*c*d*e*f + 12*(a^2*b*c^2 + a^2*b + b^3)*f^2 + 6*I
*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^
2 + ((8*a^2*b*d^2*e^2 - 16*a^2*b*c*d*e*f + 4*I*(a^3 - a*b^2)*d^2*e^2 - 8*I*
(a^3 - a*b^2)*c*d*e*f + 8*(a^2*b*c^2 + a^2*b + b^3)*f^2 + 4*I*(2*a^3 + 2*a*
b^2 + (a^3 - a*b^2)*c^2)*f^2)*cosh(d*x + c)^3 + (8*a^2*b*d^2*e^2 - 16*a^2*b
*c*d*e*f + 4*I*(a^3 - a*b^2)*d^2*e^2 - 8*I*(a^3 - a*b^2)*c*d*e*f + 8*(a^2*b
*c^2 + a^2*b + b^3)*f^2 + 4*I*(2*a^3 + 2*a*b^2 + (a^3 - a*b^2)*c^2)*f^2)*co
sh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - I) - (2*a^2
*b*d^2*f^2*x^2 + 4*a^2*b*d^2*e*f*x + 4*a^2*b*c*d*e*f - 2*a^2*b*c^2*f^2 + I*
(a^3 - a*b^2)*d^2*f^2*x^2 + 2*I*(a^3 - a*b^2)*d^2*e*f*x + 2*I*(a^3 - a*b^2)
*c*d*e*f - I*(a^3 - a*b^2)*c^2*f^2 + (2*a^2*b*d^2*f^2*x^2 + 4*a^2*b*d^2*e*f
*x + 4*a^2*b*c*d*e*f - 2*a^2*b*c^2*f^2 + I*(a^3 - a*b^2)*d^2*f^2*x^2 + 2*I*
(a^3 - a*b^2)*d^2*e*f*x + 2*I*(a^3 - a*b^2)*c*d*e*f - I*(a^3 - a*b^2)*c^2*f
^2)*cosh(d*x + c)^4 + (8*a^2*b*d^2*f^2*x^2 + 16*a^2*b*d^2*e*f*x + 16*a^2*b*
c*d*e*f - 8*a^2*b*c^2*f^2 + 4*I*(a^3 - a*b^2)*d^2*f^2*x^2 + 8*I*(a^3 - a*b^
2)*d^2*e*f*x + 8*I*(a^3 - a*b^2)*c*d*e*f - 4*I*(a^3 - a*b^2)*c^2*f^2)*cosh(
d*x + c)*sinh(d*x + c)^3 + (2*a^2*b*d^2*f^2*x^2 + 4*a^2*b*d^2*e*f*x + 4*a^2
*b*c*d*e*f - 2*a^2*b*c^2*f^2 + I*(a^3 - a*b^2)*d^2*f^2*x^2 + 2*I*(a^3 - a*b
^2)*d^2*e*f*x + 2*I*(a^3 - a*b^2)*c*d*e*f - I*(a^3 - a*b^2)*c^2*f^2)*sinh(d
*x + c)^4 + (4*a^2*b*d^2*f^2*x^2 + 8*a^2*b*d^2*e*f*x + 8*a^2*b*c*d*e*f - 4*
a^2*b*c^2*f^2 + 2*I*(a^3 - a*b^2)*d^2*f^2*x^2 + 4*I*(a^3 - a*b^2)*d^2*e*f*x
 + 4*I*(a^3 - a*b^2)*c*d*e*f - 2*I*(a^3 - a*b^2)*c^2*f^2)*cosh(d*x + c)^2 +
 (4*a^2*b*d^2*f^2*x^2 + 8*a^2*b*d^2*e*f*x + 8*a^2*b*c*d*e*f - 4*a^2*b*c^2*f
^2 + 2*I*(a^3 - a*b^2)*d^2*f^2*x^2 + 4*I*(a^3 - a*b^2)*d^2*e*f*x + 4*I*(a^3
 - a*b^2)*c*d*e*f - 2*I*(a^3 - a*b^2)*c^2*f^2 + (12*a^2*b*d^2*f^2*x^2 + 24*
a^2*b*d^2*e*f*x + 24*a^2*b*c*d*e*f - 12*a^2*b*c^2*f^2 + 6*I*(a^3 - a*b^2)*d
^2*f^2*x^2 + 12*I*(a^3 - a*b^2)*d^2*e*f*x + 12*I*(a^3 - a*b^2)*c*d*e*f - 6*
I*(a^3 - a*b^2)*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^2*b*d^2*f
^2*x^2 + 16*a^2*b*d^2*e*f*x + 16*a^2*b*c*d*e*f - 8*a^2*b*c^2*f^2 + 4*I*(a^3
 - a*b^2)*d^2*f^2*x^2 + 8*I*(a^3 - a*b^2)*d^2*e*f*x + 8*I*(a^3 - a*b^2)*c*d
*e*f - 4*I*(a^3 - a*b^2)*c^2*f^2)*cosh(d*x + c)^3 + (8*a^2*b*d^2*f^2*x^2 +
16*a^2*b*d^2*e*f*x + 16*a^2*b*c*d*e*f - 8*a^2*b*c^2*f^2 + 4*I*(a^3 - a*b^2)
*d^2*f^2*x^2 + 8*I*(a^3 - a*b^2)*d^2*e*f*x + 8*I*(a^3 - a*b^2)*c*d*e*f - 4*
I*(a^3 - a*b^2)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(I*cosh(d*x + c)
+ I*sinh(d*x + c) + 1) - (2*a^2*b*d^2*f^2*x^2 + 4*a^2*b*d^2*e*f*x + 4*a^2*b
*c*d*e*f - 2*a^2*b*c^2*f^2 - I*(a^3 - a*b^2)*d^2*f^2*x^2 - 2*I*(a^3 - a*b^2
)*d^2*e*f*x - 2*I*(a^3 - a*b^2)*c*d*e*f + I*(a^3 - a*b^2)*c^2*f^2 + (2*a^2*

b*d^2*f^2*x^2 + 4*a^2*b*d^2*e*f*x + 4*a^2*b*c*d*e*f - 2*a^2*b*c^2*f^2 - I*(
a^3 - a*b^2)*d^2*f^2*x^2 - 2*I*(a^3 - a*b^2)*d^2*e*f*x - 2*I*(a^3 - a*b^2)*
c*d*e*f + I*(a^3 - a*b^2)*c^2*f^2)*cosh(d*x + c)^4 + (8*a^2*b*d^2*f^2*x^2 +
16*a^2*b*d^2*e*f*x + 16*a^2*b*c*d*e*f - 8*a^2*b*c^2*f^2 - 4*I*(a^3 - a*b^2
)*d^2*f^2*x^2 - 8*I*(a^3 - a*b^2)*d^2*e*f*x - 8*I*(a^3 - a*b^2)*c*d*e*f + 4
I(a^3 - a*b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^2*b*d^2*f^2*
x^2 + 4*a^2*b*d^2*e*f*x + 4*a^2*b*c*d*e*f - 2*a^2*b*c^2*f^2 - I*(a^3 - a*b^
2)*d^2*f^2*x^2 - 2*I*(a^3 - a*b^2)*d^2*e*f*x - 2*I*(a^3 - a*b^2)*c*d*e*f +
I*(a^3 - a*b^2)*c^2*f^2)*sinh(d*x + c)^4 + (4*a^2*b*d^2*f^2*x^2 + 8*a^2*b*d
^2*e*f*x + 8*a^2*b*c*d*e*f - 4*a^2*b*c^2*f^2 - 2*I*(a^3 - a*b^2)*d^2*f^2*x^
2 - 4*I*(a^3 - a*b^2)*d^2*e*f*x - 4*I*(a^3 - a*b^2)*c*d*e*f + 2*I*(a^3 - a*
b^2)*c^2*f^2)*cosh(d*x + c)^2 + (4*a^2*b*d^2*f^2*x^2 + 8*a^2*b*d^2*e*f*x +
8*a^2*b*c*d*e*f - 4*a^2*b*c^2*f^2 - 2*I*(a^3 - a*b^2)*d^2*f^2*x^2 - 4*I*(a^
3 - a*b^2)*d^2*e*f*x - 4*I*(a^3 - a*b^2)*c*d*e*f + 2*I*(a^3 - a*b^2)*c^2*f^
2 + (12*a^2*b*d^2*f^2*x^2 + 24*a^2*b*d^2*e*f*x + 24*a^2*b*c*d*e*f - 12*a^2*
b*c^2*f^2 - 6*I*(a^3 - a*b^2)*d^2*f^2*x^2 - 12*I*(a^3 - a*b^2)*d^2*e*f*x -
12*I*(a^3 - a*b^2)*c*d*e*f + 6*I*(a^3 - a*b^2)*c^2*f^2)*cosh(d*x + c)^2)*si
nh(d*x + c)^2 + ((8*a^2*b*d^2*f^2*x^2 + 16*a^2*b*d^2*e*f*x + 16*a^2*b*c*d*e
*f - 8*a^2*b*c^2*f^2 - 4*I*(a^3 - a*b^2)*d^2*f^2*x^2 - 8*I*(a^3 - a*b^2)*d^
2*e*f*x - 8*I*(a^3 - a*b^2)*c*d*e*f + 4*I*(a^3 - a*b^2)*c^2*f^2)*cosh(d*x +
c)^3 + (8*a^2*b*d^2*f^2*x^2 + 16*a^2*b*d^2*e*f*x + 16*a^2*b*c*d*e*f - 8*a^
2*b*c^2*f^2 - 4*I*(a^3 - a*b^2)*d^2*f^2*x^2 - 8*I*(a^3 - a*b^2)*d^2*e*f*x -
8*I*(a^3 - a*b^2)*c*d*e*f + 4*I*(a^3 - a*b^2)*c^2*f^2)*cosh(d*x + c))*sinh
(d*x + c))*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) - 4*(a^2*b*f^2*cosh(
d*x + c)^4 + 4*a^2*b*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + a^2*b*f^2*sinh(d*x
+ c)^4 + 2*a^2*b*f^2*cosh(d*x + c)^2 + a^2*b*f^2 + 2*(3*a^2*b*f^2*cosh(d*x
+ c)^2 + a^2*b*f^2)*sinh(d*x + c)^2 + 4*(a^2*b*f^2*cosh(d*x + c)^3 + a^2*b
*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x
+ c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 4*(
a^2*b*f^2*cosh(d*x + c)^4 + 4*a^2*b*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + a^2
*b*f^2*sinh(d*x + c)^4 + 2*a^2*b*f^2*cosh(d*x + c)^2 + a^2*b*f^2 + 2*(3*a^2
*b*f^2*cosh(d*x + c)^2 + a^2*b*f^2)*sinh(d*x + c)^2 + 4*(a^2*b*f^2*cosh(d*x
+ c)^3 + a^2*b*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x +
c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2))/b) + (4*a^2*b*f^2 + (4*a^2*b*f^2 - 2*I*(a^3 - a*b^2)*f^2)*cosh(d*x +
c)^4 + (16*a^2*b*f^2 - 8*I*(a^3 - a*b^2)*f^2)*cosh(d*x + c)*sinh(d*x + c)^
3 + (4*a^2*b*f^2 - 2*I*(a^3 - a*b^2)*f^2)*sinh(d*x + c)^4 - 2*I*(a^3 - a*b^
2)*f^2 + (8*a^2*b*f^2 - 4*I*(a^3 - a*b^2)*f^2)*cosh(d*x + c)^2 + (8*a^2*b*f
^2 - 4*I*(a^3 - a*b^2)*f^2 + (24*a^2*b*f^2 - 12*I*(a^3 - a*b^2)*f^2)*cosh(d
*x + c)^2)*sinh(d*x + c)^2 + ((16*a^2*b*f^2 - 8*I*(a^3 - a*b^2)*f^2)*cosh(d
*x + c)^3 + (16*a^2*b*f^2 - 8*I*(a^3 - a*b^2)*f^2)*cosh(d*x + c))*sinh(d*x
+ c))*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) + (4*a^2*b*f^2 + (4*a^2
*b*f^2 + 2*I*(a^3 - a*b^2)*f^2)*cosh(d*x + c)^4 + (16*a^2*b*f^2 + 8*I*(a^3
- a*b^2)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*a^2*b*f^2 + 2*I*(a^3 - a*b
^2)*f^2)*sinh(d*x + c)^4 + 2*I*(a^3 - a*b^2)*f^2 + (8*a^2*b*f^2 + 4*I*(a^3

```
- a*b^2)*f^2)*cosh(d*x + c)^2 + (8*a^2*b*f^2 + 4*I*(a^3 - a*b^2)*f^2 + (24*
a^2*b*f^2 + 12*I*(a^3 - a*b^2)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((16
*a^2*b*f^2 + 8*I*(a^3 - a*b^2)*f^2)*cosh(d*x + c)^3 + (16*a^2*b*f^2 + 8*I*(
a^3 - a*b^2)*f^2)*cosh(d*x + c))*sinh(d*x + c))*polylog(3, -I*cosh(d*x + c)
 - I*sinh(d*x + c)) + 2*((a^3 + a*b^2)*d^2*f^2*x^2 + (a^3 + a*b^2)*d^2*e^2
- 2*(a^3 + a*b^2)*d*e*f + 8*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*c*f^2)*c
osh(d*x + c)^3 - 3*((a^3 + a*b^2)*d^2*f^2*x^2 + (a^3 + a*b^2)*d^2*e^2 + 2*(
a^3 + a*b^2)*d*e*f + 2*((a^3 + a*b^2)*d^2*e*f + (a^3 + a*b^2)*d*f^2)*x)*cos
h(d*x + c)^2 + 2*((a^3 + a*b^2)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x - 4*((a^2*
b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 + (a^2*b + b^3)*d*e*f - 2*(a^2
*b + b^3)*c*f^2 + (2*(a^2*b + b^3)*d^2*e*f - (a^2*b + b^3)*d*f^2)*x)*cosh(d
*x + c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)^4 + 4*(a
^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + 2*a^2*b^2
+ b^4)*d^3*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)^2
+ (a^4 + 2*a^2*b^2 + b^4)*d^3 + 2*(3*(a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x +
 c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^3)*sinh(d*x + c)^2 + 4*((a^4 + 2*a^2*b^2
+ b^4)*d^3*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c))*sin
h(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.07, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{sech}\left(dx+c\right) \left(\tanh^{2}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] a^3*d^2*f^2*integrate(x^2*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*
d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b
^4*d^2), x) - a*b^2*d^2*f^2*integrate(x^2*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2
*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2
*a^2*b^2*d^2 + b^4*d^2), x) + 2*a^2*b*d^2*f^2*integrate(x^2/(a^4*d^2*e^(2*d
*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d
^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + 2*a^3*d^2*e*f*integrate(x*e^(d*x + c)/(
a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x
+ 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) - 2*a*b^2*d^2*e*f*integrate
(x*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b
^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + 4*a^2*b*d
^2*e*f*integrate(x/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c)
 + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + a^2*b
*f^2*(2*(d*x + c)/((a^4 + 2*a^2*b^2 + b^4)*d^3) - log(e^(2*d*x + 2*c) + 1)/
((a^4 + 2*a^2*b^2 + b^4)*d^3)) + b^3*f^2*(2*(d*x + c)/((a^4 + 2*a^2*b^2 + b
^4)*d^3) - log(e^(2*d*x + 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d^3)) + (a^2*b
*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 + b^4)*d
) - a^2*b*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) - (a^3 - a*
b^2)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) - (a*e^(-d*x - c) + 2
*b*e^(-2*d*x - 2*c) - a*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)*e^(-2
*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d))*e^2 + 2*a^3*f^2*arctan(e^(d
*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^3) + 2*a*b^2*f^2*arctan(e^(d*x + c))/((
a^4 + 2*a^2*b^2 + b^4)*d^3) - (2*b*f^2*x + 2*b*e*f + (a*d*f^2*x^2*e^(3*c) +
 2*a*e*f*e^(3*c) + 2*(d*e*f + f^2)*a*x*e^(3*c))*e^(3*d*x) + 2*(b*d*f^2*x^2*
e^(2*c) + b*e*f*e^(2*c) + (2*d*e*f + f^2)*b*x*e^(2*c))*e^(2*d*x) - (a*d*f^2
*x^2*e^c - 2*a*e*f*e^c + 2*(d*e*f - f^2)*a*x*e^c)*e^(d*x))/(a^2*d^2 + b^2*d
^2 + (a^2*d^2*e^(4*c) + b^2*d^2*e^(4*c))*e^(4*d*x) + 2*(a^2*d^2*e^(2*c) + b
^2*d^2*e^(2*c))*e^(2*d*x)) - integrate(2*(a^2*b^2*f^2*x^2 + 2*a^2*b^2*e*f*x
 - (a^3*b*f^2*x^2*e^c + 2*a^3*b*e*f*x*e^c)*e^(d*x))/(a^4*b + 2*a^2*b^3 + b^
5 - (a^4*b*e^(2*c) + 2*a^2*b^3*e^(2*c) + b^5*e^(2*c))*e^(2*d*x) - 2*(a^5*e^
c + 2*a^3*b^2*e^c + a*b^4*e^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh(c+dx)^2\left(e+fx\right)^2}{\cosh(c+dx)\ (a+b\sinh(c+dx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)^2*(e + f*x)^2)/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((tanh(c + d*x)^2*(e + f*x)^2)/(cosh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{2}\tanh^{2}\left(c+dx\right)\operatorname{sech}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sech(d*x+c)*tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*tanh(c + d*x)**2*sech(c + d*x)/(a + b*sinh(c + d*x)),
 x)
```

3.388 $\int \frac{(e+fx)\mathbf{sech}(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=760

$$\frac{a^2bf\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^2}+\frac{a^2bf\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{d^2\left(a^2+b^2\right)^2}-\frac{a^2bf\text{Li}_2\left(-e^{2(c+dx)}\right)}{2d^2\left(a^2+b^2\right)^2}-\frac{a^2f\tanh(c+dx)}{2bd^2\left(a^2+b^2\right)}+\frac{a^2b(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right.}{d\left(a^2+b^2\right)^2}$$

```
[Out] -a*(f*x+e)*arctan(exp(d*x+c))/b^2/d+2*a^3*(f*x+e)*arctan(exp(d*x+c))/(a^2+b
^2)^2/d+a^3*(f*x+e)*arctan(exp(d*x+c))/b^2/(a^2+b^2)/d-a^2*b*(f*x+e)*ln(1+e
xp(2*d*x+2*c))/(a^2+b^2)^2/d+a^2*b*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(
1/2)))/(a^2+b^2)^2/d+a^2*b*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(
a^2+b^2)^2/d+1/2*I*a*f*polylog(2,-I*exp(d*x+c))/b^2/d^2+1/2*I*a^3*f*polylog
(2,I*exp(d*x+c))/b^2/(a^2+b^2)/d^2-1/2*I*a^3*f*polylog(2,-I*exp(d*x+c))/b^2
/(a^2+b^2)/d^2-I*a^3*f*polylog(2,-I*exp(d*x+c))/(a^2+b^2)^2/d^2-1/2*I*a*f*p
olylog(2,I*exp(d*x+c))/b^2/d^2+I*a^3*f*polylog(2,I*exp(d*x+c))/(a^2+b^2)^2/
d^2-1/2*a^2*b*f*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2)^2/d^2+a^2*b*f*polylog(
2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^2+a^2*b*f*polylog(2,-b*e
xp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^2-1/2*a*f*sech(d*x+c)/b^2/d^2+
1/2*a^3*f*sech(d*x+c)/b^2/(a^2+b^2)/d^2-1/2*(f*x+e)*sech(d*x+c)^2/b/d+1/2*a
^2*(f*x+e)*sech(d*x+c)^2/b/(a^2+b^2)/d+1/2*f*tanh(d*x+c)/b/d^2-1/2*a^2*f*ta
nh(d*x+c)/b/(a^2+b^2)/d^2-1/2*a*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/b^2/d+1/2*a
^3*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/b^2/(a^2+b^2)/d
```

Rubi [A] time = 1.15, antiderivative size = 760, normalized size of antiderivative = 1.00, number of steps used = 42, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {5583, 5451, 3767, 8, 4185, 4180, 2279, 2391, 5573, 5561, 2190, 6742, 3718}

$$-\frac{ia^3f\text{PolyLog}\left(2,-ie^{c+dx}\right)}{2b^2d^2\left(a^2+b^2\right)}-\frac{ia^3f\text{PolyLog}\left(2,-ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)^2}+\frac{ia^3f\text{PolyLog}\left(2,ie^{c+dx}\right)}{2b^2d^2\left(a^2+b^2\right)}+\frac{ia^3f\text{PolyLog}\left(2,ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)^2}+\frac{a^2b}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sech[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*(e + f*x)*ArcTan[E^(c + d*x)])/(b^2*d)) + (2*a^3*(e + f*x)*ArcTan[E^(c
 + d*x)])/((a^2 + b^2)^2*d) + (a^3*(e + f*x)*ArcTan[E^(c + d*x)])/(b^2*(a^2
 + b^2)*d) + (a^2*b*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])
])/((a^2 + b^2)^2*d) + (a^2*b*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a
^2 + b^2])])/((a^2 + b^2)^2*d) - (a^2*b*(e + f*x)*Log[1 + E^(2*(c + d*x))])
/((a^2 + b^2)^2*d) + ((I/2)*a*f*PolyLog[2, (-I)*E^(c + d*x)])/(b^2*d^2) - (
```

```
I*a^3*f*PolyLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)^2*d^2) - ((I/2)*a^3*f*Po
lyLog[2, (-I)*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^2) - ((I/2)*a*f*PolyLog[2, I
*E^(c + d*x)])/(b^2*d^2) + (I*a^3*f*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^2)
^2*d^2) + ((I/2)*a^3*f*PolyLog[2, I*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^2) + (
a^2*b*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^
2*d^2) + (a^2*b*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a
^2 + b^2)^2*d^2) - (a^2*b*f*PolyLog[2, -E^(2*(c + d*x))])/(2*(a^2 + b^2)^2*
d^2) - (a*f*Sech[c + d*x])/(2*b^2*d^2) + (a^3*f*Sech[c + d*x])/(2*b^2*(a^2
+ b^2)*d^2) - ((e + f*x)*Sech[c + d*x]^2)/(2*b*d) + (a^2*(e + f*x)*Sech[c +
 d*x]^2)/(2*b*(a^2 + b^2)*d) + (f*Tanh[c + d*x])/(2*b*d^2) - (a^2*f*Tanh[c
+ d*x])/(2*b*(a^2 + b^2)*d^2) - (a*(e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(
2*b^2*d) + (a^3*(e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(2*b^2*(a^2 + b^2)*d
)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\text{sech}(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{sech}^2(c+dx)\tanh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\text{sech}^2(c+dx)\tanh(c}{a+b\sinh(c+dx)}}{b}$$

$$= -\frac{(e+fx)\text{sech}^2(c+dx)}{2bd} - \frac{a\int (e+fx)\text{sech}^3(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+f}{a+}}{}$$

$$= -\frac{af\text{sech}(c+dx)}{2b^2d^2} - \frac{(e+fx)\text{sech}^2(c+dx)}{2bd} - \frac{a(e+fx)\text{sech}(c+dx)}{2b^2d}$$

$$= -\frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} - \frac{af\text{sech}(c+dx)}{2b^2d^2} - \frac{(e+fx)\text{sech}^2(c+dx}{2bd}$$

$$= -\frac{a^2b(e+fx)^2}{2\left(a^2+b^2\right)^2f} - \frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} - \frac{af\text{sech}(c+dx)}{2b^2d^2} - (e+$$

$$= -\frac{a^2b(e+fx)^2}{2\left(a^2+b^2\right)^2f} - \frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{a^2b(e+fx)\log\left(1+\frac{}{a-}\right.}{\left(a^2+b^2\right)^2d}$$

$$= -\frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2d} + \frac{a^3(e+fx)}{b^2\left(a^2\right.}$$

$$= -\frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2d} + \frac{a^3(e+fx)}{b^2\left(a^2\right.}$$

$$= -\frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2d} + \frac{a^3(e+fx)}{b^2\left(a^2\right.}$$

$$= -\frac{a(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d} + \frac{2a^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2d} + \frac{a^3(e+fx)}{b^2\left(a^2\right.}$$

<u>**Mathematica**</u> **[A]** time = 8.06, size = 588, normalized size = 0.77

$$a\left(-if\left(a^2-b^2\right)\text{Li}_2\left(-ie^{c+dx}\right)+if\left(a^2-b^2\right)\text{Li}_2\left(ie^{c+dx}\right)+2a^2de\tan^{-1}\left(e^{c+dx}\right)+ia^2f(c+dx)\log\left(1-ie^{c+dx}\right)-ia\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sech[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (2*a^2*b*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - S
qrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
)] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c + d*x]] + f*PolyLo
g[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2]))]]) + a*(2*a*b*d*e*(c + d*x) - 2*a*b*c*f*(c + d*x)
+ a*b*f*(c + d*x)^2 + 2*a^2*d*e*ArcTan[E^(c + d*x)] - 2*b^2*d*e*ArcTan[E^(c
 + d*x)] - 2*a^2*c*f*ArcTan[E^(c + d*x)] + 2*b^2*c*f*ArcTan[E^(c + d*x)] +
I*a^2*f*(c + d*x)*Log[1 - I*E^(c + d*x)] - I*b^2*f*(c + d*x)*Log[1 - I*E^(c
 + d*x)] - I*a^2*f*(c + d*x)*Log[1 + I*E^(c + d*x)] + I*b^2*f*(c + d*x)*Log
[1 + I*E^(c + d*x)] - 2*a*b*d*e*Log[1 + E^(2*(c + d*x))] + 2*a*b*c*f*Log[1
+ E^(2*(c + d*x))] - 2*a*b*f*(c + d*x)*Log[1 + E^(2*(c + d*x))] - I*(a^2 -
b^2)*f*PolyLog[2, (-I)*E^(c + d*x)] + I*(a^2 - b^2)*f*PolyLog[2, I*E^(c + d
*x)] - a*b*f*PolyLog[2, -E^(2*(c + d*x))]]) - (a^2 + b^2)*d*(e + f*x)*Sech[c
 + d*x]^2*(b + a*Sinh[c + d*x]) + (a^2 + b^2)*f*Sech[c + d*x]*(-a + b*Sinh[
c + d*x]))/(2*(a^2 + b^2)^2*d^2)
```

fricas [B] time = 0.93, size = 4873, normalized size = 6.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -1/2*(2*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e + (a^3 + a*b^2)*f)*cosh(d*
x + c)^3 + 2*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e + (a^3 + a*b^2)*f)*si
nh(d*x + c)^3 + 2*(2*(a^2*b + b^3)*d*f*x + 2*(a^2*b + b^3)*d*e + (a^2*b + b
^3)*f)*cosh(d*x + c)^2 + 2*(2*(a^2*b + b^3)*d*f*x + 2*(a^2*b + b^3)*d*e + (
a^2*b + b^3)*f + 3*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e + (a^3 + a*b^2)
*f)*cosh(d*x + c))*sinh(d*x + c)^2 + 2*(a^2*b + b^3)*f - 2*((a^3 + a*b^2)*d
*f*x + (a^3 + a*b^2)*d*e - (a^3 + a*b^2)*f)*cosh(d*x + c) - 2*(a^2*b*f*cosh
(d*x + c)^4 + 4*a^2*b*f*cosh(d*x + c)*sinh(d*x + c)^3 + a^2*b*f*sinh(d*x +
c)^4 + 2*a^2*b*f*cosh(d*x + c)^2 + a^2*b*f + 2*(3*a^2*b*f*cosh(d*x + c)^2 +
 a^2*b*f)*sinh(d*x + c)^2 + 4*(a^2*b*f*cosh(d*x + c)^3 + a^2*b*f*cosh(d*x +
 c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(a^2*b*f*cosh
(d*x + c)^4 + 4*a^2*b*f*cosh(d*x + c)*sinh(d*x + c)^3 + a^2*b*f*sinh(d*x +
c)^4 + 2*a^2*b*f*cosh(d*x + c)^2 + a^2*b*f + 2*(3*a^2*b*f*cosh(d*x + c)^2 +
 a^2*b*f)*sinh(d*x + c)^2 + 4*(a^2*b*f*cosh(d*x + c)^3 + a^2*b*f*cosh(d*x +
 c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
```

```
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + ((2*a^2*b*f - I
*(a^3 - a*b^2)*f)*cosh(d*x + c)^4 + (8*a^2*b*f - 4*I*(a^3 - a*b^2)*f)*cosh(
d*x + c)*sinh(d*x + c)^3 + (2*a^2*b*f - I*(a^3 - a*b^2)*f)*sinh(d*x + c)^4
+ 2*a^2*b*f + (4*a^2*b*f - 2*I*(a^3 - a*b^2)*f)*cosh(d*x + c)^2 + (4*a^2*b*
f + (12*a^2*b*f - 6*I*(a^3 - a*b^2)*f)*cosh(d*x + c)^2 - 2*I*(a^3 - a*b^2)*
f)*sinh(d*x + c)^2 - I*(a^3 - a*b^2)*f + ((8*a^2*b*f - 4*I*(a^3 - a*b^2)*f)
*cosh(d*x + c)^3 + (8*a^2*b*f - 4*I*(a^3 - a*b^2)*f)*cosh(d*x + c))*sinh(d*
x + c))*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + ((2*a^2*b*f + I*(a^3 - a
*b^2)*f)*cosh(d*x + c)^4 + (8*a^2*b*f + 4*I*(a^3 - a*b^2)*f)*cosh(d*x + c)*
sinh(d*x + c)^3 + (2*a^2*b*f + I*(a^3 - a*b^2)*f)*sinh(d*x + c)^4 + 2*a^2*b
*f + (4*a^2*b*f + 2*I*(a^3 - a*b^2)*f)*cosh(d*x + c)^2 + (4*a^2*b*f + (12*a
^2*b*f + 6*I*(a^3 - a*b^2)*f)*cosh(d*x + c)^2 + 2*I*(a^3 - a*b^2)*f)*sinh(d
*x + c)^2 + I*(a^3 - a*b^2)*f + ((8*a^2*b*f + 4*I*(a^3 - a*b^2)*f)*cosh(d*x
 + c)^3 + (8*a^2*b*f + 4*I*(a^3 - a*b^2)*f)*cosh(d*x + c))*sinh(d*x + c))*d
ilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) - 2*(a^2*b*d*e - a^2*b*c*f + (a^2*
b*d*e - a^2*b*c*f)*cosh(d*x + c)^4 + 4*(a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c
)*sinh(d*x + c)^3 + (a^2*b*d*e - a^2*b*c*f)*sinh(d*x + c)^4 + 2*(a^2*b*d*e
- a^2*b*c*f)*cosh(d*x + c)^2 + 2*(a^2*b*d*e - a^2*b*c*f + 3*(a^2*b*d*e - a^
2*b*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^2*b*d*e - a^2*b*c*f)*cosh
(d*x + c)^3 + (a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(2*b
*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(
a^2*b*d*e - a^2*b*c*f + (a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c)^4 + 4*(a^2*b*
d*e - a^2*b*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2*b*d*e - a^2*b*c*f)*si
nh(d*x + c)^4 + 2*(a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c)^2 + 2*(a^2*b*d*e -
a^2*b*c*f + 3*(a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*
((a^2*b*d*e - a^2*b*c*f)*cosh(d*x + c)^3 + (a^2*b*d*e - a^2*b*c*f)*cosh(d*x
 + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt(
(a^2 + b^2)/b^2) + 2*a) - 2*(a^2*b*d*f*x + a^2*b*c*f + (a^2*b*d*f*x + a^2*b
*c*f)*cosh(d*x + c)^4 + 4*(a^2*b*d*f*x + a^2*b*c*f)*cosh(d*x + c)*sinh(d*x
+ c)^3 + (a^2*b*d*f*x + a^2*b*c*f)*sinh(d*x + c)^4 + 2*(a^2*b*d*f*x + a^2*b
*c*f)*cosh(d*x + c)^2 + 2*(a^2*b*d*f*x + a^2*b*c*f + 3*(a^2*b*d*f*x + a^2*b
*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^2*b*d*f*x + a^2*b*c*f)*cosh(
d*x + c)^3 + (a^2*b*d*f*x + a^2*b*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-(
a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqr
t((a^2 + b^2)/b^2) - b)/b) - 2*(a^2*b*d*f*x + a^2*b*c*f + (a^2*b*d*f*x + a^
2*b*c*f)*cosh(d*x + c)^4 + 4*(a^2*b*d*f*x + a^2*b*c*f)*cosh(d*x + c)*sinh(d
*x + c)^3 + (a^2*b*d*f*x + a^2*b*c*f)*sinh(d*x + c)^4 + 2*(a^2*b*d*f*x + a^
2*b*c*f)*cosh(d*x + c)^2 + 2*(a^2*b*d*f*x + a^2*b*c*f + 3*(a^2*b*d*f*x + a^
2*b*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^2*b*d*f*x + a^2*b*c*f)*co
sh(d*x + c)^3 + (a^2*b*d*f*x + a^2*b*c*f)*cosh(d*x + c))*sinh(d*x + c))*log
(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*
sqrt((a^2 + b^2)/b^2) - b)/b) + (2*a^2*b*d*e - 2*a^2*b*c*f + (2*a^2*b*d*e -
 2*a^2*b*c*f - I*(a^3 - a*b^2)*d*e + I*(a^3 - a*b^2)*c*f)*cosh(d*x + c)^4 +
 (8*a^2*b*d*e - 8*a^2*b*c*f - 4*I*(a^3 - a*b^2)*d*e + 4*I*(a^3 - a*b^2)*c*f
)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^2*b*d*e - 2*a^2*b*c*f - I*(a^3 - a*b
```

```
^2)*d*e + I*(a^3 - a*b^2)*c*f)*sinh(d*x + c)^4 - I*(a^3 - a*b^2)*d*e + I*(a
^3 - a*b^2)*c*f + (4*a^2*b*d*e - 4*a^2*b*c*f - 2*I*(a^3 - a*b^2)*d*e + 2*I*
(a^3 - a*b^2)*c*f)*cosh(d*x + c)^2 + (4*a^2*b*d*e - 4*a^2*b*c*f - 2*I*(a^3
- a*b^2)*d*e + 2*I*(a^3 - a*b^2)*c*f + (12*a^2*b*d*e - 12*a^2*b*c*f - 6*I*(
a^3 - a*b^2)*d*e + 6*I*(a^3 - a*b^2)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2
+ ((8*a^2*b*d*e - 8*a^2*b*c*f - 4*I*(a^3 - a*b^2)*d*e + 4*I*(a^3 - a*b^2)*c
*f)*cosh(d*x + c)^3 + (8*a^2*b*d*e - 8*a^2*b*c*f - 4*I*(a^3 - a*b^2)*d*e +
4*I*(a^3 - a*b^2)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + si
nh(d*x + c) + I) + (2*a^2*b*d*e - 2*a^2*b*c*f + (2*a^2*b*d*e - 2*a^2*b*c*f
+ I*(a^3 - a*b^2)*d*e - I*(a^3 - a*b^2)*c*f)*cosh(d*x + c)^4 + (8*a^2*b*d*e
 - 8*a^2*b*c*f + 4*I*(a^3 - a*b^2)*d*e - 4*I*(a^3 - a*b^2)*c*f)*cosh(d*x +
c)*sinh(d*x + c)^3 + (2*a^2*b*d*e - 2*a^2*b*c*f + I*(a^3 - a*b^2)*d*e - I*(
a^3 - a*b^2)*c*f)*sinh(d*x + c)^4 + I*(a^3 - a*b^2)*d*e - I*(a^3 - a*b^2)*c
*f + (4*a^2*b*d*e - 4*a^2*b*c*f + 2*I*(a^3 - a*b^2)*d*e - 2*I*(a^3 - a*b^2)
*c*f)*cosh(d*x + c)^2 + (4*a^2*b*d*e - 4*a^2*b*c*f + 2*I*(a^3 - a*b^2)*d*e
- 2*I*(a^3 - a*b^2)*c*f + (12*a^2*b*d*e - 12*a^2*b*c*f + 6*I*(a^3 - a*b^2)*
d*e - 6*I*(a^3 - a*b^2)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^2*b*d
*e - 8*a^2*b*c*f + 4*I*(a^3 - a*b^2)*d*e - 4*I*(a^3 - a*b^2)*c*f)*cosh(d*x
+ c)^3 + (8*a^2*b*d*e - 8*a^2*b*c*f + 4*I*(a^3 - a*b^2)*d*e - 4*I*(a^3 - a*
b^2)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) -
 I) + (2*a^2*b*d*f*x + 2*a^2*b*c*f + (2*a^2*b*d*f*x + 2*a^2*b*c*f + I*(a^3
- a*b^2)*d*f*x + I*(a^3 - a*b^2)*c*f)*cosh(d*x + c)^4 + (8*a^2*b*d*f*x + 8*
a^2*b*c*f + 4*I*(a^3 - a*b^2)*d*f*x + 4*I*(a^3 - a*b^2)*c*f)*cosh(d*x + c)*
sinh(d*x + c)^3 + (2*a^2*b*d*f*x + 2*a^2*b*c*f + I*(a^3 - a*b^2)*d*f*x + I*
(a^3 - a*b^2)*c*f)*sinh(d*x + c)^4 + I*(a^3 - a*b^2)*d*f*x + I*(a^3 - a*b^2
)*c*f + (4*a^2*b*d*f*x + 4*a^2*b*c*f + 2*I*(a^3 - a*b^2)*d*f*x + 2*I*(a^3 -
 a*b^2)*c*f)*cosh(d*x + c)^2 + (4*a^2*b*d*f*x + 4*a^2*b*c*f + 2*I*(a^3 - a*
b^2)*d*f*x + 2*I*(a^3 - a*b^2)*c*f + (12*a^2*b*d*f*x + 12*a^2*b*c*f + 6*I*(
a^3 - a*b^2)*d*f*x + 6*I*(a^3 - a*b^2)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^
2 + ((8*a^2*b*d*f*x + 8*a^2*b*c*f + 4*I*(a^3 - a*b^2)*d*f*x + 4*I*(a^3 - a*
b^2)*c*f)*cosh(d*x + c)^3 + (8*a^2*b*d*f*x + 8*a^2*b*c*f + 4*I*(a^3 - a*b^2
)*d*f*x + 4*I*(a^3 - a*b^2)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(I*cosh(d
*x + c) + I*sinh(d*x + c) + 1) + (2*a^2*b*d*f*x + 2*a^2*b*c*f + (2*a^2*b*d*
f*x + 2*a^2*b*c*f - I*(a^3 - a*b^2)*d*f*x - I*(a^3 - a*b^2)*c*f)*cosh(d*x +
 c)^4 + (8*a^2*b*d*f*x + 8*a^2*b*c*f - 4*I*(a^3 - a*b^2)*d*f*x - 4*I*(a^3 -
 a*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^2*b*d*f*x + 2*a^2*b*c*f -
 I*(a^3 - a*b^2)*d*f*x - I*(a^3 - a*b^2)*c*f)*sinh(d*x + c)^4 - I*(a^3 - a*
b^2)*d*f*x - I*(a^3 - a*b^2)*c*f + (4*a^2*b*d*f*x + 4*a^2*b*c*f - 2*I*(a^3
- a*b^2)*d*f*x - 2*I*(a^3 - a*b^2)*c*f)*cosh(d*x + c)^2 + (4*a^2*b*d*f*x +
4*a^2*b*c*f - 2*I*(a^3 - a*b^2)*d*f*x - 2*I*(a^3 - a*b^2)*c*f + (12*a^2*b*d
*f*x + 12*a^2*b*c*f - 6*I*(a^3 - a*b^2)*d*f*x - 6*I*(a^3 - a*b^2)*c*f)*cosh
(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^2*b*d*f*x + 8*a^2*b*c*f - 4*I*(a^3 - a
*b^2)*d*f*x - 4*I*(a^3 - a*b^2)*c*f)*cosh(d*x + c)^3 + (8*a^2*b*d*f*x + 8*a
^2*b*c*f - 4*I*(a^3 - a*b^2)*d*f*x - 4*I*(a^3 - a*b^2)*c*f)*cosh(d*x + c))*
sinh(d*x + c))*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) - 2*((a^3 + a*b^
```

```
2)*d*f*x + (a^3 + a*b^2)*d*e - 3*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e +
 (a^3 + a*b^2)*f)*cosh(d*x + c)^2 - (a^3 + a*b^2)*f - 2*(2*(a^2*b + b^3)*d*
f*x + 2*(a^2*b + b^3)*d*e + (a^2*b + b^3)*f)*cosh(d*x + c))*sinh(d*x + c))/
((a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*d^
2*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d^2*sinh(d*x + c)
^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4
)*d^2 + 2*(3*(a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2
 + b^4)*d^2)*sinh(d*x + c)^2 + 4*((a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)
^3 + (a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [B] time = 0.27, size = 2068, normalized size = 2.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -2/d^2/(a^2+b^2)*a^2*b*f*c/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)
-b)+2/d^2/(a^2+b^2)*a^2*b*f*c/(2*a^2+2*b^2)*ln(1+exp(2*d*x+2*c))-2/d/(a^2+b
^2)*a^2*b*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*x-2/d^2/(a^2+b^2)*a^2*b*f/(2*a
^2+2*b^2)*ln(1+I*exp(d*x+c))*c-2/d/(a^2+b^2)*a*b^2*e/(2*a^2+2*b^2)*arctan(e
xp(d*x+c))-2/d^2/(a^2+b^2)*a^3*f*c/(2*a^2+2*b^2)*arctan(exp(d*x+c))+I/d^2/(
a^2+b^2)*a^3*f/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+c))-I/d^2/(a^2+b^2)*a^3*f/(2
*a^2+2*b^2)*dilog(1+I*exp(d*x+c))+2/d/(a^2+b^2)*a^3*e/(2*a^2+2*b^2)*arctan(
exp(d*x+c))+I/d/(a^2+b^2)*a*b^2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*x+I/d^2/
(a^2+b^2)*a*b^2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c-2/d/(a^2+b^2)*a^2*b*f/
(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*x-2/d^2/(a^2+b^2)*a^2*b*f/(2*a^2+2*b^2)*ln
(1-I*exp(d*x+c))*c-I/d^2/(a^2+b^2)*a*b^2*f/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+
c))+2/d^2/(a^2+b^2)*a*b^2*f*c/(2*a^2+2*b^2)*arctan(exp(d*x+c))+I/d/(a^2+b^2
)*a^3*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*x+I/d^2/(a^2+b^2)*a^3*f/(2*a^2+2*b
^2)*ln(1-I*exp(d*x+c))*c-1/d/(a^2+b^2)^(1/2)*a*b*e/(2*a^2+2*b^2)*arctanh(1/
2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d/(a^2+b^2)^(3/2)*a*b^3*e/(2*a^2+
2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+I/d^2/(a^2+b^2)*a*
b^2*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))+2/d/(a^2+b^2)*a^2*b*f/(2*a^2+2*b^
```

```
2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+2/d^2/(a^2+
b^2)*a^2*b*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^
2)^(1/2)))*c+2/d/(a^2+b^2)*a^2*b*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)
^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+2/d^2/(a^2+b^2)*a^2*b*f/(2*a^2+2*b^2)*ln((
b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/d/(a^2+b^2)^(3/2)*
a^3*b*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-I/d
/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*x-I/d^2/(a^2+b^2)*a^3*f/(
2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c-I/d/(a^2+b^2)*a*b^2*f/(2*a^2+2*b^2)*ln(1-
I*exp(d*x+c))*x+1/d^2/(a^2+b^2)^(1/2)*a*b*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*
b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d^2/(a^2+b^2)^(3/2)*a*b^3*f*c/(2*a^2+2
*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d^2/(a^2+b^2)^(3/
2)*a^3*b*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2)
)-I/d^2/(a^2+b^2)*a*b^2*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*c-(a*d*f*x*exp(3
*d*x+3*c)+a*d*e*exp(3*d*x+3*c)+2*b*d*f*x*exp(2*d*x+2*c)-a*d*f*x*exp(d*x+c)+
a*f*exp(3*d*x+3*c)+2*b*d*e*exp(2*d*x+2*c)-a*d*e*exp(d*x+c)+b*f*exp(2*d*x+2*
c)+a*f*exp(d*x+c)+b*f)/d^2/(a^2+b^2)/(1+exp(2*d*x+2*c))^2+2/d^2/(a^2+b^2)*a
^2*b*f/(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^
(1/2)))+2/d^2/(a^2+b^2)*a^2*b*f/(2*a^2+2*b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)
^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-2/d^2/(a^2+b^2)*a^2*b*f/(2*a^2+2*b^2)*dilog(
1+I*exp(d*x+c))-2/d^2/(a^2+b^2)*a^2*b*f/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+c))
+2/d/(a^2+b^2)*a^2*b*e/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-
2/d/(a^2+b^2)*a^2*b*e/(2*a^2+2*b^2)*ln(1+exp(2*d*x+2*c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(\frac{a^2b\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{a^2b\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{\left(a^3-ab^2\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{ae^{(-d}}{\left(a^2+b^2+2\left(a\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] (a^2*b*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 +
b^4)*d) - a^2*b*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) - (a^
3 - a*b^2)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) - (a*e^(-d*x -
c) + 2*b*e^(-2*d*x - 2*c) - a*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)
*e^(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d))*e - f*(((a*d*x*e^(3*c
) + a*e^(3*c))*e^(3*d*x) + (2*b*d*x*e^(2*c) + b*e^(2*c))*e^(2*d*x) - (a*d*x
*e^c - a*e^c)*e^(d*x) + b)/(a^2*d^2 + b^2*d^2 + (a^2*d^2*e^(4*c) + b^2*d^2*
e^(4*c))*e^(4*d*x) + 2*(a^2*d^2*e^(2*c) + b^2*d^2*e^(2*c))*e^(2*d*x)) + 2*i
ntegrate(-(a^3*b*x*e^(d*x + c) - a^2*b^2*x)/(a^4*b + 2*a^2*b^3 + b^5 - (a^4
*b*e^(2*c) + 2*a^2*b^3*e^(2*c) + b^5*e^(2*c))*e^(2*d*x) - 2*(a^5*e^c + 2*a^
3*b^2*e^c + a*b^4*e^c)*e^(d*x)), x) - 2*integrate(1/2*(2*a^2*b*x + (a^3*e^c
 - a*b^2*e^c)*x*e^(d*x))/(a^4 + 2*a^2*b^2 + b^4 + (a^4*e^(2*c) + 2*a^2*b^2*
e^(2*c) + b^4*e^(2*c))*e^(2*d*x)), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh (c+d\,x)^2\,\left(e+f\,x\right)}{\cosh (c+d\,x)\,\left(a+b\sinh (c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)^2*(e + f*x))/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int((tanh(c + d*x)^2*(e + f*x))/(cosh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\tanh^2 (c+dx)\operatorname{sech}(c+dx)}{a+b\sinh (c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sech(d*x+c)*tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)*tanh(c + d*x)**2*sech(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.389 $\int \frac{\mathbf{sech}(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=121

$$\frac{a^2b\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{a\left(a^2-b^2\right)\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)^2}-\frac{a^2b\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{\operatorname{sech}^2(c+dx)(a\sinh(c+d}{2d\left(a^2+b^2\right)}$$

```
[Out] 1/2*a*(a^2-b^2)*arctan(sinh(d*x+c))/(a^2+b^2)^2/d-a^2*b*ln(cosh(d*x+c))/(a^
2+b^2)^2/d+a^2*b*ln(a+b*sinh(d*x+c))/(a^2+b^2)^2/d-1/2*sech(d*x+c)^2*(b+a*s
inh(d*x+c))/(a^2+b^2)/d
```

Rubi [A] time = 0.23, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {2837, 12, 1647, 801, 635, 203, 260}

$$\frac{a^2b\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{a\left(a^2-b^2\right)\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)^2}-\frac{a^2b\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{\operatorname{sech}^2(c+dx)(a\sinh(c+d}{2d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sech[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(a^2 - b^2)*ArcTan[Sinh[c + d*x]])/(2*(a^2 + b^2)^2*d) - (a^2*b*Log[Cosh
[c + d*x]])/((a^2 + b^2)^2*d) + (a^2*b*Log[a + b*Sinh[c + d*x]])/((a^2 + b^
2)^2*d) - (Sech[c + d*x]^2*(b + a*Sinh[c + d*x]))/(2*(a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 1647

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{Q = PolynomialQuotient[(d + e*x)^m*Pq, a + c*x^2, x], f = Coeff[Pol
ynomialRemainder[(d + e*x)^m*Pq, a + c*x^2, x], x, 0], g = Coeff[Polynomial
Remainder[(d + e*x)^m*Pq, a + c*x^2, x], x, 1]}, Simp[((a*g - c*f*x)*(a + c
*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^
m*(a + c*x^2)^(p + 1)*ExpandToSum[(2*a*c*(p + 1)*Q)/(d + e*x)^m + (c*f*(2*p
 + 3))/(d + e*x)^m, x], x], x]] /; FreeQ[{a, c, d, e}, x] && PolyQ[Pq, x] &
& NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && ILtQ[m, 0]
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\operatorname{sech}(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{b^3\operatorname{Subst}\left(\int \frac{x^2}{b^2(a+x)\left(-b^2-x^2\right)^2}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= \frac{b\operatorname{Subst}\left(\int \frac{x^2}{(a+x)\left(-b^2-x^2\right)^2}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{\operatorname{sech}^2(c+dx)(b+a\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{\operatorname{Subst}\left(\int \frac{\frac{a^2b^2}{a^2+b^2}-\frac{ab^2x}{a^2+b^2}}{(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+\right.}{2bd}$$

$$= -\frac{\operatorname{sech}^2(c+dx)(b+a\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{\operatorname{Subst}\left(\int\left(-\frac{2a^2b^2}{\left(a^2+b^2\right)^2(a+x)} - \frac{ab^2\left(a^2-b^2-2a\right.}{\left(a^2+b^2\right)^2\left(b^2+x\right.}\right.\right.}{2bd}$$

$$= \frac{a^2b\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{\operatorname{sech}^2(c+dx)(b+a\sinh(c+dx))}{2\left(a^2+b^2\right)d} + \frac{(ab)\operatorname{Subs}}{}$$

$$= \frac{a^2b\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{\operatorname{sech}^2(c+dx)(b+a\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{\left(a^2b\right)\operatorname{Sub}}{}$$

$$= \frac{a\left(a^2-b^2\right)\tan^{-1}(\sinh(c+dx))}{2\left(a^2+b^2\right)^2 d} - \frac{a^2b\log(\cosh(c+dx))}{\left(a^2+b^2\right)^2 d} + \frac{a^2b\log(a+b\sin}{\left(a^2+b^2\right)}$$

Mathematica [C] time = 0.33, size = 130, normalized size = 1.07

$$-\frac{b\left(a^2+b^2\right)\operatorname{sech}^2(c+dx) + a\left(a^2+b^2\right)\tanh(c+dx)\operatorname{sech}(c+dx) + a\left(\left(a^2+b^2\right)\tan^{-1}(\sinh(c+dx)) + a((b+ia\right.}{2d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sech[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(a*((a^2 + b^2)*ArcTan[Sinh[c + d*x]] + a*((I*a + b)*Log[I - Sinh[c +
d*x]] + ((-I)*a + b)*Log[I + Sinh[c + d*x]] - 2*b*Log[a + b*Sinh[c + d*x]])
) + b*(a^2 + b^2)*Sech[c + d*x]^2 + a*(a^2 + b^2)*Sech[c + d*x]*Tanh[c + d*
x])/((a^2 + b^2)^2*d)
```

fricas [B] time = 0.51, size = 917, normalized size = 7.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -((a^3 + a*b^2)*cosh(d*x + c)^3 + (a^3 + a*b^2)*sinh(d*x + c)^3 + 2*(a^2*b
+ b^3)*cosh(d*x + c)^2 + (2*a^2*b + 2*b^3 + 3*(a^3 + a*b^2)*cosh(d*x + c))*
sinh(d*x + c)^2 - ((a^3 - a*b^2)*cosh(d*x + c)^4 + 4*(a^3 - a*b^2)*cosh(d*x
 + c)*sinh(d*x + c)^3 + (a^3 - a*b^2)*sinh(d*x + c)^4 + a^3 - a*b^2 + 2*(a^
3 - a*b^2)*cosh(d*x + c)^2 + 2*(a^3 - a*b^2 + 3*(a^3 - a*b^2)*cosh(d*x + c)
^2)*sinh(d*x + c)^2 + 4*((a^3 - a*b^2)*cosh(d*x + c)^3 + (a^3 - a*b^2)*cosh
(d*x + c))*sinh(d*x + c))*arctan(cosh(d*x + c) + sinh(d*x + c)) - (a^3 + a*
b^2)*cosh(d*x + c) - (a^2*b*cosh(d*x + c)^4 + 4*a^2*b*cosh(d*x + c)*sinh(d*
x + c)^3 + a^2*b*sinh(d*x + c)^4 + 2*a^2*b*cosh(d*x + c)^2 + a^2*b + 2*(3*a
^2*b*cosh(d*x + c)^2 + a^2*b)*sinh(d*x + c)^2 + 4*(a^2*b*cosh(d*x + c)^3 +
a^2*b*cosh(d*x + c))*sinh(d*x + c))*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x +
 c) - sinh(d*x + c))) + (a^2*b*cosh(d*x + c)^4 + 4*a^2*b*cosh(d*x + c)*sinh
(d*x + c)^3 + a^2*b*sinh(d*x + c)^4 + 2*a^2*b*cosh(d*x + c)^2 + a^2*b + 2*(
3*a^2*b*cosh(d*x + c)^2 + a^2*b)*sinh(d*x + c)^2 + 4*(a^2*b*cosh(d*x + c)^3
 + a^2*b*cosh(d*x + c))*sinh(d*x + c))*log(2*cosh(d*x + c)/(cosh(d*x + c) -
 sinh(d*x + c))) - (a^3 + a*b^2 - 3*(a^3 + a*b^2)*cosh(d*x + c)^2 - 4*(a^2*
b + b^3)*cosh(d*x + c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x
+ c)^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 +
 2*a^2*b^2 + b^4)*d*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x
+ c)^2 + 2*(3*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2
+ b^4)*d)*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d + 4*((a^4 + 2*a^2*b^2
 + b^4)*d*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c))*sinh(d
*x + c))
```

giac [A] time = 1.13, size = 226, normalized size = 1.87

$$-\frac{\frac{a^{2} b \log\left(e^{(2\,dx+2\,c)}+1\right)}{a^{4}+2\,a^{2}b^{2}+b^{4}}-\frac{a^{2} b \log\left(\left|-be^{(2\,dx+2\,c)}-2\,ae^{(dx+c)}+b\right|\right)}{a^{4}+2\,a^{2}b^{2}+b^{4}}-\frac{\left(a^{3}e^{c}-ab^{2}e^{c}\right)\arctan\left(e^{(dx+c)}\right)e^{(-c)}}{a^{4}+2\,a^{2}b^{2}+b^{4}}+\frac{\left(a^{3}e^{(3\,c)}+ab^{2}e^{(3\,c)}\right)e^{(3\,dx)}+2\left(a^{2}be^{(2\,c)}+b^{3}e^{(2\,c} \cdots}{\left(a^{2}+b^{2}\right)^{2}\left(e^{(2\,dx+2\,c)}+ \cdots\right.}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -(a^2*b*log(e^(2*d*x + 2*c) + 1)/(a^4 + 2*a^2*b^2 + b^4) - a^2*b*log(abs(-b
*e^(2*d*x + 2*c) - 2*a*e^(d*x + c) + b))/(a^4 + 2*a^2*b^2 + b^4) - (a^3*e^c
 - a*b^2*e^c)*arctan(e^(d*x + c))*e^(-c)/(a^4 + 2*a^2*b^2 + b^4) + ((a^3*e^
```

```
(3*c) + a*b^2*e^(3*c))*e^(3*d*x) + 2*(a^2*b*e^(2*c) + b^3*e^(2*c))*e^(2*d*x
) - (a^3*e^c + a*b^2*e^c)*e^(d*x))/((a^2 + b^2)^2*(e^(2*d*x + 2*c) + 1)^2))
/d
```

maple [B] time = 0.00, size = 475, normalized size = 3.93

$$\frac{4a^2b\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\left(4a^4+8a^2b^2+4b^4\right)}+\frac{\left(\tanh^3\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a^3}{d\left(a^4+2a^2b^2+b^4\right)\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^2}+\frac{\left(\tan\right.}{d\left(a^4+2a^2b^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 4/d*a^2*b/(4*a^4+8*a^2*b^2+4*b^4)*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x
+1/2*c)*b-a)+1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d
*x+1/2*c)^3*a^3+1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/
2*d*x+1/2*c)^3*a*b^2+2/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*ta
nh(1/2*d*x+1/2*c)^2*a^2*b+2/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)
^2*tanh(1/2*d*x+1/2*c)^2*b^3-1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2
+1)^2*tanh(1/2*d*x+1/2*c)*a^3-1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^
2+1)^2*tanh(1/2*d*x+1/2*c)*a*b^2-1/d/(a^4+2*a^2*b^2+b^4)*ln(tanh(1/2*d*x+1/
2*c)^2+1)*a^2*b+1/d/(a^4+2*a^2*b^2+b^4)*arctan(tanh(1/2*d*x+1/2*c))*a^3-1/d
/(a^4+2*a^2*b^2+b^4)*arctan(tanh(1/2*d*x+1/2*c))*a*b^2
```

maxima [A] time = 0.74, size = 219, normalized size = 1.81

$$\frac{a^2b\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{a^2b\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{\left(a^3-ab^2\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{ae^{(-dx-c)}\cdots}{\left(a^2+b^2+2\left(a^2+\cdots\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] a^2*b*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 + b
^4)*d) - a^2*b*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) - (a^3
 - a*b^2)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) - (a*e^(-d*x - c
) + 2*b*e^(-2*d*x - 2*c) - a*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)*
e^(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d)
```

mupad [B] time = 2.02, size = 339, normalized size = 2.80

$$\frac{\frac{2\,b}{d\,\left(a^2+b^2\right)}+\frac{2\,a\,\mathrm{e}^{c+d\,x}}{d\,\left(a^2+b^2\right)}}{2\,\mathrm{e}^{2\,c+2\,d\,x}+\mathrm{e}^{4\,c+4\,d\,x}+1}-\frac{\frac{2\,\left(a^2\,b+b^3\right)}{d\,\left(a^2+b^2\right)^2}+\frac{\mathrm{e}^{c+d\,x}\,\left(a^3+a\,b^2\right)}{d\,\left(a^2+b^2\right)^2}}{\mathrm{e}^{2\,c+2\,d\,x}+1}-\frac{a\,\ln\left(1+\mathrm{e}^{c+d\,x}\,1\mathrm{i}\right)}{2\,\left(-1\mathrm{i}\,d\,a^2+2\,d\,a\,b+1\mathrm{i}\,d\,b^2\right)}+\frac{a^2\,b\,\ln\left(2\,a^7\,\mathrm{e}^{d\,x}\,\mathrm{e}^c-a^2\,b^5-1\cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)^2/(cosh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] ((2*b)/(d*(a^2 + b^2)) + (2*a*exp(c + d*x))/(d*(a^2 + b^2)))/(2*exp(2*c + 2
*d*x) + exp(4*c + 4*d*x) + 1) - ((2*(a^2*b + b^3))/(d*(a^2 + b^2)^2) + (exp
(c + d*x)*(a*b^2 + a^3))/(d*(a^2 + b^2)^2))/(exp(2*c + 2*d*x) + 1) - (a*log
(exp(c + d*x) + 1i)*1i)/(2*(b^2*d - a^2*d + a*b*d*2i)) - (a*log(exp(c + d*x
)*1i + 1))/(2*(b^2*d*1i - a^2*d*1i + 2*a*b*d)) + (a^2*b*log(2*a^7*exp(d*x)*
exp(c) - a^2*b^5 - 14*a^4*b^3 - a^6*b + a^6*b*exp(2*c)*exp(2*d*x) + 2*a^3*b
^4*exp(d*x)*exp(c) + 28*a^5*b^2*exp(d*x)*exp(c) + a^2*b^5*exp(2*c)*exp(2*d*
x) + 14*a^4*b^3*exp(2*c)*exp(2*d*x)))/(a^4*d + b^4*d + 2*a^2*b^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh^2(c+dx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(tanh(c + d*x)**2*sech(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.390 $\int \frac{\operatorname{sech}(c+dx)\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\operatorname{Int}\left(\frac{\tanh^2(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

[Out] Unintegrable(sech(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{sech}(c+dx)\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

[In] Int[(Sech[c + d*x]*Tanh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])),x]

[Out] Defer[Int][(Sech[c + d*x]*Tanh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])
), x]

Rubi steps

$$\int \frac{\operatorname{sech}(c+dx)\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\operatorname{sech}(c+dx)\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

[In] Integrate[(Sech[c + d*x]*Tanh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]

[Out] $Aborted

fricas [A] time = 8.06, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{sech}(dx+c)\tanh(dx+c)^2}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(sech(d*x + c)*tanh(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 1.44, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{sech}(dx+c)\left(\tanh^2(dx+c)\right)}{\left(fx+e\right)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sech(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(sech(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] (b*f - (a*d*f*x*e^(3*c) + (d*e - f)*a*e^(3*c))*e^(3*d*x) - (2*b*d*f*x*e^(2*
c) + (2*d*e - f)*b*e^(2*c))*e^(2*d*x) + (a*d*f*x*e^c + (d*e + f)*a*e^c)*e^(
d*x))/(a^2*d^2*e^2 + b^2*d^2*e^2 + (a^2*d^2*f^2 + b^2*d^2*f^2)*x^2 + 2*(a^2
*d^2*e*f + b^2*d^2*e*f)*x + (a^2*d^2*e^2*e^(4*c) + b^2*d^2*e^2*e^(4*c) + (a
^2*d^2*f^2*e^(4*c) + b^2*d^2*f^2*e^(4*c))*x^2 + 2*(a^2*d^2*e*f*e^(4*c) + b^
2*d^2*e*f*e^(4*c))*x)*e^(4*d*x) + 2*(a^2*d^2*e^2*e^(2*c) + b^2*d^2*e^2*e^(2
*c) + (a^2*d^2*f^2*e^(2*c) + b^2*d^2*f^2*e^(2*c))*x^2 + 2*(a^2*d^2*e*f*e^(2
*c) + b^2*d^2*e*f*e^(2*c))*x)*e^(2*d*x)) + 2*integrate(1/2*(2*a^2*b*d^2*f^2
```

```
*x^2 + 4*a^2*b*d^2*e*f*x + 2*b^3*f^2 + 2*(d^2*e^2 + f^2)*a^2*b + ((d^2*e^2
+ 2*f^2)*a^3*e^c - (d^2*e^2 - 2*f^2)*a*b^2*e^c + (a^3*d^2*f^2*e^c - a*b^2*d
^2*f^2*e^c)*x^2 + 2*(a^3*d^2*e*f*e^c - a*b^2*d^2*e*f*e^c)*x)*e^(d*x))/(a^4*
d^2*e^3 + 2*a^2*b^2*d^2*e^3 + b^4*d^2*e^3 + (a^4*d^2*f^3 + 2*a^2*b^2*d^2*f^
3 + b^4*d^2*f^3)*x^3 + 3*(a^4*d^2*e*f^2 + 2*a^2*b^2*d^2*e*f^2 + b^4*d^2*e*f
^2)*x^2 + 3*(a^4*d^2*e^2*f + 2*a^2*b^2*d^2*e^2*f + b^4*d^2*e^2*f)*x + (a^4*
d^2*e^3*e^(2*c) + 2*a^2*b^2*d^2*e^3*e^(2*c) + b^4*d^2*e^3*e^(2*c) + (a^4*d^
2*f^3*e^(2*c) + 2*a^2*b^2*d^2*f^3*e^(2*c) + b^4*d^2*f^3*e^(2*c))*x^3 + 3*(a
^4*d^2*e*f^2*e^(2*c) + 2*a^2*b^2*d^2*e*f^2*e^(2*c) + b^4*d^2*e*f^2*e^(2*c))
*x^2 + 3*(a^4*d^2*e^2*f*e^(2*c) + 2*a^2*b^2*d^2*e^2*f*e^(2*c) + b^4*d^2*e^2
*f*e^(2*c))*x)*e^(2*d*x)), x) - 2*integrate(-(a^3*b*e^(d*x + c) - a^2*b^2)/
(a^4*b*e + 2*a^2*b^3*e + b^5*e + (a^4*b*f + 2*a^2*b^3*f + b^5*f)*x - (a^4*b
*e*e^(2*c) + 2*a^2*b^3*e*e^(2*c) + b^5*e*e^(2*c) + (a^4*b*f*e^(2*c) + 2*a^2
*b^3*f*e^(2*c) + b^5*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^5*e*e^c + 2*a^3*b^2*e*e
^c + a*b^4*e*e^c + (a^5*f*e^c + 2*a^3*b^2*f*e^c + a*b^4*f*e^c)*x)*e^(d*x)),
 x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\tanh (c+d\,x)^2}{\cosh (c+d\,x)\,\left(e+f\,x\right)\,\left(a+b\sinh (c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)^2/(cosh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(tanh(c + d*x)^2/(cosh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh^2 (c+dx)\operatorname{sech}(c+dx)}{(a+b\sinh (c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sech(d*x+c)*tanh(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(tanh(c + d*x)**2*sech(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)),
x)
```

3.391 $\int \frac{(e+fx)^3 \cosh(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=792

$$\frac{a^3(e+fx)^4}{4b^4f}-\frac{6a^2f^3\cosh(c+dx)}{b^3d^4}+\frac{6a^2f^2(e+fx)\sinh(c+dx)}{b^3d^3}-\frac{3a^2f(e+fx)^2\cosh(c+dx)}{b^3d^2}+\frac{a^2(e+fx)^3\sinh(c}{b^3d}$$

```
[Out] -3*a^3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d^2-3*a
^3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d^2+6*a^3*f
^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d^3+6*a^3*f^2*(
f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d^3+a^2*(f*x+e)^3*s
inh(d*x+c)/b^3/d+2/9*f^2*(f*x+e)*sinh(d*x+c)^3/b/d^3-1/3*f*(f*x+e)^2*cosh(d
*x+c)*sinh(d*x+c)^2/b/d^2+3/4*a*f*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/b^2/d^2
+1/3*(f*x+e)^3*sinh(d*x+c)^3/b/d+1/4*a^3*(f*x+e)^4/b^4/f-1/4*a*(f*x+e)^3/b^
2/d-2/27*f^3*cosh(d*x+c)^3/b/d^4+14/9*f^3*cosh(d*x+c)/b/d^4-3/8*a*f^3*x/b^2
/d^3-6*a^2*f^3*cosh(d*x+c)/b^3/d^4-1/2*a*(f*x+e)^3*sinh(d*x+c)^2/b^2/d+2/3*
f*(f*x+e)^2*cosh(d*x+c)/b/d^2-4/3*f^2*(f*x+e)*sinh(d*x+c)/b/d^3+6*a^2*f^2*(
f*x+e)*sinh(d*x+c)/b^3/d^3+3/8*a*f^3*cosh(d*x+c)*sinh(d*x+c)/b^2/d^4-3/4*a*
f^2*(f*x+e)*sinh(d*x+c)^2/b^2/d^3-3*a^2*f*(f*x+e)^2*cosh(d*x+c)/b^3/d^2-a^3
*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d-a^3*(f*x+e)^3*ln(1+
b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d-6*a^3*f^3*polylog(4,-b*exp(d*x+c)/(
a-(a^2+b^2)^(1/2)))/b^4/d^4-6*a^3*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^
(1/2)))/b^4/d^4
```

Rubi [A] time = 1.20, antiderivative size = 792, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 15, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.441$, Rules used = {5579, 5446, 3311, 3296, 2638, 2633, 32, 2635, 8, 5561, 2190, 2531, 6609, 2282, 6589}

$$\frac{6a^3f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^3}+\frac{6a^3f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^4d^3}-\frac{3a^3f(e+fx)^2\text{PolyLog}\left(2,-\frac{}{a-}\right.}{b^4d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-3*a*f^3*x)/(8*b^2*d^3) - (a*(e + f*x)^3)/(4*b^2*d) + (a^3*(e + f*x)^4)/(4
*b^4*f) - (6*a^2*f^3*Cosh[c + d*x])/(b^3*d^4) + (14*f^3*Cosh[c + d*x])/(9*b
*d^4) - (3*a^2*f*(e + f*x)^2*Cosh[c + d*x])/(b^3*d^2) + (2*f*(e + f*x)^2*Co
sh[c + d*x])/(3*b*d^2) - (2*f^3*Cosh[c + d*x]^3)/(27*b*d^4) - (a^3*(e + f*x
)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^4*d) - (a^3*(e + f*x
)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^4*d) - (3*a^3*f*(e +
```

```
f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^4*d^2) - (
3*a^3*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(
b^4*d^2) + (6*a^3*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2
+ b^2]))])/(b^4*d^3) + (6*a^3*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2]))])/(b^4*d^3) - (6*a^3*f^3*PolyLog[4, -((b*E^(c + d*x))/
(a - Sqrt[a^2 + b^2]))])/(b^4*d^4) - (6*a^3*f^3*PolyLog[4, -((b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2]))])/(b^4*d^4) + (6*a^2*f^2*(e + f*x)*Sinh[c + d*x])/
(b^3*d^3) - (4*f^2*(e + f*x)*Sinh[c + d*x])/(3*b*d^3) + (a^2*(e + f*x)^3*Si
nh[c + d*x])/(b^3*d) + (3*a*f^3*Cosh[c + d*x]*Sinh[c + d*x])/(8*b^2*d^4) +
(3*a*f*(e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x])/(4*b^2*d^2) - (3*a*f^2*(e +
 f*x)*Sinh[c + d*x]^2)/(4*b^2*d^3) - (a*(e + f*x)^3*Sinh[c + d*x]^2)/(2*b^2
*d) - (f*(e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x]^2)/(3*b*d^2) + (2*f^2*(e +
 f*x)*Sinh[c + d*x]^3)/(9*b*d^3) + ((e + f*x)^3*Sinh[c + d*x]^3)/(3*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\cosh(c+dx)\sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\cosh(c+dx)\sin}{a+b\sinh(c+dx}}{b}$$

$$= \frac{(e+fx)^3\sinh^3(c+dx)}{3bd} - \frac{a\int (e+fx)^3\cosh(c+dx)\sinh(c+dx)}{b^2}$$

$$= -\frac{a(e+fx)^3\sinh^2(c+dx)}{2b^2d} - \frac{f(e+fx)^2\cosh(c+dx)\sinh^2(c+d}{3bd^2}$$

$$= \frac{a^3(e+fx)^4}{4b^4f} + \frac{2f(e+fx)^2\cosh(c+dx)}{3bd^2} + \frac{a^2(e+fx)^3\sinh(c+d}{b^3d}$$

$$= -\frac{a(e+fx)^3}{4b^2d} + \frac{a^3(e+fx)^4}{4b^4f} + \frac{2f^3\cosh(c+dx)}{9bd^4} - \frac{3a^2f(e+fx)^2\,c}{b^3d^2}$$

$$= -\frac{3af^3x}{8b^2d^3} - \frac{a(e+fx)^3}{4b^2d} + \frac{a^3(e+fx)^4}{4b^4f} + \frac{14f^3\cosh(c+dx)}{9bd^4} - \frac{3a^2f}{}$$

$$= -\frac{3af^3x}{8b^2d^3} - \frac{a(e+fx)^3}{4b^2d} + \frac{a^3(e+fx)^4}{4b^4f} - \frac{6a^2f^3\cosh(c+dx)}{b^3d^4} + \frac{14f^3}{}$$

$$= -\frac{3af^3x}{8b^2d^3} - \frac{a(e+fx)^3}{4b^2d} + \frac{a^3(e+fx)^4}{4b^4f} - \frac{6a^2f^3\cosh(c+dx)}{b^3d^4} + \frac{14f^3}{}$$

$$= -\frac{3af^3x}{8b^2d^3} - \frac{a(e+fx)^3}{4b^2d} + \frac{a^3(e+fx)^4}{4b^4f} - \frac{6a^2f^3\cosh(c+dx)}{b^3d^4} + \frac{14f^3}{}$$

Mathematica [B] time = 25.87, size = 7375, normalized size = 9.31

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] Result too large to show
```

fricas [C] time = 0.61, size = 7020, normalized size = 8.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith m="fricas")

[Out] -1/864*(36*b^3*d^3*f^3*x^3 + 36*b^3*d^3*e^3 + 36*b^3*d^2*e^2*f + 24*b^3*d*e *f^2 - 4*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f ^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^6 - 4*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d ^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3* d*f^3)*x)*sinh(d*x + c)^6 + 8*b^3*f^3 + 27*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d ^3*e^3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3 *e*f^2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a* b^2*d*f^3)*x)*cosh(d*x + c)^5 + 3*(36*a*b^2*d^3*f^3*x^3 + 36*a*b^2*d^3*e^3 - 54*a*b^2*d^2*e^2*f + 54*a*b^2*d*e*f^2 - 27*a*b^2*f^3 + 54*(2*a*b^2*d^3*e* f^2 - a*b^2*d^2*f^3)*x^2 + 54*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^ 2*d*f^3)*x - 8*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3 *d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3 *e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^5 - 108*((4*a^2*b - b^3)*d^3*f^3*x^3 + (4*a^2*b - b^3)*d^3*e^3 - 3*(4*a^2*b - b^3)*d^2*e^2*f + 6*(4*a^2*b - b^3)*d*e*f^2 - 6*(4*a^2*b - b^3)*f^3 + 3*((4* a^2*b - b^3)*d^3*e*f^2 - (4*a^2*b - b^3)*d^2*f^3)*x^2 + 3*((4*a^2*b - b^3)* d^3*e^2*f - 2*(4*a^2*b - b^3)*d^2*e*f^2 + 2*(4*a^2*b - b^3)*d*f^3)*x)*cosh(d*x + c)^4 - 3*(36*(4*a^2*b - b^3)*d^3*f^3*x^3 + 36*(4*a^2*b - b^3)*d^3*e^3 - 108*(4*a^2*b - b^3)*d^2*e^2*f + 216*(4*a^2*b - b^3)*d*e*f^2 - 216*(4*a^2 *b - b^3)*f^3 + 108*((4*a^2*b - b^3)*d^3*e*f^2 - (4*a^2*b - b^3)*d^2*f^3)*x ^2 + 20*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f^ 2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^2 + 108*((4*a^2*b - b^3)* d^3*e^2*f - 2*(4*a^2*b - b^3)*d^2*e*f^2 + 2*(4*a^2*b - b^3)*d*f^3)*x - 45*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3 *e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^4 - 216*(a^3*d^4*f^3*x^4 + 4*a^3*d^4*e*f^2*x^3 + 6*a^3*d^4*e^2*f*x^2 + 4*a^3 *d^4*e^3*x + 8*a^3*c*d^3*e^3 - 12*a^3*c^2*d^2*e^2*f + 8*a^3*c^3*d*e*f^2 - 2 *a^3*c^4*f^3)*cosh(d*x + c)^3 - 2*(108*a^3*d^4*f^3*x^4 + 432*a^3*d^4*e*f^2* x^3 + 648*a^3*d^4*e^2*f*x^2 + 432*a^3*d^4*e^3*x + 864*a^3*c*d^3*e^3 - 1296* a^3*c^2*d^2*e^2*f + 864*a^3*c^3*d*e*f^2 - 216*a^3*c^4*f^3 + 40*(9*b^3*d^3*f ^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e*f^2 - 2*b^3*f^3 + 9*(3 *b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^3 - 135*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^ 3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^ 2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2*d *f^3)*x)*cosh(d*x + c)^2 + 216*((4*a^2*b - b^3)*d^3*f^3*x^3 + (4*a^2*b - b^

3)*d^3*e^3 - 3*(4*a^2*b - b^3)*d^2*e^2*f + 6*(4*a^2*b - b^3)*d*e*f^2 - 6*(4
*a^2*b - b^3)*f^3 + 3*((4*a^2*b - b^3)*d^3*e*f^2 - (4*a^2*b - b^3)*d^2*f^3)
x^2 + 3((4*a^2*b - b^3)*d^3*e^2*f - 2*(4*a^2*b - b^3)*d^2*e*f^2 + 2*(4*a^
2*b - b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^3 + 36*(3*b^3*d^3*e*f^2 +
b^3*d^2*f^3)*x^2 + 108*((4*a^2*b - b^3)*d^3*f^3*x^3 + (4*a^2*b - b^3)*d^3*
e^3 + 3*(4*a^2*b - b^3)*d^2*e^2*f + 6*(4*a^2*b - b^3)*d*e*f^2 + 6*(4*a^2*b
- b^3)*f^3 + 3*((4*a^2*b - b^3)*d^3*e*f^2 + (4*a^2*b - b^3)*d^2*f^3)*x^2 +
3*((4*a^2*b - b^3)*d^3*e^2*f + 2*(4*a^2*b - b^3)*d^2*e*f^2 + 2*(4*a^2*b - b
^3)*d*f^3)*x)*cosh(d*x + c)^2 + 6*(18*(4*a^2*b - b^3)*d^3*f^3*x^3 + 18*(4*a
^2*b - b^3)*d^3*e^3 + 54*(4*a^2*b - b^3)*d^2*e^2*f + 108*(4*a^2*b - b^3)*d*
e*f^2 - 10*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e^2*f + 6*b^3*d*e
*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 + 3*(9*b^3*d^3*e^2
*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^4 + 108*(4*a^2*b - b^3
)*f^3 + 45*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^3 - 6*a*b^2*d^2*e^2*f + 6*a
*b^2*d*e*f^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^2 - a*b^2*d^2*f^3)*x^2 + 6*
(2*a*b^2*d^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x)*cosh(d*x + c)^3 +
54*((4*a^2*b - b^3)*d^3*e*f^2 + (4*a^2*b - b^3)*d^2*f^3)*x^2 - 108*((4*a^2*
b - b^3)*d^3*f^3*x^3 + (4*a^2*b - b^3)*d^3*e^3 - 3*(4*a^2*b - b^3)*d^2*e^2*
f + 6*(4*a^2*b - b^3)*d*e*f^2 - 6*(4*a^2*b - b^3)*f^3 + 3*((4*a^2*b - b^3)*
d^3*e*f^2 - (4*a^2*b - b^3)*d^2*f^3)*x^2 + 3*((4*a^2*b - b^3)*d^3*e^2*f - 2
*(4*a^2*b - b^3)*d^2*e*f^2 + 2*(4*a^2*b - b^3)*d*f^3)*x)*cosh(d*x + c)^2 +
54*((4*a^2*b - b^3)*d^3*e^2*f + 2*(4*a^2*b - b^3)*d^2*e*f^2 + 2*(4*a^2*b -
b^3)*d*f^3)*x - 108*(a^3*d^4*f^3*x^4 + 4*a^3*d^4*e*f^2*x^3 + 6*a^3*d^4*e^2*
f*x^2 + 4*a^3*d^4*e^3*x + 8*a^3*c*d^3*e^3 - 12*a^3*c^2*d^2*e^2*f + 8*a^3*c^
3*d*e*f^2 - 2*a^3*c^4*f^3)*cosh(d*x + c))*sinh(d*x + c)^2 + 12*(9*b^3*d^3*e
^2*f + 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x + 27*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2
*d^3*e^3 + 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f^2 + 3*a*b^2*f^3 + 6*(2*a*b^2*d
^3*e*f^2 + a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d^3*e^2*f + 2*a*b^2*d^2*e*f^2 +
a*b^2*d*f^3)*x)*cosh(d*x + c) + 2592*((a^3*d^2*f^3*x^2 + 2*a^3*d^2*e*f^2*x
+ a^3*d^2*e^2*f)*cosh(d*x + c)^3 + 3*(a^3*d^2*f^3*x^2 + 2*a^3*d^2*e*f^2*x +
a^3*d^2*e^2*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d^2*f^3*x^2 + 2*a^3*
d^2*e*f^2*x + a^3*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3*d^2*f^3*x
^2 + 2*a^3*d^2*e*f^2*x + a^3*d^2*e^2*f)*sinh(d*x + c)^3)*dilog((a*cosh(d*x
+ c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^
2)/b^2) - b)/b + 1) + 2592*((a^3*d^2*f^3*x^2 + 2*a^3*d^2*e*f^2*x + a^3*d^2*
e^2*f)*cosh(d*x + c)^3 + 3*(a^3*d^2*f^3*x^2 + 2*a^3*d^2*e*f^2*x + a^3*d^2*e
^2*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d^2*f^3*x^2 + 2*a^3*d^2*e*f^2*
x + a^3*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3*d^2*f^3*x^2 + 2*a^3
*d^2*e*f^2*x + a^3*d^2*e^2*f)*sinh(d*x + c)^3)*dilog((a*cosh(d*x + c) + a*s
inh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) -
b)/b + 1) + 864*((a^3*d^3*e^3 - 3*a^3*c*d^2*e^2*f + 3*a^3*c^2*d*e*f^2 - a^3
*c^3*f^3)*cosh(d*x + c)^3 + 3*(a^3*d^3*e^3 - 3*a^3*c*d^2*e^2*f + 3*a^3*c^2*
d*e*f^2 - a^3*c^3*f^3)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d^3*e^3 - 3*a
^3*c*d^2*e^2*f + 3*a^3*c^2*d*e*f^2 - a^3*c^3*f^3)*cosh(d*x + c)*sinh(d*x +
c)^2 + (a^3*d^3*e^3 - 3*a^3*c*d^2*e^2*f + 3*a^3*c^2*d*e*f^2 - a^3*c^3*f^3)*

```
sinh(d*x + c)^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2
+ b^2)/b^2) + 2*a) + 864*((a^3*d^3*e^3 - 3*a^3*c*d^2*e^2*f + 3*a^3*c^2*d*e*
f^2 - a^3*c^3*f^3)*cosh(d*x + c)^3 + 3*(a^3*d^3*e^3 - 3*a^3*c*d^2*e^2*f + 3
*a^3*c^2*d*e*f^2 - a^3*c^3*f^3)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d^3*
e^3 - 3*a^3*c*d^2*e^2*f + 3*a^3*c^2*d*e*f^2 - a^3*c^3*f^3)*cosh(d*x + c)*si
nh(d*x + c)^2 + (a^3*d^3*e^3 - 3*a^3*c*d^2*e^2*f + 3*a^3*c^2*d*e*f^2 - a^3*
c^3*f^3)*sinh(d*x + c)^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*s
qrt((a^2 + b^2)/b^2) + 2*a) + 864*((a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2*x^2 +
 3*a^3*d^3*e^2*f*x + 3*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*f^3)*c
osh(d*x + c)^3 + 3*(a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2*x^2 + 3*a^3*d^3*e^2*f
*x + 3*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*f^3)*cosh(d*x + c)^2*s
inh(d*x + c) + 3*(a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2*x^2 + 3*a^3*d^3*e^2*f*x
 + 3*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*f^3)*cosh(d*x + c)*sinh(
d*x + c)^2 + (a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2*x^2 + 3*a^3*d^3*e^2*f*x + 3
*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*f^3)*sinh(d*x + c)^3)*log(-(
a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqr
t((a^2 + b^2)/b^2) - b)/b) + 864*((a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2*x^2 +
3*a^3*d^3*e^2*f*x + 3*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*f^3)*co
sh(d*x + c)^3 + 3*(a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2*x^2 + 3*a^3*d^3*e^2*f*
x + 3*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*f^3)*cosh(d*x + c)^2*si
nh(d*x + c) + 3*(a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2*x^2 + 3*a^3*d^3*e^2*f*x
+ 3*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*f^3)*cosh(d*x + c)*sinh(d
*x + c)^2 + (a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2*x^2 + 3*a^3*d^3*e^2*f*x + 3*
a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*f^3)*sinh(d*x + c)^3)*log(-(a
*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b) + 5184*(a^3*f^3*cosh(d*x + c)^3 + 3*a^3*f^3*cosh(
d*x + c)^2*sinh(d*x + c) + 3*a^3*f^3*cosh(d*x + c)*sinh(d*x + c)^2 + a^3*f^
3*sinh(d*x + c)^3)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(
d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 5184*(a^3*f^3*cosh(
d*x + c)^3 + 3*a^3*f^3*cosh(d*x + c)^2*sinh(d*x + c) + 3*a^3*f^3*cosh(d*x +
 c)*sinh(d*x + c)^2 + a^3*f^3*sinh(d*x + c)^3)*polylog(4, (a*cosh(d*x + c)
+ a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2))/b) - 5184*((a^3*d*f^3*x + a^3*d*e*f^2)*cosh(d*x + c)^3 + 3*(a^3*d*f^3*x
 + a^3*d*e*f^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d*f^3*x + a^3*d*e*f^
2)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3*d*f^3*x + a^3*d*e*f^2)*sinh(d*x + c
)^3)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*s
inh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 5184*((a^3*d*f^3*x + a^3*d*e*f^2)
*cosh(d*x + c)^3 + 3*(a^3*d*f^3*x + a^3*d*e*f^2)*cosh(d*x + c)^2*sinh(d*x +
 c) + 3*(a^3*d*f^3*x + a^3*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3*d*
f^3*x + a^3*d*e*f^2)*sinh(d*x + c)^3)*polylog(3, (a*cosh(d*x + c) + a*sinh(
d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) +
3*(36*a*b^2*d^3*f^3*x^3 + 36*a*b^2*d^3*e^3 + 54*a*b^2*d^2*e^2*f + 54*a*b^2*
d*e*f^2 + 27*a*b^2*f^3 - 8*(9*b^3*d^3*f^3*x^3 + 9*b^3*d^3*e^3 - 9*b^3*d^2*e
^2*f + 6*b^3*d*e*f^2 - 2*b^3*f^3 + 9*(3*b^3*d^3*e*f^2 - b^3*d^2*f^3)*x^2 +
3*(9*b^3*d^3*e^2*f - 6*b^3*d^2*e*f^2 + 2*b^3*d*f^3)*x)*cosh(d*x + c)^5 + 45
```

```
*(4*a*b^2*d^3*f^3*x^3 + 4*a*b^2*d^3*e^3 - 6*a*b^2*d^2*e^2*f + 6*a*b^2*d*e*f
^2 - 3*a*b^2*f^3 + 6*(2*a*b^2*d^3*e*f^2 - a*b^2*d^2*f^3)*x^2 + 6*(2*a*b^2*d
^3*e^2*f - 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x)*cosh(d*x + c)^4 - 144*((4*a^
2*b - b^3)*d^3*f^3*x^3 + (4*a^2*b - b^3)*d^3*e^3 - 3*(4*a^2*b - b^3)*d^2*e^
2*f + 6*(4*a^2*b - b^3)*d*e*f^2 - 6*(4*a^2*b - b^3)*f^3 + 3*((4*a^2*b - b^3
)*d^3*e*f^2 - (4*a^2*b - b^3)*d^2*f^3)*x^2 + 3*((4*a^2*b - b^3)*d^3*e^2*f -
 2*(4*a^2*b - b^3)*d^2*e*f^2 + 2*(4*a^2*b - b^3)*d*f^3)*x)*cosh(d*x + c)^3
+ 54*(2*a*b^2*d^3*e*f^2 + a*b^2*d^2*f^3)*x^2 - 216*(a^3*d^4*f^3*x^4 + 4*a^3
*d^4*e*f^2*x^3 + 6*a^3*d^4*e^2*f*x^2 + 4*a^3*d^4*e^3*x + 8*a^3*c*d^3*e^3 -
12*a^3*c^2*d^2*e^2*f + 8*a^3*c^3*d*e*f^2 - 2*a^3*c^4*f^3)*cosh(d*x + c)^2 +
 54*(2*a*b^2*d^3*e^2*f + 2*a*b^2*d^2*e*f^2 + a*b^2*d*f^3)*x + 72*((4*a^2*b
- b^3)*d^3*f^3*x^3 + (4*a^2*b - b^3)*d^3*e^3 + 3*(4*a^2*b - b^3)*d^2*e^2*f
+ 6*(4*a^2*b - b^3)*d*e*f^2 + 6*(4*a^2*b - b^3)*f^3 + 3*((4*a^2*b - b^3)*d^
3*e*f^2 + (4*a^2*b - b^3)*d^2*f^3)*x^2 + 3*((4*a^2*b - b^3)*d^3*e^2*f + 2*(
4*a^2*b - b^3)*d^2*e*f^2 + 2*(4*a^2*b - b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(
d*x + c))/(b^4*d^4*cosh(d*x + c)^3 + 3*b^4*d^4*cosh(d*x + c)^2*sinh(d*x + c
) + 3*b^4*d^4*cosh(d*x + c)*sinh(d*x + c)^2 + b^4*d^4*sinh(d*x + c)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)\sinh\left(dx+c\right)^{3}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)*sinh(d*x + c)^3/(b*sinh(d*x + c) + a),
x)
```

maple [F] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cosh\left(dx+c\right)\left(\sinh^{3}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^3*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")

[Out] -1/24*e^3*(24*(d*x + c)*a^3/(b^4*d) + 24*a^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^4*d) + (3*a*b*e^(-d*x - c) - b^2 - 3*(4*a^2 - b^2)*e^(-2*d*x - 2*c))*e^(3*d*x + 3*c)/(b^3*d) + (3*a*b*e^(-2*d*x - 2*c) + b^2*e^(-3*d*x - 3*c) + 3*(4*a^2 - b^2)*e^(-d*x - c))/(b^3*d)) - 1/864*(216*a^3*d^4*f^3*x^4*e^(3*c) + 864*a^3*d^4*e*f^2*x^3*e^(3*c) + 1296*a^3*d^4*e^2*f*x^2*e^(3*c) - 4*(9*b^3*d^3*f^3*x^3*e^(6*c) + 9*(3*d^3*e*f^2 - d^2*f^3)*b^3*x^2*e^(6*c) + 3*(9*d^3*e^2*f - 6*d^2*e*f^2 + 2*d*f^3)*b^3*x*e^(6*c) - (9*d^2*e^2*f - 6*d*e*f^2 + 2*f^3)*b^3*e^(6*c))*e^(3*d*x) + 27*(4*a*b^2*d^3*f^3*x^3*e^(5*c) + 6*(2*d^3*e*f^2 - d^2*f^3)*a*b^2*x^2*e^(5*c) + 6*(2*d^3*e^2*f - 2*d^2*e*f^2 + d*f^3)*a*b^2*x*e^(5*c) - 3*(2*d^2*e^2*f - 2*d*e*f^2 + f^3)*a*b^2*e^(5*c))*e^(2*d*x) + 108*(12*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a^2*b*e^(4*c) - 3*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*b^3*e^(4*c) - (4*a^2*b*d^3*f^3*e^(4*c) - b^3*d^3*f^3*e^(4*c))*x^3 - 3*(4*(d^3*e*f^2 - d^2*f^3)*a^2*b*e^(4*c) - (d^3*e*f^2 - d^2*f^3)*b^3*e^(4*c))*x^2 - 3*(4*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*a^2*b*e^(4*c) - (d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*b^3*e^(4*c))*x)*e^(d*x) + 108*(12*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a^2*b*e^(2*c) - 3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*b^3*e^(2*c) + (4*a^2*b*d^3*f^3*e^(2*c) - b^3*d^3*f^3*e^(2*c))*x^3 + 3*(4*(d^3*e*f^2 + d^2*f^3)*a^2*b*e^(2*c) - (d^3*e*f^2 + d^2*f^3)*b^3*e^(2*c))*x^2 + 3*(4*(d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*a^2*b*e^(2*c) - (d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*b^3*e^(2*c))*x)*e^(-d*x) + 27*(4*a*b^2*d^3*f^3*x^3*e^c + 6*(2*d^3*e*f^2 + d^2*f^3)*a*b^2*x^2*e^c + 6*(2*d^3*e^2*f + 2*d^2*e*f^2 + d*f^3)*a*b^2*x*e^c + 3*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)*a*b^2*e^c)*e^(-2*d*x) + 4*(9*b^3*d^3*f^3*x^3 + 9*(3*d^3*e*f^2 + d^2*f^3)*b^3*x^2 + 3*(9*d^3*e^2*f + 6*d^2*e*f^2 + 2*d*f^3)*b^3*x + (9*d^2*e^2*f + 6*d*e*f^2 + 2*f^3)*b^3)*e^(-3*d*x))*e^(-3*c)/(b^4*d^4) + integrate(-2*(a^3*b*f^3*x^3 + 3*a^3*b*e*f^2*x^2 + 3*a^3*b*e^2*f*x - (a^4*f^3*x^3*e^c + 3*a^4*e*f^2*x^2*e^c + 3*a^4*e^2*f*x*e^c)*e^(d*x))/(b^5*e^(2*d*x + 2*c) + 2*a*b^4*e^(d*x + c) - b^5), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)\,\sinh(c+d\,x)^3\,{\left(e+f\,x\right)}^3}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((cosh(c + d*x)*sinh(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)

[Out] int((cosh(c + d*x)*sinh(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)

<u>**sympy**</u> **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

$$\text{Timed out}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.392 $\int \frac{(e+fx)^2 \cosh(c+dx) \sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=578

$$\frac{a^3(e+fx)^3}{3b^4f}+\frac{2a^2f^2\sinh(c+dx)}{b^3d^3}-\frac{2a^2f(e+fx)\cosh(c+dx)}{b^3d^2}+\frac{a^2(e+fx)^2\sinh(c+dx)}{b^3d}+\frac{2a^3f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^3}+$$

```
[Out] -1/2*a*e*f*x/b^2/d-1/4*a*f^2*x^2/b^2/d+1/3*a^3*(f*x+e)^3/b^4/f-2*a^2*f*(f*x
+e)*cosh(d*x+c)/b^3/d^2+4/9*f*(f*x+e)*cosh(d*x+c)/b/d^2-a^3*(f*x+e)^2*ln(1+
b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d-a^3*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))/b^4/d-2*a^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2
)^(1/2)))/b^4/d^2-2*a^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2
)))/b^4/d^2+2*a^3*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d^3+
2*a^3*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d^3+2*a^2*f^2*si
nh(d*x+c)/b^3/d^3-4/9*f^2*sinh(d*x+c)/b/d^3+a^2*(f*x+e)^2*sinh(d*x+c)/b^3/d
+1/2*a*f*(f*x+e)*cosh(d*x+c)*sinh(d*x+c)/b^2/d^2-1/4*a*f^2*sinh(d*x+c)^2/b^
2/d^3-1/2*a*(f*x+e)^2*sinh(d*x+c)^2/b^2/d-2/9*f*(f*x+e)*cosh(d*x+c)*sinh(d*
x+c)^2/b/d^2+2/27*f^2*sinh(d*x+c)^3/b/d^3+1/3*(f*x+e)^2*sinh(d*x+c)^3/b/d
```

Rubi [A] time = 0.93, antiderivative size = 578, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 10, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.294, Rules used = {5579, 5446, 3310, 3296, 2637, 5561, 2190, 2531, 2282, 6589}

$$-\frac{2a^3f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{2a^3f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^4d^2}+\frac{2a^3f^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^3}+$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a*e*f*x)/(2*b^2*d) - (a*f^2*x^2)/(4*b^2*d) + (a^3*(e + f*x)^3)/(3*b^4*f)
- (2*a^2*f*(e + f*x)*Cosh[c + d*x])/(b^3*d^2) + (4*f*(e + f*x)*Cosh[c + d*x
])/(9*b*d^2) - (a^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
])])/(b^4*d) - (a^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
])])/(b^4*d) - (2*a^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^
2 + b^2]))])/(b^4*d^2) - (2*a^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2]))])/(b^4*d^2) + (2*a^3*f^2*PolyLog[3, -((b*E^(c + d*x))/
(a - Sqrt[a^2 + b^2]))])/(b^4*d^3) + (2*a^3*f^2*PolyLog[3, -((b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2]))])/(b^4*d^3) + (2*a^2*f^2*Sinh[c + d*x])/(b^3*d^3)
- (4*f^2*Sinh[c + d*x])/(9*b*d^3) + (a^2*(e + f*x)^2*Sinh[c + d*x])/(b^3*d)
 + (a*f*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(2*b^2*d^2) - (a*f^2*Sinh[c
```

```
+ d*x]^2)/(4*b^2*d^3) - (a*(e + f*x)^2*Sinh[c + d*x]^2)/(2*b^2*d) - (2*f*(e
 + f*x)*Cosh[c + d*x]*Sinh[c + d*x]^2)/(9*b*d^2) + (2*f^2*Sinh[c + d*x]^3)/
(27*b*d^3) + ((e + f*x)^2*Sinh[c + d*x]^3)/(3*b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
```

```
]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int(e+fx)^2\cosh(c+dx)\sinh^2(c+dx)\,dx}{b} - \frac{a\int\frac{(e+fx)^2\cosh(c+dx)\sin}{a+b\sinh(c+dx}}{b}$$

$$= \frac{(e+fx)^2\sinh^3(c+dx)}{3bd} - \frac{a\int(e+fx)^2\cosh(c+dx)\sinh(c+dx)}{b^2}$$

$$= -\frac{a(e+fx)^2\sinh^2(c+dx)}{2b^2d} - \frac{2f(e+fx)\cosh(c+dx)\sinh^2(c+d}{9bd^2}$$

$$= \frac{a^3(e+fx)^3}{3b^4f} + \frac{4f(e+fx)\cosh(c+dx)}{9bd^2} + \frac{a^2(e+fx)^2\sinh(c+dx}{b^3d}$$

$$= -\frac{aefx}{2b^2d} - \frac{af^2x^2}{4b^2d} + \frac{a^3(e+fx)^3}{3b^4f} - \frac{2a^2f(e+fx)\cosh(c+dx)}{b^3d^2} + 4f$$

$$= -\frac{aefx}{2b^2d} - \frac{af^2x^2}{4b^2d} + \frac{a^3(e+fx)^3}{3b^4f} - \frac{2a^2f(e+fx)\cosh(c+dx)}{b^3d^2} + 4f$$

$$= -\frac{aefx}{2b^2d} - \frac{af^2x^2}{4b^2d} + \frac{a^3(e+fx)^3}{3b^4f} - \frac{2a^2f(e+fx)\cosh(c+dx)}{b^3d^2} + 4f$$

$$= -\frac{aefx}{2b^2d} - \frac{af^2x^2}{4b^2d} + \frac{a^3(e+fx)^3}{3b^4f} - \frac{2a^2f(e+fx)\cosh(c+dx)}{b^3d^2} + 4f$$

<u>Mathematica</u> [B] time = 13.68, size = 3510, normalized size = 6.07

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/12*(f^2*(2*a*x^3*(-1 + Coth[c]) - 2*a*x^3*Coth[c] - (6*a*b^2*(d^2*x^2*Lo
g[1 + ((a - Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 2*d*x*Po
lyLog[2, ((-a + Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 2*Po
lyLog[3, ((-a + Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b]))/(Sqr
t[a^2 + b^2]*(-a + Sqrt[a^2 + b^2])*d^3) - (6*a*b^2*(d^2*x^2*Log[1 + ((a +
Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] - 2*d*x*PolyLog[2, ((a
 + Sqrt[a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b] - 2*PolyLog[3, ((a
```

```
 + Sqrt[a^2 + b^2])*(-Cosh[c + d*x] + Sinh[c + d*x]))/b]))/(Sqrt[a^2 + b^2]
*(a + Sqrt[a^2 + b^2])*d^3) + (6*a^2*(d^2*x^2*Log[1 + (b*(Cosh[c + d*x] + S
inh[c + d*x]))/(a - Sqrt[a^2 + b^2])] + 2*d*x*PolyLog[2, (b*(Cosh[c + d*x]
+ Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - 2*PolyLog[3, (b*(Cosh[c + d*x]
+ Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])]))/(Sqrt[a^2 + b^2]*d^3) - (6*a^2*
(d^2*x^2*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])]
 + 2*d*x*PolyLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b
^2]))] - 2*PolyLog[3, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 +
 b^2]))]))/(Sqrt[a^2 + b^2]*d^3) + (6*b*Cosh[d*x]*(-2*d*x*Cosh[c] + (2 + d^
2*x^2)*Sinh[c]))/d^3 + (6*b*((2 + d^2*x^2)*Cosh[c] - 2*d*x*Sinh[c])*Sinh[d*
x])/d^3))/b^2 + (e^2*((a*Log[a + b*Sinh[c + d*x]])/b^2 - Sinh[c + d*x]/b))/
(2*d) - (e*f*(-(b*Cosh[c + d*x]) - a*(-1/2*(c + d*x)^2 + (c + d*x)*Log[1 +
(b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + (c + d*x)*Log[1 + (b*E^(c + d*x))/
(a + Sqrt[a^2 + b^2])] - c*Log[a + b*Sinh[c + d*x]] + PolyLog[2, (b*E^(c +
d*x))/(-a + Sqrt[a^2 + b^2])] + PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2
+ b^2]))]) + b*d*x*Sinh[c + d*x]))/(b^2*d^2) + (e^2*(-3*a*(2*a^2 + b^2)*Log
[a + b*Sinh[c + d*x]] + 3*b*(2*a^2 + b^2)*Sinh[c + d*x] - 3*a*b^2*Sinh[c +
d*x]^2 + 2*b^3*Sinh[c + d*x]^3))/(6*b^4*d) + (e*f*(-18*b*(4*a^2 + b^2)*Cosh
[c + d*x] - 18*a*b^2*d*x*Cosh[2*(c + d*x)] - 2*b^3*Cosh[3*(c + d*x)] - 36*a
*(2*a^2 + b^2)*(-1/2*(c + d*x)^2 + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a - S
qrt[a^2 + b^2])] + (c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]
 - c*Log[a + b*Sinh[c + d*x]] + PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 +
 b^2])] + PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) + 18*b*(4*a
^2 + b^2)*d*x*Sinh[c + d*x] + 9*a*b^2*Sinh[2*(c + d*x)] + 6*b^3*d*x*Sinh[3*
(c + d*x)]))/(36*b^4*d^2) + (f^2*((2*a*(2*a^2 + b^2)*(-1 + Coth[c])*(2*x^3
+ (6*a*(d^2*x^2*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 +
 b^2])] + 2*d*x*PolyLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a
^2 + b^2])] - 2*PolyLog[3, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a
^2 + b^2])]))*Sinh[c]*(Cosh[c] + Sinh[c]))/(Sqrt[a^2 + b^2]*d^3) - (3*b^2*(d
^2*x^2*Log[1 + ((a - Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/b] -
 2*d*x*PolyLog[2, ((-a + Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/
b] - 2*PolyLog[3, ((-a + Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[c + d*x]))/
b])*(-1 + Cosh[2*c] + Sinh[2*c]))/(Sqrt[a^2 + b^2]*(-a + Sqrt[a^2 + b^2])*d
^3) - (3*b^2*(d^2*x^2*Log[1 + ((a + Sqrt[a^2 + b^2])*(Cosh[c + d*x] - Sinh[
c + d*x]))/b] - 2*d*x*PolyLog[2, ((a + Sqrt[a^2 + b^2])*(-Cosh[c + d*x] + S
inh[c + d*x]))/b] - 2*PolyLog[3, ((a + Sqrt[a^2 + b^2])*(-Cosh[c + d*x] + S
inh[c + d*x]))/b])*(-1 + Cosh[2*c] + Sinh[2*c]))/(Sqrt[a^2 + b^2]*(a + Sqrt
[a^2 + b^2])*d^3) - (3*a*(d^2*x^2*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]
))/(a + Sqrt[a^2 + b^2])] + 2*d*x*PolyLog[2, -((b*(Cosh[c + d*x] + Sinh[c +
 d*x]))/(a + Sqrt[a^2 + b^2]))] - 2*PolyLog[3, -((b*(Cosh[c + d*x] + Sinh[c
 + d*x]))/(a + Sqrt[a^2 + b^2]))])*(-1 + Cosh[2*c] + Sinh[2*c]))/(Sqrt[a^2
+ b^2]*d^3)))/(3*b^4) + Csch[c]*(Cosh[3*c + 3*d*x]/(108*b^4*d^3) - Sinh[3*c
 + 3*d*x]/(108*b^4*d^3))*(27*a*b^2*Cosh[d*x] + 54*a*b^2*d*x*Cosh[d*x] + 54*
a*b^2*d^2*x^2*Cosh[d*x] - 27*a*b^2*Cosh[2*c + d*x] - 54*a*b^2*d*x*Cosh[2*c
+ d*x] - 54*a*b^2*d^2*x^2*Cosh[2*c + d*x] + 432*a^2*b*Cosh[c + 2*d*x] + 108
```

```
*b^3*Cosh[c + 2*d*x] + 432*a^2*b*d*x*Cosh[c + 2*d*x] + 108*b^3*d*x*Cosh[c +
 2*d*x] + 216*a^2*b*d^2*x^2*Cosh[c + 2*d*x] + 54*b^3*d^2*x^2*Cosh[c + 2*d*x
] - 432*a^2*b*Cosh[3*c + 2*d*x] - 108*b^3*Cosh[3*c + 2*d*x] - 432*a^2*b*d*x
*Cosh[3*c + 2*d*x] - 108*b^3*d*x*Cosh[3*c + 2*d*x] - 216*a^2*b*d^2*x^2*Cosh
[3*c + 2*d*x] - 54*b^3*d^2*x^2*Cosh[3*c + 2*d*x] - 144*a^3*d^3*x^3*Cosh[2*c
 + 3*d*x] - 72*a*b^2*d^3*x^3*Cosh[2*c + 3*d*x] - 144*a^3*d^3*x^3*Cosh[4*c +
 3*d*x] - 72*a*b^2*d^3*x^3*Cosh[4*c + 3*d*x] - 432*a^2*b*Cosh[3*c + 4*d*x]
- 108*b^3*Cosh[3*c + 4*d*x] + 432*a^2*b*d*x*Cosh[3*c + 4*d*x] + 108*b^3*d*x
*Cosh[3*c + 4*d*x] - 216*a^2*b*d^2*x^2*Cosh[3*c + 4*d*x] - 54*b^3*d^2*x^2*C
osh[3*c + 4*d*x] + 432*a^2*b*Cosh[5*c + 4*d*x] + 108*b^3*Cosh[5*c + 4*d*x]
- 432*a^2*b*d*x*Cosh[5*c + 4*d*x] - 108*b^3*d*x*Cosh[5*c + 4*d*x] + 216*a^2
*b*d^2*x^2*Cosh[5*c + 4*d*x] + 54*b^3*d^2*x^2*Cosh[5*c + 4*d*x] + 27*a*b^2*
Cosh[4*c + 5*d*x] - 54*a*b^2*d*x*Cosh[4*c + 5*d*x] + 54*a*b^2*d^2*x^2*Cosh[
4*c + 5*d*x] - 27*a*b^2*Cosh[6*c + 5*d*x] + 54*a*b^2*d*x*Cosh[6*c + 5*d*x]
- 54*a*b^2*d^2*x^2*Cosh[6*c + 5*d*x] - 4*b^3*Cosh[5*c + 6*d*x] + 12*b^3*d*x
*Cosh[5*c + 6*d*x] - 18*b^3*d^2*x^2*Cosh[5*c + 6*d*x] + 4*b^3*Cosh[7*c + 6*
d*x] - 12*b^3*d*x*Cosh[7*c + 6*d*x] + 18*b^3*d^2*x^2*Cosh[7*c + 6*d*x] - 8*
b^3*Sinh[c] - 24*b^3*d*x*Sinh[c] - 36*b^3*d^2*x^2*Sinh[c] + 27*a*b^2*Sinh[d
*x] + 54*a*b^2*d*x*Sinh[d*x] + 54*a*b^2*d^2*x^2*Sinh[d*x] - 27*a*b^2*Sinh[2
*c + d*x] - 54*a*b^2*d*x*Sinh[2*c + d*x] - 54*a*b^2*d^2*x^2*Sinh[2*c + d*x]
 + 432*a^2*b*Sinh[c + 2*d*x] + 108*b^3*Sinh[c + 2*d*x] + 432*a^2*b*d*x*Sinh
[c + 2*d*x] + 108*b^3*d*x*Sinh[c + 2*d*x] + 216*a^2*b*d^2*x^2*Sinh[c + 2*d*
x] + 54*b^3*d^2*x^2*Sinh[c + 2*d*x] - 432*a^2*b*Sinh[3*c + 2*d*x] - 108*b^3
*Sinh[3*c + 2*d*x] - 432*a^2*b*d*x*Sinh[3*c + 2*d*x] - 108*b^3*d*x*Sinh[3*c
 + 2*d*x] - 216*a^2*b*d^2*x^2*Sinh[3*c + 2*d*x] - 54*b^3*d^2*x^2*Sinh[3*c +
 2*d*x] - 144*a^3*d^3*x^3*Sinh[2*c + 3*d*x] - 72*a*b^2*d^3*x^3*Sinh[2*c + 3
*d*x] - 144*a^3*d^3*x^3*Sinh[4*c + 3*d*x] - 72*a*b^2*d^3*x^3*Sinh[4*c + 3*d
*x] - 432*a^2*b*Sinh[3*c + 4*d*x] - 108*b^3*Sinh[3*c + 4*d*x] + 432*a^2*b*d
*x*Sinh[3*c + 4*d*x] + 108*b^3*d*x*Sinh[3*c + 4*d*x] - 216*a^2*b*d^2*x^2*Si
nh[3*c + 4*d*x] - 54*b^3*d^2*x^2*Sinh[3*c + 4*d*x] + 432*a^2*b*Sinh[5*c + 4
*d*x] + 108*b^3*Sinh[5*c + 4*d*x] - 432*a^2*b*d*x*Sinh[5*c + 4*d*x] - 108*b
^3*d*x*Sinh[5*c + 4*d*x] + 216*a^2*b*d^2*x^2*Sinh[5*c + 4*d*x] + 54*b^3*d^2
*x^2*Sinh[5*c + 4*d*x] + 27*a*b^2*Sinh[4*c + 5*d*x] - 54*a*b^2*d*x*Sinh[4*c
 + 5*d*x] + 54*a*b^2*d^2*x^2*Sinh[4*c + 5*d*x] - 27*a*b^2*Sinh[6*c + 5*d*x]
 + 54*a*b^2*d*x*Sinh[6*c + 5*d*x] - 54*a*b^2*d^2*x^2*Sinh[6*c + 5*d*x] - 4*
b^3*Sinh[5*c + 6*d*x] + 12*b^3*d*x*Sinh[5*c + 6*d*x] - 18*b^3*d^2*x^2*Sinh[
5*c + 6*d*x] + 4*b^3*Sinh[7*c + 6*d*x] - 12*b^3*d*x*Sinh[7*c + 6*d*x] + 18*
b^3*d^2*x^2*Sinh[7*c + 6*d*x])))/8
```

fricas [C] time = 0.50, size = 4263, normalized size = 7.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
```

m="fricas")

```
[Out] -1/432*(18*b^3*d^2*f^2*x^2 + 18*b^3*d^2*e^2 - 2*(9*b^3*d^2*f^2*x^2 + 9*b^3*
d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d
*x + c)^6 - 2*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2
+ 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*sinh(d*x + c)^6 + 12*b^3*d*e*f + 27*(2*a
*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 - 2*a*b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2
*d^2*e*f - a*b^2*d*f^2)*x)*cosh(d*x + c)^5 + 3*(18*a*b^2*d^2*f^2*x^2 + 18*a
*b^2*d^2*e^2 - 18*a*b^2*d*e*f + 9*a*b^2*f^2 + 18*(2*a*b^2*d^2*e*f - a*b^2*d
*f^2)*x - 4*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 +
6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^5 + 4*b^3*f^2
 - 54*((4*a^2*b - b^3)*d^2*f^2*x^2 + (4*a^2*b - b^3)*d^2*e^2 - 2*(4*a^2*b -
 b^3)*d*e*f + 2*(4*a^2*b - b^3)*f^2 + 2*((4*a^2*b - b^3)*d^2*e*f - (4*a^2*b
 - b^3)*d*f^2)*x)*cosh(d*x + c)^4 - 3*(18*(4*a^2*b - b^3)*d^2*f^2*x^2 + 18*
(4*a^2*b - b^3)*d^2*e^2 - 36*(4*a^2*b - b^3)*d*e*f + 36*(4*a^2*b - b^3)*f^2
 + 10*(9*b^3*d^2*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b
^3*d^2*e*f - b^3*d*f^2)*x)*cosh(d*x + c)^2 + 36*((4*a^2*b - b^3)*d^2*e*f -
(4*a^2*b - b^3)*d*f^2)*x - 45*(2*a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 - 2*a*
b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f - a*b^2*d*f^2)*x)*cosh(d*x + c))
*sinh(d*x + c)^4 - 144*(a^3*d^3*f^2*x^3 + 3*a^3*d^3*e*f*x^2 + 3*a^3*d^3*e^2
*x + 6*a^3*c*d^2*e^2 - 6*a^3*c^2*d*e*f + 2*a^3*c^3*f^2)*cosh(d*x + c)^3 - 2
*(72*a^3*d^3*f^2*x^3 + 216*a^3*d^3*e*f*x^2 + 216*a^3*d^3*e^2*x + 432*a^3*c*
d^2*e^2 - 432*a^3*c^2*d*e*f + 144*a^3*c^3*f^2 + 20*(9*b^3*d^2*f^2*x^2 + 9*b
^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^3*d*f^2)*x)*cos
h(d*x + c)^3 - 135*(2*a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 - 2*a*b^2*d*e*f +
 a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f - a*b^2*d*f^2)*x)*cosh(d*x + c)^2 + 108*((4
*a^2*b - b^3)*d^2*f^2*x^2 + (4*a^2*b - b^3)*d^2*e^2 - 2*(4*a^2*b - b^3)*d*e
*f + 2*(4*a^2*b - b^3)*f^2 + 2*((4*a^2*b - b^3)*d^2*e*f - (4*a^2*b - b^3)*d
*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^3 + 54*((4*a^2*b - b^3)*d^2*f^2*x^2 +
 (4*a^2*b - b^3)*d^2*e^2 + 2*(4*a^2*b - b^3)*d*e*f + 2*(4*a^2*b - b^3)*f^2
+ 2*((4*a^2*b - b^3)*d^2*e*f + (4*a^2*b - b^3)*d*f^2)*x)*cosh(d*x + c)^2 +
6*(9*(4*a^2*b - b^3)*d^2*f^2*x^2 + 9*(4*a^2*b - b^3)*d^2*e^2 - 5*(9*b^3*d^2
*f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^3
*d*f^2)*x)*cosh(d*x + c)^4 + 18*(4*a^2*b - b^3)*d*e*f + 45*(2*a*b^2*d^2*f^2
*x^2 + 2*a*b^2*d^2*e^2 - 2*a*b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f - a
*b^2*d*f^2)*x)*cosh(d*x + c)^3 + 18*(4*a^2*b - b^3)*f^2 - 54*((4*a^2*b - b^
3)*d^2*f^2*x^2 + (4*a^2*b - b^3)*d^2*e^2 - 2*(4*a^2*b - b^3)*d*e*f + 2*(4*a
^2*b - b^3)*f^2 + 2*((4*a^2*b - b^3)*d^2*e*f - (4*a^2*b - b^3)*d*f^2)*x)*co
sh(d*x + c)^2 + 18*((4*a^2*b - b^3)*d^2*e*f + (4*a^2*b - b^3)*d*f^2)*x - 72
*(a^3*d^3*f^2*x^3 + 3*a^3*d^3*e*f*x^2 + 3*a^3*d^3*e^2*x + 6*a^3*c*d^2*e^2 -
 6*a^3*c^2*d*e*f + 2*a^3*c^3*f^2)*cosh(d*x + c))*sinh(d*x + c)^2 + 12*(3*b^
3*d^2*e*f + b^3*d*f^2)*x + 27*(2*a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e^2 + 2*a*
b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f + a*b^2*d*f^2)*x)*cosh(d*x + c)
+ 864*((a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^3 + 3*(a^3*d*f^2*x + a^3*d*e
*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x +
```

```
c)*sinh(d*x + c)^2 + (a^3*d*f^2*x + a^3*d*e*f)*sinh(d*x + c)^3)*dilog((a*co
sh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2) - b)/b + 1) + 864*((a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^3
 + 3*(a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d*f^2
*x + a^3*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3*d*f^2*x + a^3*d*e*f)*s
inh(d*x + c)^3)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
 + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 432*((a^3*d^2*e^2 -
 2*a^3*c*d*e*f + a^3*c^2*f^2)*cosh(d*x + c)^3 + 3*(a^3*d^2*e^2 - 2*a^3*c*d*
e*f + a^3*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d^2*e^2 - 2*a^3*c
*d*e*f + a^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3*d^2*e^2 - 2*a^3*
c*d*e*f + a^3*c^2*f^2)*sinh(d*x + c)^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*
x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 432*((a^3*d^2*e^2 - 2*a^3*c*d*e
*f + a^3*c^2*f^2)*cosh(d*x + c)^3 + 3*(a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^
2*f^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3
*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^
3*c^2*f^2)*sinh(d*x + c)^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b
*sqrt((a^2 + b^2)/b^2) + 2*a) + 432*((a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2
*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c)^3 + 3*(a^3*d^2*f^2*x^2 + 2*a^3*d^
2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a
^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x +
c)*sinh(d*x + c)^2 + (a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a
^3*c^2*f^2)*sinh(d*x + c)^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*c
osh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 432*((a^3*d
^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c)^3
 + 3*(a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh
(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*
d*e*f - a^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3*d^2*f^2*x^2 + 2*a
^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*sinh(d*x + c)^3)*log(-(a*cosh(d
*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
 b^2)/b^2) - b)/b) - 864*(a^3*f^2*cosh(d*x + c)^3 + 3*a^3*f^2*cosh(d*x + c)
^2*sinh(d*x + c) + 3*a^3*f^2*cosh(d*x + c)*sinh(d*x + c)^2 + a^3*f^2*sinh(d
*x + c)^3)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
 + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 864*(a^3*f^2*cosh(d*x + c)^
3 + 3*a^3*f^2*cosh(d*x + c)^2*sinh(d*x + c) + 3*a^3*f^2*cosh(d*x + c)*sinh(
d*x + c)^2 + a^3*f^2*sinh(d*x + c)^3)*polylog(3, (a*cosh(d*x + c) + a*sinh(
d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) +
3*(18*a*b^2*d^2*f^2*x^2 + 18*a*b^2*d^2*e^2 + 18*a*b^2*d*e*f - 4*(9*b^3*d^2*
f^2*x^2 + 9*b^3*d^2*e^2 - 6*b^3*d*e*f + 2*b^3*f^2 + 6*(3*b^3*d^2*e*f - b^3*
d*f^2)*x)*cosh(d*x + c)^5 + 9*a*b^2*f^2 + 45*(2*a*b^2*d^2*f^2*x^2 + 2*a*b^2
*d^2*e^2 - 2*a*b^2*d*e*f + a*b^2*f^2 + 2*(2*a*b^2*d^2*e*f - a*b^2*d*f^2)*x)
*cosh(d*x + c)^4 - 72*((4*a^2*b - b^3)*d^2*f^2*x^2 + (4*a^2*b - b^3)*d^2*e^
2 - 2*(4*a^2*b - b^3)*d*e*f + 2*(4*a^2*b - b^3)*f^2 + 2*((4*a^2*b - b^3)*d^
2*e*f - (4*a^2*b - b^3)*d*f^2)*x)*cosh(d*x + c)^3 - 144*(a^3*d^3*f^2*x^3 +
3*a^3*d^3*e*f*x^2 + 3*a^3*d^3*e^2*x + 6*a^3*c*d^2*e^2 - 6*a^3*c^2*d*e*f + 2
*a^3*c^3*f^2)*cosh(d*x + c)^2 + 18*(2*a*b^2*d^2*e*f + a*b^2*d*f^2)*x + 36*(
```

```
(4*a^2*b - b^3)*d^2*f^2*x^2 + (4*a^2*b - b^3)*d^2*e^2 + 2*(4*a^2*b - b^3)*d
*e*f + 2*(4*a^2*b - b^3)*f^2 + 2*((4*a^2*b - b^3)*d^2*e*f + (4*a^2*b - b^3)
*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^4*d^3*cosh(d*x + c)^3 + 3*b^4*d
^3*cosh(d*x + c)^2*sinh(d*x + c) + 3*b^4*d^3*cosh(d*x + c)*sinh(d*x + c)^2
+ b^4*d^3*sinh(d*x + c)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\cosh\left(dx+c\right)\sinh\left(dx+c\right)^{3}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)*sinh(d*x + c)^3/(b*sinh(d*x + c) + a),
x)
```

maple [F] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\cosh\left(dx+c\right)\left(\sinh^{3}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{24}\,e^{2}\left(\frac{24\,(dx+c)a^{3}}{b^{4}d}+\frac{24\,a^{3}\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{b^{4}d}+\frac{\left(3\,abe^{(-dx-c)}-b^{2}-3\left(4\,a^{2}-b^{2}\right)e^{(-2\,dx-2\,c)}\right)e^{(3}}{b^{3}d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/24*e^2*(24*(d*x + c)*a^3/(b^4*d) + 24*a^3*log(-2*a*e^(-d*x - c) + b*e^(-
2*d*x - 2*c) - b)/(b^4*d) + (3*a*b*e^(-d*x - c) - b^2 - 3*(4*a^2 - b^2)*e^(
-2*d*x - 2*c))*e^(3*d*x + 3*c)/(b^3*d) + (3*a*b*e^(-2*d*x - 2*c) + b^2*e^(-
3*d*x - 3*c) + 3*(4*a^2 - b^2)*e^(-d*x - c))/(b^3*d)) - 1/432*(144*a^3*d^3*
f^2*x^3*e^(3*c) + 432*a^3*d^3*e*f*x^2*e^(3*c) - 2*(9*b^3*d^2*f^2*x^2*e^(6*c
```

```
) + 6*(3*d^2*e*f - d*f^2)*b^3*x*e^(6*c) - 2*(3*d*e*f - f^2)*b^3*e^(6*c))*e^
(3*d*x) + 27*(2*a*b^2*d^2*f^2*x^2*e^(5*c) + 2*(2*d^2*e*f - d*f^2)*a*b^2*x*e
^(5*c) - (2*d*e*f - f^2)*a*b^2*e^(5*c))*e^(2*d*x) + 54*(8*(d*e*f - f^2)*a^2
*b*e^(4*c) - 2*(d*e*f - f^2)*b^3*e^(4*c) - (4*a^2*b*d^2*f^2*e^(4*c) - b^3*d
^2*f^2*e^(4*c))*x^2 - 2*(4*(d^2*e*f - d*f^2)*a^2*b*e^(4*c) - (d^2*e*f - d*f
^2)*b^3*e^(4*c))*x)*e^(d*x) + 54*(8*(d*e*f + f^2)*a^2*b*e^(2*c) - 2*(d*e*f
+ f^2)*b^3*e^(2*c) + (4*a^2*b*d^2*f^2*e^(2*c) - b^3*d^2*f^2*e^(2*c))*x^2 +
2*(4*(d^2*e*f + d*f^2)*a^2*b*e^(2*c) - (d^2*e*f + d*f^2)*b^3*e^(2*c))*x)*e^
(-d*x) + 27*(2*a*b^2*d^2*f^2*x^2*e^c + 2*(2*d^2*e*f + d*f^2)*a*b^2*x*e^c +
(2*d*e*f + f^2)*a*b^2*e^c)*e^(-2*d*x) + 2*(9*b^3*d^2*f^2*x^2 + 6*(3*d^2*e*f
 + d*f^2)*b^3*x + 2*(3*d*e*f + f^2)*b^3)*e^(-3*d*x))*e^(-3*c)/(b^4*d^3) + i
ntegrate(-2*(a^3*b*f^2*x^2 + 2*a^3*b*e*f*x - (a^4*f^2*x^2*e^c + 2*a^4*e*f*x
*e^c)*e^(d*x))/(b^5*e^(2*d*x + 2*c) + 2*a*b^4*e^(d*x + c) - b^5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)\,\sinh(c+d\,x)^3\,{\left(e+f\,x\right)}^2}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)*sinh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.393 $\int \frac{(e+fx)\cosh(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=348

$$\frac{a^3(e+fx)^2}{2b^4f}-\frac{a^2f\cosh(c+dx)}{b^3d^2}+\frac{a^2(e+fx)\sinh(c+dx)}{b^3d}-\frac{a^3f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{a^3f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{b^4d^2}-a^3(e+fx)\,\mathrm{l}$$

```
[Out] -1/4*a*f*x/b^2/d+1/2*a^3*(f*x+e)^2/b^4/f-a^2*f*cosh(d*x+c)/b^3/d^2+1/3*f*co
sh(d*x+c)/b/d^2-1/9*f*cosh(d*x+c)^3/b/d^2-a^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a-
(a^2+b^2)^(1/2)))/b^4/d-a^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/
b^4/d-a^3*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^4/d^2-a^3*f*poly
log(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^4/d^2+a^2*(f*x+e)*sinh(d*x+c)/b^
3/d+1/4*a*f*cosh(d*x+c)*sinh(d*x+c)/b^2/d^2-1/2*a*(f*x+e)*sinh(d*x+c)^2/b^2
/d+1/3*(f*x+e)*sinh(d*x+c)^3/b/d
```

Rubi [A] time = 0.53, antiderivative size = 348, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {5579, 5446, 2633, 2635, 8, 3296, 2638, 5561, 2190, 2279, 2391}

$$-\frac{a^3f\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^4d^2}-\frac{a^3f\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^4d^2}-\frac{a^2f\cosh(c+dx)}{b^3d^2}-\frac{a^3(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{b^4d}-\cdots$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a*f*x)/(4*b^2*d) + (a^3*(e + f*x)^2)/(2*b^4*f) - (a^2*f*Cosh[c + d*x])/(b
^3*d^2) + (f*Cosh[c + d*x])/(3*b*d^2) - (f*Cosh[c + d*x]^3)/(9*b*d^2) - (a^
3*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^4*d) - (a^3*
(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^4*d) - (a^3*f*
PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^4*d^2) - (a^3*f*Po
lyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^4*d^2) + (a^2*(e + f
*x)*Sinh[c + d*x])/(b^3*d) + (a*f*Cosh[c + d*x]*Sinh[c + d*x])/(4*b^2*d^2)
- (a*(e + f*x)*Sinh[c + d*x]^2)/(2*b^2*d) + ((e + f*x)*Sinh[c + d*x]^3)/(3*
b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
```

```
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh(c+dx)\sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\cosh(c+dx)\sinh^2(}{a+b\sinh(c+dx)}}{b}$$

$$= \frac{(e+fx)\sinh^3(c+dx)}{3bd} - \frac{a\int (e+fx)\cosh(c+dx)\sinh(c+dx)\,dx}{b^2}$$

$$= -\frac{a(e+fx)\sinh^2(c+dx)}{2b^2d} + \frac{(e+fx)\sinh^3(c+dx)}{3bd} + \frac{a^2\int (e+fx)}{}$$

$$= \frac{a^3(e+fx)^2}{2b^4f} + \frac{f\cosh(c+dx)}{3bd^2} - \frac{f\cosh^3(c+dx)}{9bd^2} + \frac{a^2(e+fx)\sinh}{b^3d}$$

$$= -\frac{afx}{4b^2d} + \frac{a^3(e+fx)^2}{2b^4f} - \frac{a^2f\cosh(c+dx)}{b^3d^2} + \frac{f\cosh(c+dx)}{3bd^2} - \frac{f\cosh}{}$$

$$= -\frac{afx}{4b^2d} + \frac{a^3(e+fx)^2}{2b^4f} - \frac{a^2f\cosh(c+dx)}{b^3d^2} + \frac{f\cosh(c+dx)}{3bd^2} - \frac{f\cosh}{}$$

$$= -\frac{afx}{4b^2d} + \frac{a^3(e+fx)^2}{2b^4f} - \frac{a^2f\cosh(c+dx)}{b^3d^2} + \frac{f\cosh(c+dx)}{3bd^2} - \frac{f\cosh}{}$$

Mathematica [A] time = 1.50, size = 447, normalized size = 1.28

$$-\frac{72a^3de\log(a+b\sinh(c+dx)) - 72a^3cf\log(a+b\sinh(c+dx)) - 36a^3c^2f - 72a^3cdfx - 36a^3d^2fx^2 - 72a^2ba}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x
]

[Out] -1/72*(-36*a^3*c^2*f - 72*a^3*c*d*f*x - 36*a^3*d^2*f*x^2 + 72*a^2*b*f*Cosh[
c + d*x] - 18*b^3*f*Cosh[c + d*x] + 18*a*b^2*d*f*x*Cosh[2*(c + d*x)] + 2*b^
3*f*Cosh[3*(c + d*x)] + 72*a^3*c*f*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
b^2])] + 72*a^3*d*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 72*a
^3*c*f*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 72*a^3*d*f*x*Log[1
+ (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 72*a^3*d*e*Log[a + b*Sinh[c + d*
x]] - 72*a^3*c*f*Log[a + b*Sinh[c + d*x]] + 72*a^3*f*PolyLog[2, (b*E^(c + d
*x))/(-a + Sqrt[a^2 + b^2])] + 72*a^3*f*PolyLog[2, -((b*E^(c + d*x))/(a + S
qrt[a^2 + b^2]))] - 72*a^2*b*d*e*Sinh[c + d*x] - 72*a^2*b*d*f*x*Sinh[c + d*
```

```
x] + 18*b^3*d*f*x*Sinh[c + d*x] + 36*a*b^2*d*e*Sinh[c + d*x]^2 - 24*b^3*d*e
*Sinh[c + d*x]^3 - 9*a*b^2*f*Sinh[2*(c + d*x)] - 6*b^3*d*f*x*Sinh[3*(c + d*
x)])/(b^4*d^2)
```

fricas [B] time = 0.52, size = 2129, normalized size = 6.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] 1/144*(2*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^6 + 2*(3*b^3*d*f*x
 + 3*b^3*d*e - b^3*f)*sinh(d*x + c)^6 - 6*b^3*d*f*x - 9*(2*a*b^2*d*f*x + 2*
a*b^2*d*e - a*b^2*f)*cosh(d*x + c)^5 - 3*(6*a*b^2*d*f*x + 6*a*b^2*d*e - 3*a
*b^2*f - 4*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c))*sinh(d*x + c)^5
 - 6*b^3*d*e + 18*((4*a^2*b - b^3)*d*f*x + (4*a^2*b - b^3)*d*e - (4*a^2*b -
 b^3)*f)*cosh(d*x + c)^4 + 3*(6*(4*a^2*b - b^3)*d*f*x + 6*(4*a^2*b - b^3)*d
*e + 10*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^2 - 6*(4*a^2*b - b^
3)*f - 15*(2*a*b^2*d*f*x + 2*a*b^2*d*e - a*b^2*f)*cosh(d*x + c))*sinh(d*x +
 c)^4 - 2*b^3*f + 72*(a^3*d^2*f*x^2 + 2*a^3*d^2*e*x + 4*a^3*c*d*e - 2*a^3*c
^2*f)*cosh(d*x + c)^3 + 2*(36*a^3*d^2*f*x^2 + 72*a^3*d^2*e*x + 144*a^3*c*d*
e - 72*a^3*c^2*f + 20*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^3 - 4
5*(2*a*b^2*d*f*x + 2*a*b^2*d*e - a*b^2*f)*cosh(d*x + c)^2 + 36*((4*a^2*b -
b^3)*d*f*x + (4*a^2*b - b^3)*d*e - (4*a^2*b - b^3)*f)*cosh(d*x + c))*sinh(d
*x + c)^3 - 18*((4*a^2*b - b^3)*d*f*x + (4*a^2*b - b^3)*d*e + (4*a^2*b - b^
3)*f)*cosh(d*x + c)^2 + 6*(5*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c
)^4 - 3*(4*a^2*b - b^3)*d*f*x - 15*(2*a*b^2*d*f*x + 2*a*b^2*d*e - a*b^2*f)*
cosh(d*x + c)^3 - 3*(4*a^2*b - b^3)*d*e + 18*((4*a^2*b - b^3)*d*f*x + (4*a^
2*b - b^3)*d*e - (4*a^2*b - b^3)*f)*cosh(d*x + c)^2 - 3*(4*a^2*b - b^3)*f +
 36*(a^3*d^2*f*x^2 + 2*a^3*d^2*e*x + 4*a^3*c*d*e - 2*a^3*c^2*f)*cosh(d*x +
c))*sinh(d*x + c)^2 - 9*(2*a*b^2*d*f*x + 2*a*b^2*d*e + a*b^2*f)*cosh(d*x +
c) - 144*(a^3*f*cosh(d*x + c)^3 + 3*a^3*f*cosh(d*x + c)^2*sinh(d*x + c) + 3
*a^3*f*cosh(d*x + c)*sinh(d*x + c)^2 + a^3*f*sinh(d*x + c)^3)*dilog((a*cosh
(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2) - b)/b + 1) - 144*(a^3*f*cosh(d*x + c)^3 + 3*a^3*f*cosh(d*x +
c)^2*sinh(d*x + c) + 3*a^3*f*cosh(d*x + c)*sinh(d*x + c)^2 + a^3*f*sinh(d*x
 + c)^3)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*si
nh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 144*((a^3*d*e - a^3*c*f)*c
osh(d*x + c)^3 + 3*(a^3*d*e - a^3*c*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a
^3*d*e - a^3*c*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3*d*e - a^3*c*f)*sinh(
d*x + c)^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2
)/b^2) + 2*a) - 144*((a^3*d*e - a^3*c*f)*cosh(d*x + c)^3 + 3*(a^3*d*e - a^3
*c*f)*cosh(d*x + c)^2*sinh(d*x + c) + 3*(a^3*d*e - a^3*c*f)*cosh(d*x + c)*s
inh(d*x + c)^2 + (a^3*d*e - a^3*c*f)*sinh(d*x + c)^3)*log(2*b*cosh(d*x + c)
```

```
 + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 144*((a^3*d*f*x +
 a^3*c*f)*cosh(d*x + c)^3 + 3*(a^3*d*f*x + a^3*c*f)*cosh(d*x + c)^2*sinh(d*
x + c) + 3*(a^3*d*f*x + a^3*c*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3*d*f*x
 + a^3*c*f)*sinh(d*x + c)^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*c
osh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 144*((a^3*d
*f*x + a^3*c*f)*cosh(d*x + c)^3 + 3*(a^3*d*f*x + a^3*c*f)*cosh(d*x + c)^2*s
inh(d*x + c) + 3*(a^3*d*f*x + a^3*c*f)*cosh(d*x + c)*sinh(d*x + c)^2 + (a^3
*d*f*x + a^3*c*f)*sinh(d*x + c)^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c)
- (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 3*(6*
a*b^2*d*f*x - 4*(3*b^3*d*f*x + 3*b^3*d*e - b^3*f)*cosh(d*x + c)^5 + 6*a*b^2
*d*e + 15*(2*a*b^2*d*f*x + 2*a*b^2*d*e - a*b^2*f)*cosh(d*x + c)^4 + 3*a*b^2
*f - 24*((4*a^2*b - b^3)*d*f*x + (4*a^2*b - b^3)*d*e - (4*a^2*b - b^3)*f)*c
osh(d*x + c)^3 - 72*(a^3*d^2*f*x^2 + 2*a^3*d^2*e*x + 4*a^3*c*d*e - 2*a^3*c^
2*f)*cosh(d*x + c)^2 + 12*((4*a^2*b - b^3)*d*f*x + (4*a^2*b - b^3)*d*e + (4
*a^2*b - b^3)*f)*cosh(d*x + c))*sinh(d*x + c))/(b^4*d^2*cosh(d*x + c)^3 + 3
*b^4*d^2*cosh(d*x + c)^2*sinh(d*x + c) + 3*b^4*d^2*cosh(d*x + c)*sinh(d*x +
 c)^2 + b^4*d^2*sinh(d*x + c)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\cosh\left(dx+c\right)\sinh\left(dx+c\right)^{3}}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)*sinh(d*x + c)^3/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.21, size = 671, normalized size = 1.93

$$\frac{a^{3}f\,x^{2}}{2b^{4}}-\frac{a^{3}ex}{b^{4}}+\frac{\left(3dfx+3de-f\right)\mathrm{e}^{3dx+3c}}{72b\,d^{2}}-\frac{a\left(2dfx+2de-f\right)\mathrm{e}^{2dx+2c}}{16b^{2}d^{2}}+\frac{\left(4a^{2}dfx-b^{2}dfx+4a^{2}de-b^{2}de-4a^{2}f\cdots\right.}{8b^{3}d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2*a^3*f*x^2/b^4-a^3*e*x/b^4+1/72*(3*d*f*x+3*d*e-f)/b/d^2*exp(3*d*x+3*c)-1
/16*a*(2*d*f*x+2*d*e-f)/b^2/d^2*exp(2*d*x+2*c)+1/8*(4*a^2*d*f*x-b^2*d*f*x+4
*a^2*d*e-b^2*d*e-4*a^2*f+b^2*f)/b^3/d^2*exp(d*x+c)-1/8*(4*a^2-b^2)*(d*f*x+d
*e+f)/b^3/d^2*exp(-d*x-c)-1/16*a*(2*d*f*x+2*d*e+f)/b^2/d^2*exp(-2*d*x-2*c)-
1/72*(3*d*f*x+3*d*e+f)/b/d^2*exp(-3*d*x-3*c)+1/d^2*a^3/b^4*f*c*ln(b*exp(2*d
*x+2*c)+2*a*exp(d*x+c)-b)-2/d^2*a^3/b^4*f*c*ln(exp(d*x+c))-1/d*a^3/b^4*e*ln
```

```
(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d*a^3/b^4*e*ln(exp(d*x+c))-1/d*a^3/b^
4*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a^3/
b^4*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a^3/
b^4*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*a^3/
b^4*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d^2*a^3/
b^4*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/d^2*a^3
/b^4*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+2/d*a^
3/b^4*f*c*x+1/d^2*a^3/b^4*f*c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{24}e\left(\frac{24\,(dx+c)a^3}{b^4d}+\frac{24\,a^3\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{b^4d}+\frac{\left(3\,abe^{(-dx-c)}-b^2-3\left(4\,a^2-b^2\right)e^{(-2\,dx-2\,c)}\right)e^{(3\,d}}{b^3d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/24*e*(24*(d*x + c)*a^3/(b^4*d) + 24*a^3*log(-2*a*e^(-d*x - c) + b*e^(-2*
d*x - 2*c) - b)/(b^4*d) + (3*a*b*e^(-d*x - c) - b^2 - 3*(4*a^2 - b^2)*e^(-2
*d*x - 2*c))*e^(3*d*x + 3*c)/(b^3*d) + (3*a*b*e^(-2*d*x - 2*c) + b^2*e^(-3*
d*x - 3*c) + 3*(4*a^2 - b^2)*e^(-d*x - c))/(b^3*d)) - 1/144*f*((72*a^3*d^2*
x^2*e^(3*c) - 2*(3*b^3*d*x*e^(6*c) - b^3*e^(6*c))*e^(3*d*x) + 9*(2*a*b^2*d*
x*e^(5*c) - a*b^2*e^(5*c))*e^(2*d*x) + 18*(4*a^2*b*e^(4*c) - b^3*e^(4*c) -
(4*a^2*b*d*e^(4*c) - b^3*d*e^(4*c))*x)*e^(d*x) + 18*(4*a^2*b*e^(2*c) - b^3*
e^(2*c) + (4*a^2*b*d*e^(2*c) - b^3*d*e^(2*c))*x)*e^(-d*x) + 9*(2*a*b^2*d*x*
e^c + a*b^2*e^c)*e^(-2*d*x) + 2*(3*b^3*d*x + b^3)*e^(-3*d*x))*e^(-3*c)/(b^4
*d^2) - 9*integrate(32*(a^4*x*e^(d*x + c) - a^3*b*x)/(b^5*e^(2*d*x + 2*c) +
 2*a*b^4*e^(d*x + c) - b^5), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)\,{\sinh\left(c+d\,x\right)}^3\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*sinh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.394 $\int \frac{\cosh(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=76

$$-\frac{a^3\log(a+b\sinh(c+dx))}{b^4d}+\frac{a^2\sinh(c+dx)}{b^3d}-\frac{a\sinh^2(c+dx)}{2b^2d}+\frac{\sinh^3(c+dx)}{3bd}$$

```
[Out] -a^3*ln(a+b*sinh(d*x+c))/b^4/d+a^2*sinh(d*x+c)/b^3/d-1/2*a*sinh(d*x+c)^2/b^
2/d+1/3*sinh(d*x+c)^3/b/d
```

Rubi [A] time = 0.10, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2833, 12, 43}

$$\frac{a^2\sinh(c+dx)}{b^3d}-\frac{a^3\log(a+b\sinh(c+dx))}{b^4d}-\frac{a\sinh^2(c+dx)}{2b^2d}+\frac{\sinh^3(c+dx)}{3bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a^3*Log[a + b*Sinh[c + d*x]])/(b^4*d)) + (a^2*Sinh[c + d*x])/(b^3*d) - (
a*Sinh[c + d*x]^2)/(2*b^2*d) + Sinh[c + d*x]^3/(3*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2833

```
Int[cos[(e_.) + (f_.)*(x_)]*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((
c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b*f), Sub
st[Int[(a + x)^m*(c + (d*x)/b)^n, x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b
, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{x^3}{b^3(a+x)}\,dx, x, b\sinh(c+dx)\right)}{bd}$$
$$= \frac{\text{Subst}\left(\int \frac{x^3}{a+x}\,dx, x, b\sinh(c+dx)\right)}{b^4d}$$
$$= \frac{\text{Subst}\left(\int \left(a^2-ax+x^2-\frac{a^3}{a+x}\right)dx, x, b\sinh(c+dx)\right)}{b^4d}$$
$$= -\frac{a^3\log(a+b\sinh(c+dx))}{b^4d} + \frac{a^2\sinh(c+dx)}{b^3d} - \frac{a\sinh^2(c+dx)}{2b^2d} + \frac{\sinh^3(c}{3b}$$

Mathematica [A] time = 0.12, size = 66, normalized size = 0.87

$$\frac{-6a^3\log(a+b\sinh(c+dx))+6a^2b\sinh(c+dx)-3ab^2\sinh^2(c+dx)+2b^3\sinh^3(c+dx)}{6b^4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-6*a^3*Log[a + b*Sinh[c + d*x]] + 6*a^2*b*Sinh[c + d*x] - 3*a*b^2*Sinh[c +
 d*x]^2 + 2*b^3*Sinh[c + d*x]^3)/(6*b^4*d)
```

fricas [B] time = 0.43, size = 602, normalized size = 7.92

$$b^3\cosh(dx+c)^6 + b^3\sinh(dx+c)^6 + 24a^3dx\cosh(dx+c)^3 - 3ab^2\cosh(dx+c)^5 + 3\left(2b^3\cosh(dx+c) - a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/24*(b^3*cosh(d*x + c)^6 + b^3*sinh(d*x + c)^6 + 24*a^3*d*x*cosh(d*x + c)^
3 - 3*a*b^2*cosh(d*x + c)^5 + 3*(2*b^3*cosh(d*x + c) - a*b^2)*sinh(d*x + c)
^5 + 3*(4*a^2*b - b^3)*cosh(d*x + c)^4 + 3*(5*b^3*cosh(d*x + c)^2 - 5*a*b^2
*cosh(d*x + c) + 4*a^2*b - b^3)*sinh(d*x + c)^4 - 3*a*b^2*cosh(d*x + c) + 2
*(10*b^3*cosh(d*x + c)^3 + 12*a^3*d*x - 15*a*b^2*cosh(d*x + c)^2 + 6*(4*a^2
*b - b^3)*cosh(d*x + c))*sinh(d*x + c)^3 - b^3 - 3*(4*a^2*b - b^3)*cosh(d*x
 + c)^2 + 3*(5*b^3*cosh(d*x + c)^4 + 24*a^3*d*x*cosh(d*x + c) - 10*a*b^2*co
sh(d*x + c)^3 - 4*a^2*b + b^3 + 6*(4*a^2*b - b^3)*cosh(d*x + c)^2)*sinh(d*x
```

```
 + c)^2 - 24*(a^3*cosh(d*x + c)^3 + 3*a^3*cosh(d*x + c)^2*sinh(d*x + c) + 3
*a^3*cosh(d*x + c)*sinh(d*x + c)^2 + a^3*sinh(d*x + c)^3)*log(2*(b*sinh(d*x
 + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) + 3*(2*b^3*cosh(d*x + c)^5 + 24
*a^3*d*x*cosh(d*x + c)^2 - 5*a*b^2*cosh(d*x + c)^4 + 4*(4*a^2*b - b^3)*cosh
(d*x + c)^3 - a*b^2 - 2*(4*a^2*b - b^3)*cosh(d*x + c))*sinh(d*x + c))/(b^4*
d*cosh(d*x + c)^3 + 3*b^4*d*cosh(d*x + c)^2*sinh(d*x + c) + 3*b^4*d*cosh(d*
x + c)*sinh(d*x + c)^2 + b^4*d*sinh(d*x + c)^3)
```

giac [A] time = 0.62, size = 117, normalized size = 1.54

$$-\frac{\frac{24\,a^3\log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{b^4}-\frac{b^2\left(e^{(dx+c)}-e^{(-dx-c)}\right)^3-3\,ab\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+12\,a^2\left(e^{(dx+c)}-e^{(-dx-c)}\right)}{b^3}}{24\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/24*(24*a^3*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/b^4 - (b^2*(e^
(d*x + c) - e^(-d*x - c))^3 - 3*a*b*(e^(d*x + c) - e^(-d*x - c))^2 + 12*a^2
*(e^(d*x + c) - e^(-d*x - c)))/b^3)/d
```

maple [A] time = 0.04, size = 73, normalized size = 0.96

$$-\frac{a^3\ln\left(a+b\sinh\left(dx+c\right)\right)}{b^4d}+\frac{a^2\sinh\left(dx+c\right)}{b^3d}-\frac{a\left(\sinh^2\left(dx+c\right)\right)}{2b^2d}+\frac{\sinh^3\left(dx+c\right)}{3bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] -a^3*ln(a+b*sinh(d*x+c))/b^4/d+a^2*sinh(d*x+c)/b^3/d-1/2*a*sinh(d*x+c)^2/b^
2/d+1/3*sinh(d*x+c)^3/b/d
```

maxima [B] time = 0.45, size = 171, normalized size = 2.25

$$-\frac{(dx+c)a^3}{b^4d}-\frac{a^3\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{b^4d}-\frac{\left(3\,abe^{(-dx-c)}-b^2-3\left(4\,a^2-b^2\right)e^{(-2\,dx-2\,c)}\right)e^{(3\,dx+3\,c)}}{24\,b^3d}-\frac{3\,abe^{(-2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -(d*x + c)*a^3/(b^4*d) - a^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b
)/(b^4*d) - 1/24*(3*a*b*e^(-d*x - c) - b^2 - 3*(4*a^2 - b^2)*e^(-2*d*x - 2*
c))*e^(3*d*x + 3*c)/(b^3*d) - 1/24*(3*a*b*e^(-2*d*x - 2*c) + b^2*e^(-3*d*x
- 3*c) + 3*(4*a^2 - b^2)*e^(-d*x - c))/(b^3*d)
```

mupad [B] time = 0.14, size = 63, normalized size = 0.83

$$-\frac{a^3\ \ln\left(a+b\sinh\left(c+d\,x\right)\right)-\frac{b^3\sinh\left(c+d\,x\right)^3}{3}+\frac{a\,b^2\sinh\left(c+d\,x\right)^2}{2}-a^2\,b\sinh\left(c+d\,x\right)}{b^4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] -(a^3*log(a + b*sinh(c + d*x)) - (b^3*sinh(c + d*x)^3)/3 + (a*b^2*sinh(c +
d*x)^2)/2 - a^2*b*sinh(c + d*x))/(b^4*d)
```

sympy [A] time = 2.01, size = 105, normalized size = 1.38

$$\begin{cases} \frac{x\sinh^3\left(c\right)\cosh\left(c\right)}{a} & \text{for}\ b=0 \wedge d=0 \\ \frac{\sinh^4\left(c+dx\right)}{4ad} & \text{for}\ b=0 \\ \frac{x\sinh^3\left(c\right)\cosh\left(c\right)}{a+b\sinh\left(c\right)} & \text{for}\ d=0 \\ -\frac{a^3\log\left(\frac{a}{b}+\sinh\left(c+dx\right)\right)}{b^4d}+\frac{a^2\sinh\left(c+dx\right)}{b^3d}-\frac{a\cosh^2\left(c+dx\right)}{2b^2d}+\frac{\sinh^3\left(c+dx\right)}{3bd} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Piecewise((x*sinh(c)**3*cosh(c)/a, Eq(b, 0) & Eq(d, 0)), (sinh(c + d*x)**4/
(4*a*d), Eq(b, 0)), (x*sinh(c)**3*cosh(c)/(a + b*sinh(c)), Eq(d, 0)), (-a**
3*log(a/b + sinh(c + d*x))/(b**4*d) + a**2*sinh(c + d*x)/(b**3*d) - a*cosh(
c + d*x)**2/(2*b**2*d) + sinh(c + d*x)**3/(3*b*d), True))
```

3.395 $\int \frac{\cosh(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{\sinh^3(c+dx)\cosh(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]*Sinh[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]*Sinh[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\cosh(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]*Sinh[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)\sinh(dx+c)^3}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(cosh(d*x + c)*sinh(d*x + c)^3/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh\left(dx+c\right)\sinh\left(dx+c\right)^{3}}{\left(fx+e\right)\left(b\sinh\left(dx+c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate(cosh(d*x + c)*sinh(d*x + c)^3/((f*x + e)*(b*sinh(d*x + c) + a)),
x)
```

maple [A] time = 0.25, size = 0, normalized size = 0.00

$$\int \frac{\cosh\left(dx+c\right)\left(\sinh^{3}\left(dx+c\right)\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{e^{\left(-3\,c+\frac{3\,de}{f}\right)}E_1\left(\frac{3\left(fx+e\right)d}{f}\right)}{8\,bf}-\frac{ae^{\left(-2\,c+\frac{2\,de}{f}\right)}E_1\left(\frac{2\left(fx+e\right)d}{f}\right)}{4\,b^2f}+\frac{ae^{\left(2\,c-\frac{2\,de}{f}\right)}E_1\left(-\frac{2\left(fx+e\right)d}{f}\right)}{4\,b^2f}-\frac{e^{\left(3\,c-\frac{3\,de}{f}\right)}E_1\left(-\frac{3\left(fx+e\right)d}{f}\right)}{8\,bf}-\frac{\left(4\,a^2-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/8*e^(-3*c + 3*d*e/f)*exp_integral_e(1, 3*(f*x + e)*d/f)/(b*f) - 1/4*a*e^
(-2*c + 2*d*e/f)*exp_integral_e(1, 2*(f*x + e)*d/f)/(b^2*f) + 1/4*a*e^(2*c
- 2*d*e/f)*exp_integral_e(1, -2*(f*x + e)*d/f)/(b^2*f) - 1/8*e^(3*c - 3*d*e
```

```
/f)*exp_integral_e(1, -3*(f*x + e)*d/f)/(b*f) - 1/8*(4*a^2 - b^2)*e^(-c + d
*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b^3*f) - 1/8*(4*a^2*e^c - b^2*e^c)*
e^(-d*e/f)*exp_integral_e(1, -(f*x + e)*d/f)/(b^3*f) - a^3*log(f*x + e)/(b^
4*f) + 1/16*integrate(-32*(a^4*e^(d*x + c) - a^3*b)/(b^5*f*x + b^5*e - (b^5
*f*x*e^(2*c) + b^5*e*e^(2*c))*e^(2*d*x) - 2*(a*b^4*f*x*e^c + a*b^4*e*e^c)*e
^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh\left(c+d\,x\right)\,{\sinh\left(c+d\,x\right)}^3}{\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*sinh(c + d*x)^3)/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)*sinh(c + d*x)^3)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*sinh(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.396 $\int \frac{(e+fx)^3\cosh^2(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1038

$$-\frac{(e+fx)^4}{32bf}+\frac{a^2(e+fx)^4}{8b^3f}+\frac{a^4(e+fx)^4}{4b^5f}-\frac{a\cosh^3(c+dx)(e+fx)^3}{3b^2d}-\frac{a^3\cosh(c+dx)(e+fx)^3}{b^4d}-\frac{a^3\sqrt{a^2+b^2}\,\log\left(\right.}{}$$

```
[Out] -a^3*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^5/d
+a^3*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^5/d
-6*a^3*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^5
/d^4+6*a^3*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)
/b^5/d^4+3/8*a^2*f^3*x^2/b^3/d^2-3/8*a^2*f^3*cosh(d*x+c)^2/b^3/d^4-1/3*a*(f
*x+e)^3*cosh(d*x+c)^3/b^2/d-3/128*f*(f*x+e)^2*cosh(4*d*x+4*c)/b/d^2+6*a^3*f
^3*sinh(d*x+c)/b^4/d^4+2/27*a*f^3*sinh(d*x+c)^3/b^2/d^4+3/256*f^2*(f*x+e)*s
inh(4*d*x+4*c)/b/d^3+3*a^3*f*(f*x+e)^2*sinh(d*x+c)/b^4/d^2+1/2*a^2*(f*x+e)^
3*cosh(d*x+c)*sinh(d*x+c)/b^3/d+3/4*a^2*e*f^2*x/b^3/d^2-6*a^3*f^2*(f*x+e)*c
osh(d*x+c)/b^4/d^3-3/4*a^2*f*(f*x+e)^2*cosh(d*x+c)^2/b^3/d^2-2/9*a*f^2*(f*x
+e)*cosh(d*x+c)^3/b^2/d^3+3/4*a^2*f^2*(f*x+e)*cosh(d*x+c)*sinh(d*x+c)/b^3/d
^3+1/3*a*f*(f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)/b^2/d^2+1/4*a^4*(f*x+e)^4/b^
5/f-3/1024*f^3*cosh(4*d*x+4*c)/b/d^4+1/32*(f*x+e)^3*sinh(4*d*x+4*c)/b/d-4/3
*a*f^2*(f*x+e)*cosh(d*x+c)/b^2/d^3+2/3*a*f*(f*x+e)^2*sinh(d*x+c)/b^2/d^2-1/
32*(f*x+e)^4/b/f+14/9*a*f^3*sinh(d*x+c)/b^2/d^4+1/8*a^2*(f*x+e)^4/b^3/f-3*a
^3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)
/b^5/d^2+3*a^3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^
2+b^2)^(1/2)/b^5/d^2+6*a^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))*(a^2+b^2)^(1/2)/b^5/d^3-6*a^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/
(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^5/d^3-a^3*(f*x+e)^3*cosh(d*x+c)/b^4/
d
```

Rubi [A] time = 1.83, antiderivative size = 1038, normalized size of antiderivative = 1.00, number of steps used = 38, number of rules used = 18, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5579, 5448, 3296, 2638, 5447, 3311, 2637, 2633, 32, 3310, 5565, 3322, 2264, 2190, 2531, 6609, 2282, 6589}

$$-\frac{(e+fx)^4}{32bf}+\frac{a^2(e+fx)^4}{8b^3f}+\frac{a^4(e+fx)^4}{4b^5f}-\frac{a\cosh^3(c+dx)(e+fx)^3}{3b^2d}-\frac{a^3\cosh(c+dx)(e+fx)^3}{b^4d}-\frac{a^3\sqrt{a^2+b^2}\,\log\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]^2*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (3*a^2*e*f^2*x)/(4*b^3*d^2) + (3*a^2*f^3*x^2)/(8*b^3*d^2) + (a^4*(e + f*x)^
4)/(4*b^5*f) + (a^2*(e + f*x)^4)/(8*b^3*f) - (e + f*x)^4/(32*b*f) - (6*a^3*
```

```
f^2*(e + f*x)*Cosh[c + d*x])/(b^4*d^3) - (4*a*f^2*(e + f*x)*Cosh[c + d*x])/
(3*b^2*d^3) - (a^3*(e + f*x)^3*Cosh[c + d*x])/(b^4*d) - (3*a^2*f^3*Cosh[c +
 d*x]^2)/(8*b^3*d^4) - (3*a^2*f*(e + f*x)^2*Cosh[c + d*x]^2)/(4*b^3*d^2) -
(2*a*f^2*(e + f*x)*Cosh[c + d*x]^3)/(9*b^2*d^3) - (a*(e + f*x)^3*Cosh[c + d
*x]^3)/(3*b^2*d) - (3*f^3*Cosh[4*c + 4*d*x])/(1024*b*d^4) - (3*f*(e + f*x)^
2*Cosh[4*c + 4*d*x])/(128*b*d^2) - (a^3*Sqrt[a^2 + b^2]*(e + f*x)^3*Log[1 +
 (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^5*d) + (a^3*Sqrt[a^2 + b^2]*(e
+ f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^5*d) - (3*a^3*S
qrt[a^2 + b^2]*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b
^2]))])/(b^5*d^2) + (3*a^3*Sqrt[a^2 + b^2]*f*(e + f*x)^2*PolyLog[2, -((b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^5*d^2) + (6*a^3*Sqrt[a^2 + b^2]*f^2*
(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^5*d^3) -
 (6*a^3*Sqrt[a^2 + b^2]*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqr
t[a^2 + b^2]))])/(b^5*d^3) - (6*a^3*Sqrt[a^2 + b^2]*f^3*PolyLog[4, -((b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^5*d^4) + (6*a^3*Sqrt[a^2 + b^2]*f^3*P
olyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^5*d^4) + (6*a^3*f^3
*Sinh[c + d*x])/(b^4*d^4) + (14*a*f^3*Sinh[c + d*x])/(9*b^2*d^4) + (3*a^3*f
*(e + f*x)^2*Sinh[c + d*x])/(b^4*d^2) + (2*a*f*(e + f*x)^2*Sinh[c + d*x])/(
3*b^2*d^2) + (3*a^2*f^2*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(4*b^3*d^3)
+ (a^2*(e + f*x)^3*Cosh[c + d*x]*Sinh[c + d*x])/(2*b^3*d) + (a*f*(e + f*x)^
2*Cosh[c + d*x]^2*Sinh[c + d*x])/(3*b^2*d^2) + (2*a*f^3*Sinh[c + d*x]^3)/(2
7*b^2*d^4) + (3*f^2*(e + f*x)*Sinh[4*c + 4*d*x])/(256*b*d^3) + ((e + f*x)^3
*Sinh[4*c + 4*d*x])/(32*b*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
```

```
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5448

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sinh[a +
b*x]^n*Cosh[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] &
& IGtQ[p, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
```

```
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh^2(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\cosh^2(c+dx)\sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\cosh^2(c+dx)\,\mathrm{s}}{a+b\sinh(c+}}{b}$$

$$= -\frac{a\int (e+fx)^3\cosh^2(c+dx)\sinh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^3\cosh^2(c+}{a+b\sinh}}{b^2}$$

$$= -\frac{(e+fx)^4}{32bf} - \frac{a(e+fx)^3\cosh^3(c+dx)}{3b^2d} + \frac{a^2\int (e+fx)^3\cosh^2(c+}{b^3}$$

$$= -\frac{(e+fx)^4}{32bf} - \frac{3a^2f(e+fx)^2\cosh^2(c+dx)}{4b^3d^2} - \frac{2af^2(e+fx)\cosh^3(}{9b^2d^3}$$

$$= \frac{a^4(e+fx)^4}{4b^5f} + \frac{a^2(e+fx)^4}{8b^3f} - \frac{(e+fx)^4}{32bf} - \frac{a^3(e+fx)^3\cosh(c+dx)}{b^4d}$$

$$= \frac{3a^2ef^2x}{4b^3d^2} + \frac{3a^2f^3x^2}{8b^3d^2} + \frac{a^4(e+fx)^4}{4b^5f} + \frac{a^2(e+fx)^4}{8b^3f} - \frac{(e+fx)^4}{32bf} - \frac{4}{}$$

$$= \frac{3a^2ef^2x}{4b^3d^2} + \frac{3a^2f^3x^2}{8b^3d^2} + \frac{a^4(e+fx)^4}{4b^5f} + \frac{a^2(e+fx)^4}{8b^3f} - \frac{(e+fx)^4}{32bf} - \frac{6}{}$$

$$= \frac{3a^2ef^2x}{4b^3d^2} + \frac{3a^2f^3x^2}{8b^3d^2} + \frac{a^4(e+fx)^4}{4b^5f} + \frac{a^2(e+fx)^4}{8b^3f} - \frac{(e+fx)^4}{32bf} - \frac{6}{}$$

$$= \frac{3a^2ef^2x}{4b^3d^2} + \frac{3a^2f^3x^2}{8b^3d^2} + \frac{a^4(e+fx)^4}{4b^5f} + \frac{a^2(e+fx)^4}{8b^3f} - \frac{(e+fx)^4}{32bf} - \frac{6}{}$$

$$= \frac{3a^2ef^2x}{4b^3d^2} + \frac{3a^2f^3x^2}{8b^3d^2} + \frac{a^4(e+fx)^4}{4b^5f} + \frac{a^2(e+fx)^4}{8b^3f} - \frac{(e+fx)^4}{32bf} - \frac{6}{}$$

$$= \frac{3a^2ef^2x}{4b^3d^2} + \frac{3a^2f^3x^2}{8b^3d^2} + \frac{a^4(e+fx)^4}{4b^5f} + \frac{a^2(e+fx)^4}{8b^3f} - \frac{(e+fx)^4}{32bf} - \frac{6}{}$$

Mathematica [C] time = 26.94, size = 7058, normalized size = 6.80

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^2*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x
]),x]
```

```
[Out] Result too large to show
```

fricas [C] time = 0.67, size = 10658, normalized size = 10.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="fricas")
```

```
[Out] -1/55296*(864*b^4*d^3*f^3*x^3 + 864*b^4*d^3*e^3 + 648*b^4*d^2*e^2*f - 27*(3
2*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*
b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*
b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^8 - 27*(32*b^4*d^3*f^3*x^3 + 32
*b^4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^
3*e*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*
f^3)*x)*sinh(d*x + c)^8 + 324*b^4*d*e*f^2 + 256*(9*a*b^3*d^3*f^3*x^3 + 9*a*
b^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f + 6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^
3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2
 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c)^7 + 8*(288*a*b^3*d^3*f^3*x^3 + 288*a*b^3
*d^3*e^3 - 288*a*b^3*d^2*e^2*f + 192*a*b^3*d*e*f^2 - 64*a*b^3*f^3 + 288*(3*
a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 96*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*
e*f^2 + 2*a*b^3*d*f^3)*x - 27*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4
*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3
)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)
)*sinh(d*x + c)^7 + 81*b^4*f^3 - 1728*(4*a^2*b^2*d^3*f^3*x^3 + 4*a^2*b^2*d^
3*e^3 - 6*a^2*b^2*d^2*e^2*f + 6*a^2*b^2*d*e*f^2 - 3*a^2*b^2*f^3 + 6*(2*a^2*
b^2*d^3*e*f^2 - a^2*b^2*d^2*f^3)*x^2 + 6*(2*a^2*b^2*d^3*e^2*f - 2*a^2*b^2*d
^2*e*f^2 + a^2*b^2*d*f^3)*x)*cosh(d*x + c)^6 - 4*(1728*a^2*b^2*d^3*f^3*x^3
+ 1728*a^2*b^2*d^3*e^3 - 2592*a^2*b^2*d^2*e^2*f + 2592*a^2*b^2*d*e*f^2 - 12
96*a^2*b^2*f^3 + 2592*(2*a^2*b^2*d^3*e*f^2 - a^2*b^2*d^2*f^3)*x^2 + 189*(32
*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b
^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b
^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^2 + 2592*(2*a^2*b^2*d^3*e^2*f -
2*a^2*b^2*d^2*e*f^2 + a^2*b^2*d*f^3)*x - 448*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3
*d^3*e^3 - 9*a*b^3*d^2*e^2*f + 6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d
^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 +
2*a*b^3*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^6 + 6912*((4*a^3*b + a*b^3)*
d^3*f^3*x^3 + (4*a^3*b + a*b^3)*d^3*e^3 - 3*(4*a^3*b + a*b^3)*d^2*e^2*f + 6
*(4*a^3*b + a*b^3)*d*e*f^2 - 6*(4*a^3*b + a*b^3)*f^3 + 3*((4*a^3*b + a*b^3)
*d^3*e*f^2 - (4*a^3*b + a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + a*b^3)*d^3*e^2*
f - 2*(4*a^3*b + a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + a*b^3)*d*f^3)*x)*cosh(d*x
```

+ c)^5 + 24*(288*(4*a^3*b + a*b^3)*d^3*f^3*x^3 + 288*(4*a^3*b + a*b^3)*d^3*
e^3 - 864*(4*a^3*b + a*b^3)*d^2*e^2*f + 1728*(4*a^3*b + a*b^3)*d*e*f^2 - 17
28*(4*a^3*b + a*b^3)*f^3 - 63*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4
*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3
)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)
^3 + 864*((4*a^3*b + a*b^3)*d^3*e*f^2 - (4*a^3*b + a*b^3)*d^2*f^3)*x^2 + 22
4*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f + 6*a*b^3*d*e*
f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 3*(9*a*b^3*
d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c)^2 + 864*((4
*a^3*b + a*b^3)*d^3*e^2*f - 2*(4*a^3*b + a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + a*
b^3)*d*f^3)*x - 432*(4*a^2*b^2*d^3*f^3*x^3 + 4*a^2*b^2*d^3*e^3 - 6*a^2*b^2*
d^2*e^2*f + 6*a^2*b^2*d*e*f^2 - 3*a^2*b^2*f^3 + 6*(2*a^2*b^2*d^3*e*f^2 - a^
2*b^2*d^2*f^3)*x^2 + 6*(2*a^2*b^2*d^3*e^2*f - 2*a^2*b^2*d^2*e*f^2 + a^2*b^2
*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c)^5 - 1728*((8*a^4 + 4*a^2*b^2 - b^4)
*d^4*f^3*x^4 + 4*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*e*f^2*x^3 + 6*(8*a^4 + 4*a^2
*b^2 - b^4)*d^4*e^2*f*x^2 + 4*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*e^3*x)*cosh(d*x
 + c)^4 - 2*(864*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*f^3*x^4 + 3456*(8*a^4 + 4*a^
2*b^2 - b^4)*d^4*e*f^2*x^3 + 5184*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*e^2*f*x^2 +
 3456*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*e^3*x + 945*(32*b^4*d^3*f^3*x^3 + 32*b^
4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e
*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3
)*x)*cosh(d*x + c)^4 - 4480*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^
3*d^2*e^2*f + 6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*
d^2*f^3)*x^2 + 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)
*cosh(d*x + c)^3 + 12960*(4*a^2*b^2*d^3*f^3*x^3 + 4*a^2*b^2*d^3*e^3 - 6*a^2
*b^2*d^2*e^2*f + 6*a^2*b^2*d*e*f^2 - 3*a^2*b^2*f^3 + 6*(2*a^2*b^2*d^3*e*f^2
 - a^2*b^2*d^2*f^3)*x^2 + 6*(2*a^2*b^2*d^3*e^2*f - 2*a^2*b^2*d^2*e*f^2 + a^
2*b^2*d*f^3)*x)*cosh(d*x + c)^2 - 17280*((4*a^3*b + a*b^3)*d^3*f^3*x^3 + (4
*a^3*b + a*b^3)*d^3*e^3 - 3*(4*a^3*b + a*b^3)*d^2*e^2*f + 6*(4*a^3*b + a*b^
3)*d*e*f^2 - 6*(4*a^3*b + a*b^3)*f^3 + 3*((4*a^3*b + a*b^3)*d^3*e*f^2 - (4*
a^3*b + a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + a*b^3)*d^3*e^2*f - 2*(4*a^3*b +
 a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + a*b^3)*d*f^3)*x)*cosh(d*x + c))*sinh(d*x +
 c)^4 + 6912*((4*a^3*b + a*b^3)*d^3*f^3*x^3 + (4*a^3*b + a*b^3)*d^3*e^3 + 3
*(4*a^3*b + a*b^3)*d^2*e^2*f + 6*(4*a^3*b + a*b^3)*d*e*f^2 + 6*(4*a^3*b + a
*b^3)*f^3 + 3*((4*a^3*b + a*b^3)*d^3*e*f^2 + (4*a^3*b + a*b^3)*d^2*f^3)*x^2
 + 3*((4*a^3*b + a*b^3)*d^3*e^2*f + 2*(4*a^3*b + a*b^3)*d^2*e*f^2 + 2*(4*a^
3*b + a*b^3)*d*f^3)*x)*cosh(d*x + c)^3 + 8*(864*(4*a^3*b + a*b^3)*d^3*f^3*x
^3 + 864*(4*a^3*b + a*b^3)*d^3*e^3 + 2592*(4*a^3*b + a*b^3)*d^2*e^2*f - 189
*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*d^2*e^2*f + 12*b^4*d*e*f^2 -
 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)*x^2 + 12*(8*b^4*d^3*e^2*f -
 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^5 + 5184*(4*a^3*b + a*b^3)*d
*e*f^2 + 1120*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f +
6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 +
 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c)
^4 + 5184*(4*a^3*b + a*b^3)*f^3 - 4320*(4*a^2*b^2*d^3*f^3*x^3 + 4*a^2*b^2*d

```
^3*e^3 - 6*a^2*b^2*d^2*e^2*f + 6*a^2*b^2*d*e*f^2 - 3*a^2*b^2*f^3 + 6*(2*a^2
*b^2*d^3*e*f^2 - a^2*b^2*d^2*f^3)*x^2 + 6*(2*a^2*b^2*d^3*e^2*f - 2*a^2*b^2*
d^2*e*f^2 + a^2*b^2*d*f^3)*x)*cosh(d*x + c)^3 + 2592*((4*a^3*b + a*b^3)*d^3
*e*f^2 + (4*a^3*b + a*b^3)*d^2*f^3)*x^2 + 8640*((4*a^3*b + a*b^3)*d^3*f^3*x
^3 + (4*a^3*b + a*b^3)*d^3*e^3 - 3*(4*a^3*b + a*b^3)*d^2*e^2*f + 6*(4*a^3*b
 + a*b^3)*d*e*f^2 - 6*(4*a^3*b + a*b^3)*f^3 + 3*((4*a^3*b + a*b^3)*d^3*e*f^
2 - (4*a^3*b + a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + a*b^3)*d^3*e^2*f - 2*(4*
a^3*b + a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + a*b^3)*d*f^3)*x)*cosh(d*x + c)^2 +
2592*((4*a^3*b + a*b^3)*d^3*e^2*f + 2*(4*a^3*b + a*b^3)*d^2*e*f^2 + 2*(4*a^
3*b + a*b^3)*d*f^3)*x - 864*((8*a^4 + 4*a^2*b^2 - b^4)*d^4*f^3*x^4 + 4*(8*a
^4 + 4*a^2*b^2 - b^4)*d^4*e*f^2*x^3 + 6*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*e^2*f
*x^2 + 4*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*e^3*x)*cosh(d*x + c))*sinh(d*x + c)^
3 + 648*(4*b^4*d^3*e*f^2 + b^4*d^2*f^3)*x^2 + 1728*(4*a^2*b^2*d^3*f^3*x^3 +
 4*a^2*b^2*d^3*e^3 + 6*a^2*b^2*d^2*e^2*f + 6*a^2*b^2*d*e*f^2 + 3*a^2*b^2*f^
3 + 6*(2*a^2*b^2*d^3*e*f^2 + a^2*b^2*d^2*f^3)*x^2 + 6*(2*a^2*b^2*d^3*e^2*f
+ 2*a^2*b^2*d^2*e*f^2 + a^2*b^2*d*f^3)*x)*cosh(d*x + c)^2 + 12*(576*a^2*b^2
*d^3*f^3*x^3 + 576*a^2*b^2*d^3*e^3 + 864*a^2*b^2*d^2*e^2*f + 864*a^2*b^2*d*
e*f^2 + 432*a^2*b^2*f^3 - 63*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*
d^2*e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)
*x^2 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^
6 + 448*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^3*d^2*e^2*f + 6*a*b^
3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 3*(9*
a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x + c)^5 - 2
160*(4*a^2*b^2*d^3*f^3*x^3 + 4*a^2*b^2*d^3*e^3 - 6*a^2*b^2*d^2*e^2*f + 6*a^
2*b^2*d*e*f^2 - 3*a^2*b^2*f^3 + 6*(2*a^2*b^2*d^3*e*f^2 - a^2*b^2*d^2*f^3)*x
^2 + 6*(2*a^2*b^2*d^3*e^2*f - 2*a^2*b^2*d^2*e*f^2 + a^2*b^2*d*f^3)*x)*cosh(
d*x + c)^4 + 5760*((4*a^3*b + a*b^3)*d^3*f^3*x^3 + (4*a^3*b + a*b^3)*d^3*e^
3 - 3*(4*a^3*b + a*b^3)*d^2*e^2*f + 6*(4*a^3*b + a*b^3)*d*e*f^2 - 6*(4*a^3*
b + a*b^3)*f^3 + 3*((4*a^3*b + a*b^3)*d^3*e*f^2 - (4*a^3*b + a*b^3)*d^2*f^3
)*x^2 + 3*((4*a^3*b + a*b^3)*d^3*e^2*f - 2*(4*a^3*b + a*b^3)*d^2*e*f^2 + 2*
(4*a^3*b + a*b^3)*d*f^3)*x)*cosh(d*x + c)^3 + 864*(2*a^2*b^2*d^3*e*f^2 + a^
2*b^2*d^2*f^3)*x^2 - 864*((8*a^4 + 4*a^2*b^2 - b^4)*d^4*f^3*x^4 + 4*(8*a^4
+ 4*a^2*b^2 - b^4)*d^4*e*f^2*x^3 + 6*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*e^2*f*x^
2 + 4*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*e^3*x)*cosh(d*x + c)^2 + 864*(2*a^2*b^2
*d^3*e^2*f + 2*a^2*b^2*d^2*e*f^2 + a^2*b^2*d*f^3)*x + 1728*((4*a^3*b + a*b^
3)*d^3*f^3*x^3 + (4*a^3*b + a*b^3)*d^3*e^3 + 3*(4*a^3*b + a*b^3)*d^2*e^2*f
+ 6*(4*a^3*b + a*b^3)*d*e*f^2 + 6*(4*a^3*b + a*b^3)*f^3 + 3*((4*a^3*b + a*b
^3)*d^3*e*f^2 + (4*a^3*b + a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + a*b^3)*d^3*e
^2*f + 2*(4*a^3*b + a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + a*b^3)*d*f^3)*x)*cosh(d
*x + c))*sinh(d*x + c)^2 + 165888*((a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x
 + a^3*b*d^2*e^2*f)*cosh(d*x + c)^4 + 4*(a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*
f^2*x + a^3*b*d^2*e^2*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^3*b*d^2*f^3*x
^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*f)*cosh(d*x + c)^2*sinh(d*x + c)^2
 + 4*(a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*f)*cosh(d*x +
 c)*sinh(d*x + c)^3 + (a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*
```

e^2*f)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*si
nh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b
)/b + 1) - 165888*((a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2
*f)*cosh(d*x + c)^4 + 4*(a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^
2*e^2*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2
*e*f^2*x + a^3*b*d^2*e^2*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^3*b*d^2*
f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c
)^3 + (a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*f)*sinh(d*x
+ c)^4)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b
*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 55296
*((a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^
3)*cosh(d*x + c)^4 + 4*(a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d
*e*f^2 - a^3*b*c^3*f^3)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^3*b*d^3*e^3 -
3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*cosh(d*x + c)^2*
sinh(d*x + c)^2 + 4*(a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*
f^2 - a^3*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*b*d^3*e^3 - 3*a^3
*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*sinh(d*x + c)^4)*sqrt
((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2
 + b^2)/b^2) + 2*a) + 55296*((a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b
*c^2*d*e*f^2 - a^3*b*c^3*f^3)*cosh(d*x + c)^4 + 4*(a^3*b*d^3*e^3 - 3*a^3*b*
c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*cosh(d*x + c)^3*sinh(d*x
 + c) + 6*(a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*
b*c^3*f^3)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^3*b*d^3*e^3 - 3*a^3*b*c*d
^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)
^3 + (a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3
*f^3)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*si
nh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 55296*((a^3*b*d^3*f^3*x^3
+ 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3
*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)^4 + 4*(a^3*b*d^3*f^3*x^3 + 3*
a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*c
^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^3*b*d^3*f^
3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f -
 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(
a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c
*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x +
c)^3 + (a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3
*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*sinh(d*x + c)^4)*
sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x
 + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 55296*((a^3*b*d^3*
f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f
 - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)^4 + 4*(a^3*b*d^3*f^3*
x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3
*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^3*
b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2
*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)^2*sinh(d*x + c)

```
^2 + 4*(a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3
*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)*sin
h(d*x + c)^3 + (a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2
*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*sinh(d*x
+ c)^4)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 331776*(a^
3*b*f^3*cosh(d*x + c)^4 + 4*a^3*b*f^3*cosh(d*x + c)^3*sinh(d*x + c) + 6*a^3
*b*f^3*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*a^3*b*f^3*cosh(d*x + c)*sinh(d*x
 + c)^3 + a^3*b*f^3*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*co
sh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2))/b) - 331776*(a^3*b*f^3*cosh(d*x + c)^4 + 4*a^3*b*f^3*cosh(d
*x + c)^3*sinh(d*x + c) + 6*a^3*b*f^3*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*a
^3*b*f^3*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*b*f^3*sinh(d*x + c)^4)*sqrt((a
^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 331776*((a^3*b*d*f^3*x
+ a^3*b*d*e*f^2)*cosh(d*x + c)^4 + 4*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cosh(d
*x + c)^3*sinh(d*x + c) + 6*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cosh(d*x + c)^2
*sinh(d*x + c)^2 + 4*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cosh(d*x + c)*sinh(d*x
 + c)^3 + (a^3*b*d*f^3*x + a^3*b*d*e*f^2)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)
/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*
sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 331776*((a^3*b*d*f^3*x + a^3*b*d
*e*f^2)*cosh(d*x + c)^4 + 4*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cosh(d*x + c)^3
*sinh(d*x + c) + 6*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cosh(d*x + c)^2*sinh(d*x
 + c)^2 + 4*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 +
 (a^3*b*d*f^3*x + a^3*b*d*e*f^2)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*pol
ylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2))/b) + 324*(8*b^4*d^3*e^2*f + 4*b^4*d^2*e*f^2 +
b^4*d*f^3)*x + 256*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 + 9*a*b^3*d^2*e^2
*f + 6*a*b^3*d*e*f^2 + 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 + a*b^3*d^2*f^3)*
x^2 + 3*(9*a*b^3*d^3*e^2*f + 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x
 + c) + 8*(288*a*b^3*d^3*f^3*x^3 + 288*a*b^3*d^3*e^3 + 288*a*b^3*d^2*e^2*f
+ 192*a*b^3*d*e*f^2 - 27*(32*b^4*d^3*f^3*x^3 + 32*b^4*d^3*e^3 - 24*b^4*d^2*
e^2*f + 12*b^4*d*e*f^2 - 3*b^4*f^3 + 24*(4*b^4*d^3*e*f^2 - b^4*d^2*f^3)*x^2
 + 12*(8*b^4*d^3*e^2*f - 4*b^4*d^2*e*f^2 + b^4*d*f^3)*x)*cosh(d*x + c)^7 +
64*a*b^3*f^3 + 224*(9*a*b^3*d^3*f^3*x^3 + 9*a*b^3*d^3*e^3 - 9*a*b^3*d^2*e^2
*f + 6*a*b^3*d*e*f^2 - 2*a*b^3*f^3 + 9*(3*a*b^3*d^3*e*f^2 - a*b^3*d^2*f^3)*
x^2 + 3*(9*a*b^3*d^3*e^2*f - 6*a*b^3*d^2*e*f^2 + 2*a*b^3*d*f^3)*x)*cosh(d*x
 + c)^6 - 1296*(4*a^2*b^2*d^3*f^3*x^3 + 4*a^2*b^2*d^3*e^3 - 6*a^2*b^2*d^2*e
^2*f + 6*a^2*b^2*d*e*f^2 - 3*a^2*b^2*f^3 + 6*(2*a^2*b^2*d^3*e*f^2 - a^2*b^2
*d^2*f^3)*x^2 + 6*(2*a^2*b^2*d^3*e^2*f - 2*a^2*b^2*d^2*e*f^2 + a^2*b^2*d*f^
3)*x)*cosh(d*x + c)^5 + 4320*((4*a^3*b + a*b^3)*d^3*f^3*x^3 + (4*a^3*b + a*
b^3)*d^3*e^3 - 3*(4*a^3*b + a*b^3)*d^2*e^2*f + 6*(4*a^3*b + a*b^3)*d*e*f^2
- 6*(4*a^3*b + a*b^3)*f^3 + 3*((4*a^3*b + a*b^3)*d^3*e*f^2 - (4*a^3*b + a*b
^3)*d^2*f^3)*x^2 + 3*((4*a^3*b + a*b^3)*d^3*e^2*f - 2*(4*a^3*b + a*b^3)*d^2
*e*f^2 + 2*(4*a^3*b + a*b^3)*d*f^3)*x)*cosh(d*x + c)^4 - 864*((8*a^4 + 4*a^
```

```
2*b^2 - b^4)*d^4*f^3*x^4 + 4*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*e*f^2*x^3 + 6*(8
*a^4 + 4*a^2*b^2 - b^4)*d^4*e^2*f*x^2 + 4*(8*a^4 + 4*a^2*b^2 - b^4)*d^4*e^3
*x)*cosh(d*x + c)^3 + 288*(3*a*b^3*d^3*e*f^2 + a*b^3*d^2*f^3)*x^2 + 2592*((
4*a^3*b + a*b^3)*d^3*f^3*x^3 + (4*a^3*b + a*b^3)*d^3*e^3 + 3*(4*a^3*b + a*b
^3)*d^2*e^2*f + 6*(4*a^3*b + a*b^3)*d*e*f^2 + 6*(4*a^3*b + a*b^3)*f^3 + 3*(
(4*a^3*b + a*b^3)*d^3*e*f^2 + (4*a^3*b + a*b^3)*d^2*f^3)*x^2 + 3*((4*a^3*b
+ a*b^3)*d^3*e^2*f + 2*(4*a^3*b + a*b^3)*d^2*e*f^2 + 2*(4*a^3*b + a*b^3)*d*
f^3)*x)*cosh(d*x + c)^2 + 96*(9*a*b^3*d^3*e^2*f + 6*a*b^3*d^2*e*f^2 + 2*a*b
^3*d*f^3)*x + 432*(4*a^2*b^2*d^3*f^3*x^3 + 4*a^2*b^2*d^3*e^3 + 6*a^2*b^2*d^
2*e^2*f + 6*a^2*b^2*d*e*f^2 + 3*a^2*b^2*f^3 + 6*(2*a^2*b^2*d^3*e*f^2 + a^2*
b^2*d^2*f^3)*x^2 + 6*(2*a^2*b^2*d^3*e^2*f + 2*a^2*b^2*d^2*e*f^2 + a^2*b^2*d
*f^3)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^5*d^4*cosh(d*x + c)^4 + 4*b^5*d^4
*cosh(d*x + c)^3*sinh(d*x + c) + 6*b^5*d^4*cosh(d*x + c)^2*sinh(d*x + c)^2
+ 4*b^5*d^4*cosh(d*x + c)*sinh(d*x + c)^3 + b^5*d^4*sinh(d*x + c)^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \cosh\left(dx+c\right)^{2} \sinh\left(dx+c\right)^{3}}{b \sinh\left(dx+c\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)^2*sinh(d*x + c)^3/(b*sinh(d*x + c) + a)
, x)
```

maple [F] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\cosh^{2}\left(dx+c\right)\right) \left(\sinh^{3}\left(dx+c\right)\right)}{a+b \sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="maxima")
```

```
[Out] -1/192*e^3*(192*sqrt(a^2 + b^2)*a^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^
2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(b^5*d) + (8*a*b^2*e^(-d*x - c)
 - 24*a^2*b*e^(-2*d*x - 2*c) - 3*b^3 + 24*(4*a^3 + a*b^2)*e^(-3*d*x - 3*c))
*e^(4*d*x + 4*c)/(b^4*d) - 24*(8*a^4 + 4*a^2*b^2 - b^4)*(d*x + c)/(b^5*d) +
 (24*a^2*b*e^(-2*d*x - 2*c) + 8*a*b^2*e^(-3*d*x - 3*c) + 3*b^3*e^(-4*d*x -
4*c) + 24*(4*a^3 + a*b^2)*e^(-d*x - c))/(b^4*d)) + 1/55296*(1728*(8*a^4*d^4
*f^3*e^(4*c) + 4*a^2*b^2*d^4*f^3*e^(4*c) - b^4*d^4*f^3*e^(4*c))*x^4 + 6912*
(8*a^4*d^4*e*f^2*e^(4*c) + 4*a^2*b^2*d^4*e*f^2*e^(4*c) - b^4*d^4*e*f^2*e^(4
*c))*x^3 + 10368*(8*a^4*d^4*e^2*f*e^(4*c) + 4*a^2*b^2*d^4*e^2*f*e^(4*c) - b
^4*d^4*e^2*f*e^(4*c))*x^2 + 27*(32*b^4*d^3*f^3*x^3*e^(8*c) + 24*(4*d^3*e*f^
2 - d^2*f^3)*b^4*x^2*e^(8*c) + 12*(8*d^3*e^2*f - 4*d^2*e*f^2 + d*f^3)*b^4*x
*e^(8*c) - 3*(8*d^2*e^2*f - 4*d*e*f^2 + f^3)*b^4*e^(8*c))*e^(4*d*x) - 256*(
9*a*b^3*d^3*f^3*x^3*e^(7*c) + 9*(3*d^3*e*f^2 - d^2*f^3)*a*b^3*x^2*e^(7*c) +
 3*(9*d^3*e^2*f - 6*d^2*e*f^2 + 2*d*f^3)*a*b^3*x*e^(7*c) - (9*d^2*e^2*f - 6
*d*e*f^2 + 2*f^3)*a*b^3*e^(7*c))*e^(3*d*x) + 1728*(4*a^2*b^2*d^3*f^3*x^3*e^
(6*c) + 6*(2*d^3*e*f^2 - d^2*f^3)*a^2*b^2*x^2*e^(6*c) + 6*(2*d^3*e^2*f - 2*
d^2*e*f^2 + d*f^3)*a^2*b^2*x*e^(6*c) - 3*(2*d^2*e^2*f - 2*d*e*f^2 + f^3)*a^
2*b^2*e^(6*c))*e^(2*d*x) + 6912*(12*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a^3*b*e
^(5*c) + 3*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a*b^3*e^(5*c) - (4*a^3*b*d^3*f^3
*e^(5*c) + a*b^3*d^3*f^3*e^(5*c))*x^3 - 3*(4*(d^3*e*f^2 - d^2*f^3)*a^3*b*e^
(5*c) + (d^3*e*f^2 - d^2*f^3)*a*b^3*e^(5*c))*x^2 - 3*(4*(d^3*e^2*f - 2*d^2*
e*f^2 + 2*d*f^3)*a^3*b*e^(5*c) + (d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*a*b^3*
e^(5*c))*x)*e^(d*x) - 6912*(12*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a^3*b*e^(3*c
) + 3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a*b^3*e^(3*c) + (4*a^3*b*d^3*f^3*e^(3
*c) + a*b^3*d^3*f^3*e^(3*c))*x^3 + 3*(4*(d^3*e*f^2 + d^2*f^3)*a^3*b*e^(3*c)
 + (d^3*e*f^2 + d^2*f^3)*a*b^3*e^(3*c))*x^2 + 3*(4*(d^3*e^2*f + 2*d^2*e*f^2
 + 2*d*f^3)*a^3*b*e^(3*c) + (d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*a*b^3*e^(3*
c))*x)*e^(-d*x) - 1728*(4*a^2*b^2*d^3*f^3*x^3*e^(2*c) + 6*(2*d^3*e*f^2 + d^
2*f^3)*a^2*b^2*x^2*e^(2*c) + 6*(2*d^3*e^2*f + 2*d^2*e*f^2 + d*f^3)*a^2*b^2*
x*e^(2*c) + 3*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)*a^2*b^2*e^(2*c))*e^(-2*d*x) -
 256*(9*a*b^3*d^3*f^3*x^3*e^c + 9*(3*d^3*e*f^2 + d^2*f^3)*a*b^3*x^2*e^c + 3
*(9*d^3*e^2*f + 6*d^2*e*f^2 + 2*d*f^3)*a*b^3*x*e^c + (9*d^2*e^2*f + 6*d*e*f
^2 + 2*f^3)*a*b^3*e^c)*e^(-3*d*x) - 27*(32*b^4*d^3*f^3*x^3 + 24*(4*d^3*e*f^
2 + d^2*f^3)*b^4*x^2 + 12*(8*d^3*e^2*f + 4*d^2*e*f^2 + d*f^3)*b^4*x + 3*(8*
d^2*e^2*f + 4*d*e*f^2 + f^3)*b^4)*e^(-4*d*x))*e^(-4*c)/(b^5*d^4) - integrat
e(2*((a^5*f^3*e^c + a^3*b^2*f^3*e^c)*x^3 + 3*(a^5*e*f^2*e^c + a^3*b^2*e*f^2
*e^c)*x^2 + 3*(a^5*e^2*f*e^c + a^3*b^2*e^2*f*e^c)*x)*e^(d*x)/(b^6*e^(2*d*x
+ 2*c) + 2*a*b^5*e^(d*x + c) - b^6), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)^2\,\sinh(c+d\,x)^3\,\left(e+f\,x\right)^3}{a+b\,\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**2*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.397 $\int \frac{(e+fx)^2 \cosh^2(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=755

$$\frac{a^4(e+fx)^3}{3b^5f}-\frac{2a^3f^2\cosh(c+dx)}{b^4d^3}+\frac{2a^3f(e+fx)\sinh(c+dx)}{b^4d^2}-\frac{a^3(e+fx)^2\cosh(c+dx)}{b^4d}+\frac{a^2f^2\sinh(c+dx)\cos}{4b^3d^3}$$

```
[Out] 1/4*a^2*f^2*x/b^3/d^2+1/3*a^4*(f*x+e)^3/b^5/f+1/6*a^2*(f*x+e)^3/b^3/f-1/24*
(f*x+e)^3/b/f-2*a^3*f^2*cosh(d*x+c)/b^4/d^3-4/9*a*f^2*cosh(d*x+c)/b^2/d^3-a
^3*(f*x+e)^2*cosh(d*x+c)/b^4/d-1/2*a^2*f*(f*x+e)*cosh(d*x+c)^2/b^3/d^2-2/27
*a*f^2*cosh(d*x+c)^3/b^2/d^3-1/3*a*(f*x+e)^2*cosh(d*x+c)^3/b^2/d-1/64*f*(f*
x+e)*cosh(4*d*x+4*c)/b/d^2+2*a^3*f*(f*x+e)*sinh(d*x+c)/b^4/d^2+4/9*a*f*(f*x
+e)*sinh(d*x+c)/b^2/d^2+1/4*a^2*f^2*cosh(d*x+c)*sinh(d*x+c)/b^3/d^3+1/2*a^2
*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/b^3/d+2/9*a*f*(f*x+e)*cosh(d*x+c)^2*sinh
(d*x+c)/b^2/d^2+1/256*f^2*sinh(4*d*x+4*c)/b/d^3+1/32*(f*x+e)^2*sinh(4*d*x+4
*c)/b/d-a^3*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2
)/b^5/d+a^3*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2
)/b^5/d-2*a^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b
^2)^(1/2)/b^5/d^2+2*a^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2
)))*(a^2+b^2)^(1/2)/b^5/d^2+2*a^3*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^
(1/2)))*(a^2+b^2)^(1/2)/b^5/d^3-2*a^3*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b
^2)^(1/2)))*(a^2+b^2)^(1/2)/b^5/d^3
```

Rubi [A] time = 1.51, antiderivative size = 755, normalized size of antiderivative = 1.00, number of steps used = 31, number of rules used = 18, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5579, 5448, 3296, 2637, 5447, 3310, 2638, 3311, 32, 2635, 8, 5565, 3322, 2264, 2190, 2531, 2282, 6589}

$$-\frac{2a^3f\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^5d^2}+\frac{2a^3f\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^5d^2}+\frac{2a^3f^2\sqrt{a^2+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]^2*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*f^2*x)/(4*b^3*d^2) + (a^4*(e + f*x)^3)/(3*b^5*f) + (a^2*(e + f*x)^3)/(
6*b^3*f) - (e + f*x)^3/(24*b*f) - (2*a^3*f^2*Cosh[c + d*x])/(b^4*d^3) - (4*
a*f^2*Cosh[c + d*x])/(9*b^2*d^3) - (a^3*(e + f*x)^2*Cosh[c + d*x])/(b^4*d)
- (a^2*f*(e + f*x)*Cosh[c + d*x]^2)/(2*b^3*d^2) - (2*a*f^2*Cosh[c + d*x]^3)
/(27*b^2*d^3) - (a*(e + f*x)^2*Cosh[c + d*x]^3)/(3*b^2*d) - (f*(e + f*x)*Co
sh[4*c + 4*d*x])/(64*b*d^2) - (a^3*Sqrt[a^2 + b^2]*(e + f*x)^2*Log[1 + (b*E
^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^5*d) + (a^3*Sqrt[a^2 + b^2]*(e + f*x
```

```
)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]])/(b^5*d) - (2*a^3*Sqrt[a
^2 + b^2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])
/(b^5*d^2) + (2*a^3*Sqrt[a^2 + b^2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2]))])/(b^5*d^2) + (2*a^3*Sqrt[a^2 + b^2]*f^2*PolyLog[3
, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^5*d^3) - (2*a^3*Sqrt[a^2 +
b^2]*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^5*d^3) +
(2*a^3*f*(e + f*x)*Sinh[c + d*x])/(b^4*d^2) + (4*a*f*(e + f*x)*Sinh[c + d*x
])/(9*b^2*d^2) + (a^2*f^2*Cosh[c + d*x]*Sinh[c + d*x])/(4*b^3*d^3) + (a^2*(
e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x])/(2*b^3*d) + (2*a*f*(e + f*x)*Cosh[c
 + d*x]^2*Sinh[c + d*x])/(9*b^2*d^2) + (f^2*Sinh[4*c + 4*d*x])/(256*b*d^3)
+ ((e + f*x)^2*Sinh[4*c + 4*d*x])/(32*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
```

```
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5448

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sinh[a +
b*x]^n*Cosh[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] &
& IGtQ[p, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^2(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh^2(c+dx)\sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\cosh^2(c+dx}{a+b\sinh(c}}{b}$$

$$= -\frac{a\int (e+fx)^2\cosh^2(c+dx)\sinh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^2\cosh^2(}{a+b\sin}}{b^2}$$

$$= -\frac{(e+fx)^3}{24bf} - \frac{a(e+fx)^2\cosh^3(c+dx)}{3b^2d} + \frac{a^2\int (e+fx)^2\cosh^2(c}{b^3}$$

$$= -\frac{(e+fx)^3}{24bf} - \frac{a^2f(e+fx)\cosh^2(c+dx)}{2b^3d^2} - \frac{2af^2\cosh^3(c+dx)}{27b^2d^3} -$$

$$= \frac{a^4(e+fx)^3}{3b^5f} + \frac{a^2(e+fx)^3}{6b^3f} - \frac{(e+fx)^3}{24bf} - \frac{a^3(e+fx)^2\cosh(c+d}{b^4d}$$

$$= \frac{a^2f^2x}{4b^3d^2} + \frac{a^4(e+fx)^3}{3b^5f} + \frac{a^2(e+fx)^3}{6b^3f} - \frac{(e+fx)^3}{24bf} - \frac{4af^2\cosh(c+}{9b^2d^3}$$

$$= \frac{a^2f^2x}{4b^3d^2} + \frac{a^4(e+fx)^3}{3b^5f} + \frac{a^2(e+fx)^3}{6b^3f} - \frac{(e+fx)^3}{24bf} - \frac{2a^3f^2\cosh(c}{b^4d^3}$$

$$= \frac{a^2f^2x}{4b^3d^2} + \frac{a^4(e+fx)^3}{3b^5f} + \frac{a^2(e+fx)^3}{6b^3f} - \frac{(e+fx)^3}{24bf} - \frac{2a^3f^2\cosh(c}{b^4d^3}$$

$$= \frac{a^2f^2x}{4b^3d^2} + \frac{a^4(e+fx)^3}{3b^5f} + \frac{a^2(e+fx)^3}{6b^3f} - \frac{(e+fx)^3}{24bf} - \frac{2a^3f^2\cosh(c}{b^4d^3}$$

$$= \frac{a^2f^2x}{4b^3d^2} + \frac{a^4(e+fx)^3}{3b^5f} + \frac{a^2(e+fx)^3}{6b^3f} - \frac{(e+fx)^3}{24bf} - \frac{2a^3f^2\cosh(c}{b^4d^3}$$

Mathematica [C] time = 16.25, size = 4653, normalized size = 6.16

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^2*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x
]),x]
```

```
[Out] -1/8*(e^2*(c/d + x - (2*a*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]
])/(Sqrt[-a^2 - b^2]*d)))/b - (e*f*(x^2 + ((2*I)*a*Pi*ArcTanh[(-b + a*Tanh[
(c + d*x)/2])/Sqrt[a^2 + b^2]])/(Sqrt[a^2 + b^2]*d^2) + (2*a*(2*((-I)*c + A
rcCos[((-I)*a)/b])*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sq
rt[-a^2 - b^2]] + ((-2*I)*c + Pi - (2*I)*d*x)*ArcTanh[((a - I*b)*Tan[((2*I)
*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] - (ArcCos[((-I)*a)/b] + (2*I)*Ar
cTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[
((I*a + b)*(a + I*(b + Sqrt[-a^2 - b^2]))*(-I + Cot[((2*I)*c + Pi + (2*I)*d
*x)/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]
))] - (ArcCos[((-I)*a)/b] - (2*I)*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2
*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[((I*a + b)*(I*a - b + Sqrt[-a^2 - b^2])
*(I + Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(a - I*b + Sqrt[-a^2 - b^2]*Co
t[((2*I)*c + Pi + (2*I)*d*x)/4]))] + (ArcCos[((-I)*a)/b] - (2*I)*ArcTanh[((
a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] - (2*I)*ArcTa
nh[((a - I*b)*Tan[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[-((
(-1)^(3/4)*Sqrt[-a^2 - b^2]*E^(-1/2*c - (d*x)/2))/(Sqrt[2]*Sqrt[(-I)*b]*Sqr
t[a + b*Sinh[c + d*x]]))] + (ArcCos[((-I)*a)/b] + (2*I)*(ArcTanh[((a + I*b)
*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] + ArcTanh[((a - I*b)*
Tan[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]]))*Log[((-1)^(1/4)*Sqrt
[-a^2 - b^2]*E^((c + d*x)/2))/(Sqrt[2]*Sqrt[(-I)*b]*Sqrt[a + b*Sinh[c + d*x
]])] + I*(PolyLog[2, ((I*a + Sqrt[-a^2 - b^2])*(I*a + b - I*Sqrt[-a^2 - b^2
]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*Cot[
((2*I)*c + Pi + (2*I)*d*x)/4]))] - PolyLog[2, ((a + I*Sqrt[-a^2 - b^2])*(-a
 + I*b + Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a + b +
 I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))])))/(Sqrt[-a^2 - b^
2]*d^2)))/(8*b) - (f^2*(x^3 - (3*a*(d^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sq
rt[a^2 + b^2])] - d^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] +
2*d*x*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*x*PolyLog[2,
 -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*PolyLog[3, (b*E^(c + d*x))/(
-a + Sqrt[a^2 + b^2])] + 2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
]))]))/(Sqrt[a^2 + b^2]*d^3)))/(24*b) - (f^2*(2*(4*a^2 + b^2)*x^3 - (6*a*(4
*a^2 + 3*b^2)*(d^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d^2
*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 2*d*x*PolyLog[2, (b*E
^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*x*PolyLog[2, -((b*E^(c + d*x))/(a
 + Sqrt[a^2 + b^2]))] - 2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])
] + 2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(Sqrt[a^2 + b^
2]*d^3) - (24*a*b*Cosh[d*x]*((2 + d^2*x^2)*Cosh[c] - 2*d*x*Sinh[c]))/d^3 +
(3*b^2*Cosh[2*d*x]*(-2*d*x*Cosh[2*c] + (1 + 2*d^2*x^2)*Sinh[2*c]))/d^3 - (2
4*a*b*(-2*d*x*Cosh[c] + (2 + d^2*x^2)*Sinh[c])*Sinh[d*x])/d^3 + (3*b^2*((1
+ 2*d^2*x^2)*Cosh[2*c] - 2*d*x*Sinh[2*c])*Sinh[2*d*x])/d^3))/(96*b^3) - (e^
```

2*((4*a^2 + b^2)*(c + d*x) - (2*a*(4*a^2 + 3*b^2)*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2 - b^2] - 4*a*b*Cosh[c + d*x] + b^2*Sinh[2*(c + d*x)]))/(16*b^3*d) - (e*f*((4*a^2 + b^2)*(-c + d*x)*(c + d*x) - 8*a*b*d*x*Cosh[c + d*x] - b^2*Cosh[2*(c + d*x)] - (2*a*(4*a^2 + 3*b^2)*(2*c*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] + (c + d*x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - (c + d*x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + PolyLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - PolyLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))]))/Sqrt[a^2 + b^2] + 8*a*b*Sinh[c + d*x] + 2*b^2*d*x*Sinh[2*(c + d*x)]))/(16*b^3*d^2) + (e^2*(6*(16*a^4 + 12*a^2*b^2 + b^4)*(c + d*x) - (12*a*(16*a^4 + 20*a^2*b^2 + 5*b^4)*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2 - b^2] - 48*a*b*(2*a^2 + b^2)*Cosh[c + d*x] - 8*a*b^3*Cosh[3*(c + d*x)] + 6*b^2*(4*a^2 + b^2)*Sinh[2*(c + d*x)] + 3*b^4*Sinh[4*(c + d*x)]))/(96*b^5*d) + (e*f*(-576*a^4*Sqrt[a^2 + b^2]*c^2 - 432*a^2*b^2*Sqrt[a^2 + b^2]*c^2 - 36*b^4*Sqrt[a^2 + b^2]*c^2 + 576*a^4*Sqrt[a^2 + b^2]*d^2*x^2 + 432*a^2*b^2*Sqrt[a^2 + b^2]*d^2*x^2 + 36*b^4*Sqrt[a^2 + b^2]*d^2*x^2 - 2304*a^5*c*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] - 2880*a^3*b^2*c*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] - 720*a*b^4*c*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] - 1152*a^3*b*Sqrt[a^2 + b^2]*d*x*Cosh[c + d*x] - 576*a*b^3*Sqrt[a^2 + b^2]*d*x*Cosh[c + d*x] - 144*a^2*b^2*Sqrt[a^2 + b^2]*Cosh[2*(c + d*x)] - 36*b^4*Sqrt[a^2 + b^2]*Cosh[2*(c + d*x)] - 96*a*b^3*Sqrt[a^2 + b^2]*d*x*Cosh[3*(c + d*x)] - 9*b^4*Sqrt[a^2 + b^2]*Cosh[4*(c + d*x)] - 1152*a^5*c*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - 1440*a^3*b^2*c*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - 360*a*b^4*c*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - 1152*a^5*d*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - 1440*a^3*b^2*d*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - 360*a*b^4*d*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] + 1152*a^5*c*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 1440*a^3*b^2*c*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 360*a*b^4*c*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 1152*a^5*d*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 1440*a^3*b^2*d*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 360*a*b^4*d*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] - 72*a*(16*a^4 + 20*a^2*b^2 + 5*b^4)*PolyLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] + 72*a*(16*a^4 + 20*a^2*b^2 + 5*b^4)*PolyLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))] + 1152*a^3*b*Sqrt[a^2 + b^2]*Sinh[c + d*x] + 576*a*b^3*Sqrt[a^2 + b^2]*Sinh[c + d*x] + 288*a^2*b^2*Sqrt[a^2 + b^2]*d*x*Sinh[2*(c + d*x)] + 72*b^4*Sqrt[a^2 + b^2]*d*x*Sinh[2*(c + d*x)] + 32*a*b^3*Sqrt[a^2 + b^2]*Sinh[3*(c + d*x)] + 36*b^4*Sqrt[a^2 + b^2]*d*x*Sinh[4*(c + d*x)]))/(576*b^5*Sqrt[a^2 + b^2]*d^2) + (f^2*((16*a^4*x^3)/(3*b^5) + (4*a^2*x^3)/b^3 + x^3/(3*b) - (32*a^3*Cosh[c + d*x])/

```
(b^4*d^3) - (16*a*Cosh[c + d*x])/(b^2*d^3) - (16*a^3*x^2*Cosh[c + d*x])/(b^
4*d) - (8*a*x^2*Cosh[c + d*x])/(b^2*d) - (4*a^2*x*Cosh[2*(c + d*x)])/(b^3*d
^2) - (x*Cosh[2*(c + d*x)])/(b*d^2) - (8*a*Cosh[3*(c + d*x)])/(27*b^2*d^3)
- (4*a*x^2*Cosh[3*(c + d*x)])/(3*b^2*d) - (x*Cosh[4*(c + d*x)])/(4*b*d^2) -
 (16*a^5*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^5*Sqrt[a^2
+ b^2]*d) - (20*a^3*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^
3*Sqrt[a^2 + b^2]*d) - (5*a*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
])])/(b*Sqrt[a^2 + b^2]*d) + (16*a^5*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[
a^2 + b^2])])/(b^5*Sqrt[a^2 + b^2]*d) + (20*a^3*x^2*Log[1 + (b*E^(c + d*x))
/(a + Sqrt[a^2 + b^2])])/(b^3*Sqrt[a^2 + b^2]*d) + (5*a*x^2*Log[1 + (b*E^(c
 + d*x))/(a + Sqrt[a^2 + b^2])])/(b*Sqrt[a^2 + b^2]*d) - (2*(16*a^5 + 20*a^
3*b^2 + 5*a*b^4)*x*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])])/(b^5
*Sqrt[a^2 + b^2]*d^2) + (2*(16*a^5 + 20*a^3*b^2 + 5*a*b^4)*x*PolyLog[2, -((
b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^5*Sqrt[a^2 + b^2]*d^2) + (32*a^5
*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])])/(b^5*Sqrt[a^2 + b^2]*d
^3) + (40*a^3*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])])/(b^3*Sqrt
[a^2 + b^2]*d^3) + (10*a*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
)/(b*Sqrt[a^2 + b^2]*d^3) - (32*a^5*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[
a^2 + b^2]))])/(b^5*Sqrt[a^2 + b^2]*d^3) - (40*a^3*PolyLog[3, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))])/(b^3*Sqrt[a^2 + b^2]*d^3) - (10*a*PolyLog[3,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*Sqrt[a^2 + b^2]*d^3) + (32*a^
3*x*Sinh[c + d*x])/(b^4*d^2) + (16*a*x*Sinh[c + d*x])/(b^2*d^2) + (2*a^2*Si
nh[2*(c + d*x)])/(b^3*d^3) + Sinh[2*(c + d*x)]/(2*b*d^3) + (4*a^2*x^2*Sinh[
2*(c + d*x)])/(b^3*d) + (x^2*Sinh[2*(c + d*x)])/(b*d) + (8*a*x*Sinh[3*(c +
d*x)])/(9*b^2*d^2) + Sinh[4*(c + d*x)]/(16*b*d^3) + (x^2*Sinh[4*(c + d*x)])
/(2*b*d)))/16
```

<u>fricas</u> [C] time = 0.76, size = 6459, normalized size = 8.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="fricas")
```

```
[Out] -1/13824*(216*b^4*d^2*f^2*x^2 - 27*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b
^4*d*e*f + b^4*f^2 + 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^8 - 27*
(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^2 + 4*(4*b^4*d^2*e
*f - b^4*d*f^2)*x)*sinh(d*x + c)^8 + 216*b^4*d^2*e^2 + 64*(9*a*b^3*d^2*f^2*
x^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3*f^2 + 6*(3*a*b^3*d^2*e*f -
a*b^3*d*f^2)*x)*cosh(d*x + c)^7 + 8*(72*a*b^3*d^2*f^2*x^2 + 72*a*b^3*d^2*e^
2 - 48*a*b^3*d*e*f + 16*a*b^3*f^2 + 48*(3*a*b^3*d^2*e*f - a*b^3*d*f^2)*x -
27*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^2 + 4*(4*b^4*d^
2*e*f - b^4*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^7 + 108*b^4*d*e*f - 864*
(2*a^2*b^2*d^2*f^2*x^2 + 2*a^2*b^2*d^2*e^2 - 2*a^2*b^2*d*e*f + a^2*b^2*f^2
```

```
+ 2*(2*a^2*b^2*d^2*e*f - a^2*b^2*d*f^2)*x)*cosh(d*x + c)^6 - 4*(432*a^2*b^2
*d^2*f^2*x^2 + 432*a^2*b^2*d^2*e^2 - 432*a^2*b^2*d*e*f + 216*a^2*b^2*f^2 +
189*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^2 + 4*(4*b^4*d
^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^2 + 432*(2*a^2*b^2*d^2*e*f - a^2*b^2*d
*f^2)*x - 112*(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*
b^3*f^2 + 6*(3*a*b^3*d^2*e*f - a*b^3*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)
^6 + 27*b^4*f^2 + 1728*((4*a^3*b + a*b^3)*d^2*f^2*x^2 + (4*a^3*b + a*b^3)*d
^2*e^2 - 2*(4*a^3*b + a*b^3)*d*e*f + 2*(4*a^3*b + a*b^3)*f^2 + 2*((4*a^3*b
+ a*b^3)*d^2*e*f - (4*a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^5 + 24*(72*(4*
a^3*b + a*b^3)*d^2*f^2*x^2 + 72*(4*a^3*b + a*b^3)*d^2*e^2 - 144*(4*a^3*b +
a*b^3)*d*e*f - 63*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f + b^4*f^
2 + 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^3 + 144*(4*a^3*b + a*b^3
)*f^2 + 56*(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3
*f^2 + 6*(3*a*b^3*d^2*e*f - a*b^3*d*f^2)*x)*cosh(d*x + c)^2 + 144*((4*a^3*b
 + a*b^3)*d^2*e*f - (4*a^3*b + a*b^3)*d*f^2)*x - 216*(2*a^2*b^2*d^2*f^2*x^2
 + 2*a^2*b^2*d^2*e^2 - 2*a^2*b^2*d*e*f + a^2*b^2*f^2 + 2*(2*a^2*b^2*d^2*e*f
 - a^2*b^2*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^5 - 576*((8*a^4 + 4*a^2*b
^2 - b^4)*d^3*f^2*x^3 + 3*(8*a^4 + 4*a^2*b^2 - b^4)*d^3*e*f*x^2 + 3*(8*a^4
+ 4*a^2*b^2 - b^4)*d^3*e^2*x)*cosh(d*x + c)^4 - 2*(288*(8*a^4 + 4*a^2*b^2 -
 b^4)*d^3*f^2*x^3 + 864*(8*a^4 + 4*a^2*b^2 - b^4)*d^3*e*f*x^2 + 864*(8*a^4
+ 4*a^2*b^2 - b^4)*d^3*e^2*x + 945*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b
^4*d*e*f + b^4*f^2 + 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^4 - 112
0*(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3*f^2 + 6*
(3*a*b^3*d^2*e*f - a*b^3*d*f^2)*x)*cosh(d*x + c)^3 + 6480*(2*a^2*b^2*d^2*f^
2*x^2 + 2*a^2*b^2*d^2*e^2 - 2*a^2*b^2*d*e*f + a^2*b^2*f^2 + 2*(2*a^2*b^2*d^
2*e*f - a^2*b^2*d*f^2)*x)*cosh(d*x + c)^2 - 4320*((4*a^3*b + a*b^3)*d^2*f^2
*x^2 + (4*a^3*b + a*b^3)*d^2*e^2 - 2*(4*a^3*b + a*b^3)*d*e*f + 2*(4*a^3*b +
 a*b^3)*f^2 + 2*((4*a^3*b + a*b^3)*d^2*e*f - (4*a^3*b + a*b^3)*d*f^2)*x)*co
sh(d*x + c))*sinh(d*x + c)^4 + 1728*((4*a^3*b + a*b^3)*d^2*f^2*x^2 + (4*a^3
*b + a*b^3)*d^2*e^2 + 2*(4*a^3*b + a*b^3)*d*e*f + 2*(4*a^3*b + a*b^3)*f^2 +
 2*((4*a^3*b + a*b^3)*d^2*e*f + (4*a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^3
 + 8*(216*(4*a^3*b + a*b^3)*d^2*f^2*x^2 - 189*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^
2*e^2 - 4*b^4*d*e*f + b^4*f^2 + 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x +
 c)^5 + 216*(4*a^3*b + a*b^3)*d^2*e^2 + 280*(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*
d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3*f^2 + 6*(3*a*b^3*d^2*e*f - a*b^3*d*f^2)*x
)*cosh(d*x + c)^4 + 432*(4*a^3*b + a*b^3)*d*e*f - 2160*(2*a^2*b^2*d^2*f^2*x
^2 + 2*a^2*b^2*d^2*e^2 - 2*a^2*b^2*d*e*f + a^2*b^2*f^2 + 2*(2*a^2*b^2*d^2*e
*f - a^2*b^2*d*f^2)*x)*cosh(d*x + c)^3 + 432*(4*a^3*b + a*b^3)*f^2 + 2160*(
(4*a^3*b + a*b^3)*d^2*f^2*x^2 + (4*a^3*b + a*b^3)*d^2*e^2 - 2*(4*a^3*b + a*
b^3)*d*e*f + 2*(4*a^3*b + a*b^3)*f^2 + 2*((4*a^3*b + a*b^3)*d^2*e*f - (4*a^
3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^2 + 432*((4*a^3*b + a*b^3)*d^2*e*f + (
4*a^3*b + a*b^3)*d*f^2)*x - 288*((8*a^4 + 4*a^2*b^2 - b^4)*d^3*f^2*x^3 + 3*
(8*a^4 + 4*a^2*b^2 - b^4)*d^3*e*f*x^2 + 3*(8*a^4 + 4*a^2*b^2 - b^4)*d^3*e^2
*x)*cosh(d*x + c))*sinh(d*x + c)^3 + 864*(2*a^2*b^2*d^2*f^2*x^2 + 2*a^2*b^2
*d^2*e^2 + 2*a^2*b^2*d*e*f + a^2*b^2*f^2 + 2*(2*a^2*b^2*d^2*e*f + a^2*b^2*d
```

*f^2)*x)*cosh(d*x + c)^2 + 12*(144*a^2*b^2*d^2*f^2*x^2 + 144*a^2*b^2*d^2*e^
2 + 144*a^2*b^2*d*e*f - 63*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f
 + b^4*f^2 + 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^6 + 72*a^2*b^2*
f^2 + 112*(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3*
f^2 + 6*(3*a*b^3*d^2*e*f - a*b^3*d*f^2)*x)*cosh(d*x + c)^5 - 1080*(2*a^2*b^
2*d^2*f^2*x^2 + 2*a^2*b^2*d^2*e^2 - 2*a^2*b^2*d*e*f + a^2*b^2*f^2 + 2*(2*a^
2*b^2*d^2*e*f - a^2*b^2*d*f^2)*x)*cosh(d*x + c)^4 + 1440*((4*a^3*b + a*b^3)
*d^2*f^2*x^2 + (4*a^3*b + a*b^3)*d^2*e^2 - 2*(4*a^3*b + a*b^3)*d*e*f + 2*(4
*a^3*b + a*b^3)*f^2 + 2*((4*a^3*b + a*b^3)*d^2*e*f - (4*a^3*b + a*b^3)*d*f^
2)*x)*cosh(d*x + c)^3 - 288*((8*a^4 + 4*a^2*b^2 - b^4)*d^3*f^2*x^3 + 3*(8*a
^4 + 4*a^2*b^2 - b^4)*d^3*e*f*x^2 + 3*(8*a^4 + 4*a^2*b^2 - b^4)*d^3*e^2*x)*
cosh(d*x + c)^2 + 144*(2*a^2*b^2*d^2*e*f + a^2*b^2*d*f^2)*x + 432*((4*a^3*b
 + a*b^3)*d^2*f^2*x^2 + (4*a^3*b + a*b^3)*d^2*e^2 + 2*(4*a^3*b + a*b^3)*d*e
f + 2(4*a^3*b + a*b^3)*f^2 + 2*((4*a^3*b + a*b^3)*d^2*e*f + (4*a^3*b + a*
b^3)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 27648*((a^3*b*d*f^2*x + a^3
*b*d*e*f)*cosh(d*x + c)^4 + 4*(a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)^3
*sinh(d*x + c) + 6*(a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)^2*sinh(d*x +
 c)^2 + 4*(a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^
3*b*d*f^2*x + a^3*b*d*e*f)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*dilog((a*
cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2) - b)/b + 1) - 27648*((a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*
x + c)^4 + 4*(a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)^3*sinh(d*x + c) +
6*(a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^3*b*
d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*b*d*f^2*x + a^3
*b*d*e*f)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
 - b)/b + 1) - 13824*((a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh
(d*x + c)^4 + 4*(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x
 + c)^3*sinh(d*x + c) + 6*(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*
cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*
b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f
 + a^3*b*c^2*f^2)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x +
 c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 13824*((a^3*b*
d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x + c)^4 + 4*(a^3*b*d^2*e
^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^
3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c
)^2 + 4*(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x + c)*sin
h(d*x + c)^3 + (a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*sinh(d*x +
 c)^4)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*
b*sqrt((a^2 + b^2)/b^2) + 2*a) + 13824*((a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*
f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*cosh(d*x + c)^4 + 4*(a^3*b*d^2*f^2*x
^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*cosh(d*x + c)^3*s
inh(d*x + c) + 6*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f -
 a^3*b*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^3*b*d^2*f^2*x^2 + 2*
a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x +

```
c)^3 + (a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^
2*f^2)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sin
h(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)
/b) - 13824*((a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3
*b*c^2*f^2)*cosh(d*x + c)^4 + 4*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*
a^3*b*c*d*e*f - a^3*b*c^2*f^2)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^3*b*d^2
*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*cosh(d*x +
c)^2*sinh(d*x + c)^2 + 4*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c
*d*e*f - a^3*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*b*d^2*f^2*x^2
+ 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*sinh(d*x + c)^4)*sqr
t((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 27648*(a^3*b*f^2*cosh
(d*x + c)^4 + 4*a^3*b*f^2*cosh(d*x + c)^3*sinh(d*x + c) + 6*a^3*b*f^2*cosh(
d*x + c)^2*sinh(d*x + c)^2 + 4*a^3*b*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + a^
3*b*f^2*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c)
+ a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2))/b) + 27648*(a^3*b*f^2*cosh(d*x + c)^4 + 4*a^3*b*f^2*cosh(d*x + c)^3*sin
h(d*x + c) + 6*a^3*b*f^2*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*a^3*b*f^2*cosh
(d*x + c)*sinh(d*x + c)^3 + a^3*b*f^2*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2
)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 108*(4*b^4*d^2*e*f + b^4*d*f^2)*x +
64*(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2 + 6*a*b^3*d*e*f + 2*a*b^3*f^2 + 6
*(3*a*b^3*d^2*e*f + a*b^3*d*f^2)*x)*cosh(d*x + c) + 8*(72*a*b^3*d^2*f^2*x^2
 + 72*a*b^3*d^2*e^2 - 27*(8*b^4*d^2*f^2*x^2 + 8*b^4*d^2*e^2 - 4*b^4*d*e*f +
 b^4*f^2 + 4*(4*b^4*d^2*e*f - b^4*d*f^2)*x)*cosh(d*x + c)^7 + 48*a*b^3*d*e*
f + 56*(9*a*b^3*d^2*f^2*x^2 + 9*a*b^3*d^2*e^2 - 6*a*b^3*d*e*f + 2*a*b^3*f^2
 + 6*(3*a*b^3*d^2*e*f - a*b^3*d*f^2)*x)*cosh(d*x + c)^6 + 16*a*b^3*f^2 - 64
8*(2*a^2*b^2*d^2*f^2*x^2 + 2*a^2*b^2*d^2*e^2 - 2*a^2*b^2*d*e*f + a^2*b^2*f^
2 + 2*(2*a^2*b^2*d^2*e*f - a^2*b^2*d*f^2)*x)*cosh(d*x + c)^5 + 1080*((4*a^3
*b + a*b^3)*d^2*f^2*x^2 + (4*a^3*b + a*b^3)*d^2*e^2 - 2*(4*a^3*b + a*b^3)*d
*e*f + 2*(4*a^3*b + a*b^3)*f^2 + 2*((4*a^3*b + a*b^3)*d^2*e*f - (4*a^3*b +
a*b^3)*d*f^2)*x)*cosh(d*x + c)^4 - 288*((8*a^4 + 4*a^2*b^2 - b^4)*d^3*f^2*x
^3 + 3*(8*a^4 + 4*a^2*b^2 - b^4)*d^3*e*f*x^2 + 3*(8*a^4 + 4*a^2*b^2 - b^4)*
d^3*e^2*x)*cosh(d*x + c)^3 + 648*((4*a^3*b + a*b^3)*d^2*f^2*x^2 + (4*a^3*b
+ a*b^3)*d^2*e^2 + 2*(4*a^3*b + a*b^3)*d*e*f + 2*(4*a^3*b + a*b^3)*f^2 + 2*
((4*a^3*b + a*b^3)*d^2*e*f + (4*a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^2 +
48*(3*a*b^3*d^2*e*f + a*b^3*d*f^2)*x + 216*(2*a^2*b^2*d^2*f^2*x^2 + 2*a^2*b
^2*d^2*e^2 + 2*a^2*b^2*d*e*f + a^2*b^2*f^2 + 2*(2*a^2*b^2*d^2*e*f + a^2*b^2
*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^5*d^3*cosh(d*x + c)^4 + 4*b^5*d
^3*cosh(d*x + c)^3*sinh(d*x + c) + 6*b^5*d^3*cosh(d*x + c)^2*sinh(d*x + c)^
2 + 4*b^5*d^3*cosh(d*x + c)*sinh(d*x + c)^3 + b^5*d^3*sinh(d*x + c)^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\cosh\left(dx+c\right)^2\sinh\left(dx+c\right)^3}{b\sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)^2*sinh(d*x + c)^3/(b*sinh(d*x + c) + a)
, x)
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\left(\cosh^2\left(dx+c\right)\right)\left(\sinh^3\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="maxima")
```

```
[Out] -1/192*e^2*(192*sqrt(a^2 + b^2)*a^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^
2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(b^5*d) + (8*a*b^2*e^(-d*x - c)
 - 24*a^2*b*e^(-2*d*x - 2*c) - 3*b^3 + 24*(4*a^3 + a*b^2)*e^(-3*d*x - 3*c))
*e^(4*d*x + 4*c)/(b^4*d) - 24*(8*a^4 + 4*a^2*b^2 - b^4)*(d*x + c)/(b^5*d) +
 (24*a^2*b*e^(-2*d*x - 2*c) + 8*a*b^2*e^(-3*d*x - 3*c) + 3*b^3*e^(-4*d*x -
4*c) + 24*(4*a^3 + a*b^2)*e^(-d*x - c))/(b^4*d)) + 1/13824*(576*(8*a^4*d^3*
f^2*e^(4*c) + 4*a^2*b^2*d^3*f^2*e^(4*c) - b^4*d^3*f^2*e^(4*c))*x^3 + 1728*(
8*a^4*d^3*e*f*e^(4*c) + 4*a^2*b^2*d^3*e*f*e^(4*c) - b^4*d^3*e*f*e^(4*c))*x^
2 + 27*(8*b^4*d^2*f^2*x^2*e^(8*c) + 4*(4*d^2*e*f - d*f^2)*b^4*x*e^(8*c) - (
4*d*e*f - f^2)*b^4*e^(8*c))*e^(4*d*x) - 64*(9*a*b^3*d^2*f^2*x^2*e^(7*c) + 6
*(3*d^2*e*f - d*f^2)*a*b^3*x*e^(7*c) - 2*(3*d*e*f - f^2)*a*b^3*e^(7*c))*e^(
3*d*x) + 864*(2*a^2*b^2*d^2*f^2*x^2*e^(6*c) + 2*(2*d^2*e*f - d*f^2)*a^2*b^2
*x*e^(6*c) - (2*d*e*f - f^2)*a^2*b^2*e^(6*c))*e^(2*d*x) + 1728*(8*(d*e*f -
```

```
f^2)*a^3*b*e^(5*c) + 2*(d*e*f - f^2)*a*b^3*e^(5*c) - (4*a^3*b*d^2*f^2*e^(5*
c) + a*b^3*d^2*f^2*e^(5*c))*x^2 - 2*(4*(d^2*e*f - d*f^2)*a^3*b*e^(5*c) + (d
^2*e*f - d*f^2)*a*b^3*e^(5*c))*x)*e^(d*x) - 1728*(8*(d*e*f + f^2)*a^3*b*e^(
3*c) + 2*(d*e*f + f^2)*a*b^3*e^(3*c) + (4*a^3*b*d^2*f^2*e^(3*c) + a*b^3*d^2
*f^2*e^(3*c))*x^2 + 2*(4*(d^2*e*f + d*f^2)*a^3*b*e^(3*c) + (d^2*e*f + d*f^2
)*a*b^3*e^(3*c))*x)*e^(-d*x) - 864*(2*a^2*b^2*d^2*f^2*x^2*e^(2*c) + 2*(2*d^
2*e*f + d*f^2)*a^2*b^2*x*e^(2*c) + (2*d*e*f + f^2)*a^2*b^2*e^(2*c))*e^(-2*d
*x) - 64*(9*a*b^3*d^2*f^2*x^2*e^c + 6*(3*d^2*e*f + d*f^2)*a*b^3*x*e^c + 2*(
3*d*e*f + f^2)*a*b^3*e^c)*e^(-3*d*x) - 27*(8*b^4*d^2*f^2*x^2 + 4*(4*d^2*e*f
 + d*f^2)*b^4*x + (4*d*e*f + f^2)*b^4)*e^(-4*d*x))*e^(-4*c)/(b^5*d^3) - int
egrate(2*((a^5*f^2*e^c + a^3*b^2*f^2*e^c)*x^2 + 2*(a^5*e*f*e^c + a^3*b^2*e*
f*e^c)*x)*e^(d*x)/(b^6*e^(2*d*x + 2*c) + 2*a*b^5*e^(d*x + c) - b^6), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)^2\,\sinh\left(c+d\,x\right)^3\,{\left(e+f\,x\right)}^2}{a+b\,\sinh\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)**2*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.398 $\int \frac{(e+fx)\cosh^2(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=474

$$\frac{a^4ex}{b^5}+\frac{a^4fx^2}{2b^5}+\frac{a^3f\sinh(c+dx)}{b^4d^2}-\frac{a^3(e+fx)\cosh(c+dx)}{b^4d}-\frac{a^2f\cosh^2(c+dx)}{4b^3d^2}+\frac{a^2(e+fx)\sinh(c+dx)\cosh(c+dx)}{2b^3d}$$

```
[Out] a^4*e*x/b^5+1/2*a^2*e*x/b^3+1/2*a^4*f*x^2/b^5+1/4*a^2*f*x^2/b^3-1/16*(f*x+e
)^2/b/f-a^3*(f*x+e)*cosh(d*x+c)/b^4/d-1/4*a^2*f*cosh(d*x+c)^2/b^3/d^2-1/3*a
*(f*x+e)*cosh(d*x+c)^3/b^2/d-1/128*f*cosh(4*d*x+4*c)/b/d^2+a^3*f*sinh(d*x+c
)/b^4/d^2+1/3*a*f*sinh(d*x+c)/b^2/d^2+1/2*a^2*(f*x+e)*cosh(d*x+c)*sinh(d*x+
c)/b^3/d+1/9*a*f*sinh(d*x+c)^3/b^2/d^2+1/32*(f*x+e)*sinh(4*d*x+4*c)/b/d-a^3
*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^5/d+a^3*(
f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^5/d-a^3*f*p
olylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^5/d^2+a^3*f*p
olylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/b^5/d^2
```

Rubi [A] time = 0.86, antiderivative size = 474, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 14, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.412, Rules used = {5579, 5448, 3296, 2638, 5447, 2633, 3310, 5565, 2637, 3322, 2264, 2190, 2279, 2391}

$$-\frac{a^3f\sqrt{a^2+b^2}\,\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^5d^2}+\frac{a^3f\sqrt{a^2+b^2}\,\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^5d^2}+\frac{a^3f\sinh(c+dx)}{b^4d^2}-\frac{a^2f\cosh^2(c+dx)}{4b^3d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^2*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^4*e*x)/b^5 + (a^2*e*x)/(2*b^3) + (a^4*f*x^2)/(2*b^5) + (a^2*f*x^2)/(4*b^
3) - (e + f*x)^2/(16*b*f) - (a^3*(e + f*x)*Cosh[c + d*x])/(b^4*d) - (a^2*f*
Cosh[c + d*x]^2)/(4*b^3*d^2) - (a*(e + f*x)*Cosh[c + d*x]^3)/(3*b^2*d) - (f
*Cosh[4*c + 4*d*x])/(128*b*d^2) - (a^3*Sqrt[a^2 + b^2]*(e + f*x)*Log[1 + (b
*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^5*d) + (a^3*Sqrt[a^2 + b^2]*(e + f
*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^5*d) - (a^3*Sqrt[a^2
 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^5*d^2) +
 (a^3*Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
])/(b^5*d^2) + (a^3*f*Sinh[c + d*x])/(b^4*d^2) + (a*f*Sinh[c + d*x])/(3*b^2
*d^2) + (a^2*(e + f*x)*Cosh[c + d*x]*Sinh[c + d*x])/(2*b^3*d) + (a*f*Sinh[c
 + d*x]^3)/(9*b^2*d^2) + ((e + f*x)*Sinh[4*c + 4*d*x])/(32*b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5448

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sinh[a +
b*x]^n*Cosh[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] &
& IGtQ[p, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
```

```
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh^2(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh^2(c+dx)\sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\cosh^2(c+dx)\sin}{a+b\sinh(c+dx}}{b}$$

$$= -\frac{a\int (e+fx)\cosh^2(c+dx)\sinh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)\cosh^2(c+dx}{a+b\sinh(c}}{b^2}$$

$$= -\frac{(e+fx)^2}{16bf} - \frac{a(e+fx)\cosh^3(c+dx)}{3b^2d} + \frac{a^2\int (e+fx)\cosh^2(c+d}{b^3}$$

$$= -\frac{(e+fx)^2}{16bf} - \frac{a^2f\cosh^2(c+dx)}{4b^3d^2} - \frac{a(e+fx)\cosh^3(c+dx)}{3b^2d} + \frac{a^2(e}{}$$

$$= \frac{a^4ex}{b^5} + \frac{a^2ex}{2b^3} + \frac{a^4fx^2}{2b^5} + \frac{a^2fx^2}{4b^3} - \frac{(e+fx)^2}{16bf} - \frac{a^3(e+fx)\cosh(c+}{b^4d}$$

$$= \frac{a^4ex}{b^5} + \frac{a^2ex}{2b^3} + \frac{a^4fx^2}{2b^5} + \frac{a^2fx^2}{4b^3} - \frac{(e+fx)^2}{16bf} - \frac{a^3(e+fx)\cosh(c+}{b^4d}$$

$$= \frac{a^4ex}{b^5} + \frac{a^2ex}{2b^3} + \frac{a^4fx^2}{2b^5} + \frac{a^2fx^2}{4b^3} - \frac{(e+fx)^2}{16bf} - \frac{a^3(e+fx)\cosh(c+}{b^4d}$$

$$= \frac{a^4ex}{b^5} + \frac{a^2ex}{2b^3} + \frac{a^4fx^2}{2b^5} + \frac{a^2fx^2}{4b^3} - \frac{(e+fx)^2}{16bf} - \frac{a^3(e+fx)\cosh(c+}{b^4d}$$

$$= \frac{a^4ex}{b^5} + \frac{a^2ex}{2b^3} + \frac{a^4fx^2}{2b^5} + \frac{a^2fx^2}{4b^3} - \frac{(e+fx)^2}{16bf} - \frac{a^3(e+fx)\cosh(c+}{b^4d}$$

Mathematica [C] time = 10.35, size = 2917, normalized size = 6.15

Result too large to show

Warning: Unable to verify antiderivative.

[In] Integrate[((e + f*x)*Cosh[c + d*x]^2*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]

[Out] -1/8*(e*(c/d + x - (2*a*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/(Sqrt[-a^2 - b^2]*d)))/b - (f*(x^2 + ((2*I)*a*Pi*ArcTanh[(-b + a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(Sqrt[a^2 + b^2]*d^2) + (2*a*(2*((-I)*c + ArcCos[((-I)*a)/b])*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] + ((-2*I)*c + Pi - (2*I)*d*x)*ArcTanh[((a - I*b)*Tan[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] - (ArcCos[((-I)*a)/b] + (2*I)*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[((I*a + b)*(a + I*(b + Sqrt[-a^2 - b^2]))*(-I + Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))] - (ArcCos[((-I)*a)/b] - (2*I)*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[((I*a + b)*(I*a - b + Sqrt[-a^2 - b^2])*(I + Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(a - I*b + Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))] + (ArcCos[((-I)*a)/b] - (2*I)*ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] - (2*I)*ArcTanh[((a - I*b)*Tan[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]])*Log[-(((-1)^(3/4)*Sqrt[-a^2 - b^2]*E^(-1/2*c - (d*x)/2))/(Sqrt[2]*Sqrt[(-I)*b]*Sqrt[a + b*Sinh[c + d*x]]))] + (ArcCos[((-I)*a)/b] + (2*I)*(ArcTanh[((a + I*b)*Cot[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]] + ArcTanh[((a - I*b)*Tan[((2*I)*c + Pi + (2*I)*d*x)/4])/Sqrt[-a^2 - b^2]]))*Log[((-1)^(1/4)*Sqrt[-a^2 - b^2]*E^((c + d*x)/2))/(Sqrt[2]*Sqrt[(-I)*b]*Sqrt[a + b*Sinh[c + d*x]])] + I*(PolyLog[2, ((I*a + Sqrt[-a^2 - b^2])*(I*a + b - I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))] - PolyLog[2, ((a + I*Sqrt[-a^2 - b^2])*(-a + I*b + Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))/(b*(I*a + b + I*Sqrt[-a^2 - b^2]*Cot[((2*I)*c + Pi + (2*I)*d*x)/4]))])))/(Sqrt[-a^2 - b^2]*d^2)))/(16*b) - (e*((4*a^2 + b^2)*(c + d*x) - (2*a*(4*a^2 + 3*b^2)*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2 - b^2] - 4*a*b*Cosh[c + d*x] + b^2*Sinh[2*(c + d*x)]))/(16*b^3*d) - (f*((4*a^2 + b^2)*(-c + d*x)*(c + d*x) - 8*a*b*d*x*Cosh[c + d*x] - b^2*Cosh[2*(c + d*x)] - (2*a*(4*a^2 + 3*b^2)*(2*c*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] + (c + d*x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - (c + d*x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + PolyLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - PolyLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))]))/Sqrt[a^2 + b^2] + 8*a*b*Sinh[c + d*x] + 2*b^2*d*x*Sinh[2*(c + d*x)]))/(32*b^3*d^2) + (e*(6*(16*a^4 + 12*a^2*b^2 + b^4)*(c + d*x) - (12*a*(16*a^4 + 20*a^2*b^2 + 5*b^4)*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/Sqrt[-a^2 - b^2] - 48*a*b*(2*a^2 + b^2)*Cosh[c + d*x] - 8*a*b^3*Cosh[3*(c + d*x)] + 6*b^2*(4*a^2 + b^2)*Sinh[2*(c + d*x)] + 3*b^4*Sinh[4*(c + d*x)]))/(96*b^5*d) + (f*(-576*a^4*Sqrt[a^2 + b^2]*c^2 - 432*a^2*b^2*Sqrt[a^2 + b^2]*c^2 - 36*b^4*Sqrt[a^2 + b^2]*c^2 + 576*a^4*Sqrt[a^2 + b^2]*d^2*x^2 + 432*a^2*b^2*Sqrt[a^2 + b^2]*d^2*x^2 + 36*b^4*Sqrt[a^2 + b^2]*d^2*x^2 - 2304

```
*a^5*c*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] - 2
880*a^3*b^2*c*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^
2]] - 720*a*b^4*c*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2
+ b^2]] - 1152*a^3*b*Sqrt[a^2 + b^2]*d*x*Cosh[c + d*x] - 576*a*b^3*Sqrt[a^2
 + b^2]*d*x*Cosh[c + d*x] - 144*a^2*b^2*Sqrt[a^2 + b^2]*Cosh[2*(c + d*x)] -
 36*b^4*Sqrt[a^2 + b^2]*Cosh[2*(c + d*x)] - 96*a*b^3*Sqrt[a^2 + b^2]*d*x*Co
sh[3*(c + d*x)] - 9*b^4*Sqrt[a^2 + b^2]*Cosh[4*(c + d*x)] - 1152*a^5*c*Log[
1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - 1440*a^3*b
^2*c*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - 3
60*a*b^4*c*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2]
)] - 1152*a^5*d*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2
 + b^2])] - 1440*a^3*b^2*d*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a
 - Sqrt[a^2 + b^2])] - 360*a*b^4*d*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d
*x]))/(a - Sqrt[a^2 + b^2])] + 1152*a^5*c*Log[1 + (b*(Cosh[c + d*x] + Sinh[
c + d*x]))/(a + Sqrt[a^2 + b^2])] + 1440*a^3*b^2*c*Log[1 + (b*(Cosh[c + d*x
] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 360*a*b^4*c*Log[1 + (b*(Cosh[c
 + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 1152*a^5*d*x*Log[1 + (b*
(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 1440*a^3*b^2*d*x*
Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + 360*a*
b^4*d*x*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])]
- 72*a*(16*a^4 + 20*a^2*b^2 + 5*b^4)*PolyLog[2, (b*(Cosh[c + d*x] + Sinh[c
+ d*x]))/(-a + Sqrt[a^2 + b^2])] + 72*a*(16*a^4 + 20*a^2*b^2 + 5*b^4)*PolyL
og[2, -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))] + 1152*
a^3*b*Sqrt[a^2 + b^2]*Sinh[c + d*x] + 576*a*b^3*Sqrt[a^2 + b^2]*Sinh[c + d*
x] + 288*a^2*b^2*Sqrt[a^2 + b^2]*d*x*Sinh[2*(c + d*x)] + 72*b^4*Sqrt[a^2 +
b^2]*d*x*Sinh[2*(c + d*x)] + 32*a*b^3*Sqrt[a^2 + b^2]*Sinh[3*(c + d*x)] + 3
6*b^4*Sqrt[a^2 + b^2]*d*x*Sinh[4*(c + d*x)]))/(1152*b^5*Sqrt[a^2 + b^2]*d^2
)
```

fricas [B] time = 0.49, size = 3228, normalized size = 6.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/2304*(9*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c)^8 + 9*(4*b^4*d*f*
x + 4*b^4*d*e - b^4*f)*sinh(d*x + c)^8 - 32*(3*a*b^3*d*f*x + 3*a*b^3*d*e -
a*b^3*f)*cosh(d*x + c)^7 - 8*(12*a*b^3*d*f*x + 12*a*b^3*d*e - 4*a*b^3*f - 9
*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c))*sinh(d*x + c)^7 - 36*b^4*
d*f*x + 144*(2*a^2*b^2*d*f*x + 2*a^2*b^2*d*e - a^2*b^2*f)*cosh(d*x + c)^6 +
 4*(72*a^2*b^2*d*f*x + 72*a^2*b^2*d*e - 36*a^2*b^2*f + 63*(4*b^4*d*f*x + 4*
b^4*d*e - b^4*f)*cosh(d*x + c)^2 - 56*(3*a*b^3*d*f*x + 3*a*b^3*d*e - a*b^3*
f)*cosh(d*x + c))*sinh(d*x + c)^6 - 36*b^4*d*e - 288*((4*a^3*b + a*b^3)*d*f
```

*x + (4*a^3*b + a*b^3)*d*e - (4*a^3*b + a*b^3)*f)*cosh(d*x + c)^5 - 24*(12*
(4*a^3*b + a*b^3)*d*f*x - 21*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c
)^3 + 12*(4*a^3*b + a*b^3)*d*e + 28*(3*a*b^3*d*f*x + 3*a*b^3*d*e - a*b^3*f)
*cosh(d*x + c)^2 - 12*(4*a^3*b + a*b^3)*f - 36*(2*a^2*b^2*d*f*x + 2*a^2*b^2
*d*e - a^2*b^2*f)*cosh(d*x + c))*sinh(d*x + c)^5 - 9*b^4*f + 144*((8*a^4 +
4*a^2*b^2 - b^4)*d^2*f*x^2 + 2*(8*a^4 + 4*a^2*b^2 - b^4)*d^2*e*x)*cosh(d*x
+ c)^4 + 2*(72*(8*a^4 + 4*a^2*b^2 - b^4)*d^2*f*x^2 + 144*(8*a^4 + 4*a^2*b^2
 - b^4)*d^2*e*x + 315*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c)^4 - 5
60*(3*a*b^3*d*f*x + 3*a*b^3*d*e - a*b^3*f)*cosh(d*x + c)^3 + 1080*(2*a^2*b^
2*d*f*x + 2*a^2*b^2*d*e - a^2*b^2*f)*cosh(d*x + c)^2 - 720*((4*a^3*b + a*b^
3)*d*f*x + (4*a^3*b + a*b^3)*d*e - (4*a^3*b + a*b^3)*f)*cosh(d*x + c))*sinh
(d*x + c)^4 - 288*((4*a^3*b + a*b^3)*d*f*x + (4*a^3*b + a*b^3)*d*e + (4*a^3
*b + a*b^3)*f)*cosh(d*x + c)^3 + 8*(63*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*co
sh(d*x + c)^5 - 140*(3*a*b^3*d*f*x + 3*a*b^3*d*e - a*b^3*f)*cosh(d*x + c)^4
 - 36*(4*a^3*b + a*b^3)*d*f*x + 360*(2*a^2*b^2*d*f*x + 2*a^2*b^2*d*e - a^2*
b^2*f)*cosh(d*x + c)^3 - 36*(4*a^3*b + a*b^3)*d*e - 360*((4*a^3*b + a*b^3)*
d*f*x + (4*a^3*b + a*b^3)*d*e - (4*a^3*b + a*b^3)*f)*cosh(d*x + c)^2 - 36*(
4*a^3*b + a*b^3)*f + 72*((8*a^4 + 4*a^2*b^2 - b^4)*d^2*f*x^2 + 2*(8*a^4 + 4
*a^2*b^2 - b^4)*d^2*e*x)*cosh(d*x + c))*sinh(d*x + c)^3 - 144*(2*a^2*b^2*d*
f*x + 2*a^2*b^2*d*e + a^2*b^2*f)*cosh(d*x + c)^2 - 12*(24*a^2*b^2*d*f*x - 2
1*(4*b^4*d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c)^6 + 24*a^2*b^2*d*e + 56*(
3*a*b^3*d*f*x + 3*a*b^3*d*e - a*b^3*f)*cosh(d*x + c)^5 + 12*a^2*b^2*f - 180
*(2*a^2*b^2*d*f*x + 2*a^2*b^2*d*e - a^2*b^2*f)*cosh(d*x + c)^4 + 240*((4*a^
3*b + a*b^3)*d*f*x + (4*a^3*b + a*b^3)*d*e - (4*a^3*b + a*b^3)*f)*cosh(d*x
+ c)^3 - 72*((8*a^4 + 4*a^2*b^2 - b^4)*d^2*f*x^2 + 2*(8*a^4 + 4*a^2*b^2 - b
^4)*d^2*e*x)*cosh(d*x + c)^2 + 72*((4*a^3*b + a*b^3)*d*f*x + (4*a^3*b + a*b
^3)*d*e + (4*a^3*b + a*b^3)*f)*cosh(d*x + c))*sinh(d*x + c)^2 - 2304*(a^3*b
*f*cosh(d*x + c)^4 + 4*a^3*b*f*cosh(d*x + c)^3*sinh(d*x + c) + 6*a^3*b*f*co
sh(d*x + c)^2*sinh(d*x + c)^2 + 4*a^3*b*f*cosh(d*x + c)*sinh(d*x + c)^3 + a
^3*b*f*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*si
nh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b
)/b + 1) + 2304*(a^3*b*f*cosh(d*x + c)^4 + 4*a^3*b*f*cosh(d*x + c)^3*sinh(d
*x + c) + 6*a^3*b*f*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*a^3*b*f*cosh(d*x +
c)*sinh(d*x + c)^3 + a^3*b*f*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*dilog((
a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqr
t((a^2 + b^2)/b^2) - b)/b + 1) + 2304*((a^3*b*d*e - a^3*b*c*f)*cosh(d*x + c
)^4 + 4*(a^3*b*d*e - a^3*b*c*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^3*b*d*
e - a^3*b*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^3*b*d*e - a^3*b*c*f)*
cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*b*d*e - a^3*b*c*f)*sinh(d*x + c)^4)*sq
rt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a
^2 + b^2)/b^2) + 2*a) - 2304*((a^3*b*d*e - a^3*b*c*f)*cosh(d*x + c)^4 + 4*(
a^3*b*d*e - a^3*b*c*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^3*b*d*e - a^3*b
*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^3*b*d*e - a^3*b*c*f)*cosh(d*x
+ c)*sinh(d*x + c)^3 + (a^3*b*d*e - a^3*b*c*f)*sinh(d*x + c)^4)*sqrt((a^2 +
 b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)

```
/b^2) + 2*a) - 2304*((a^3*b*d*f*x + a^3*b*c*f)*cosh(d*x + c)^4 + 4*(a^3*b*d
*f*x + a^3*b*c*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^3*b*d*f*x + a^3*b*c*
f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^3*b*d*f*x + a^3*b*c*f)*cosh(d*x +
 c)*sinh(d*x + c)^3 + (a^3*b*d*f*x + a^3*b*c*f)*sinh(d*x + c)^4)*sqrt((a^2
+ b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*
sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2304*((a^3*b*d*f*x + a^3*b*c
*f)*cosh(d*x + c)^4 + 4*(a^3*b*d*f*x + a^3*b*c*f)*cosh(d*x + c)^3*sinh(d*x
+ c) + 6*(a^3*b*d*f*x + a^3*b*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^3
*b*d*f*x + a^3*b*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*b*d*f*x + a^3*b*
c*f)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(
d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b
) - 32*(3*a*b^3*d*f*x + 3*a*b^3*d*e + a*b^3*f)*cosh(d*x + c) + 8*(9*(4*b^4*
d*f*x + 4*b^4*d*e - b^4*f)*cosh(d*x + c)^7 - 12*a*b^3*d*f*x - 28*(3*a*b^3*d
*f*x + 3*a*b^3*d*e - a*b^3*f)*cosh(d*x + c)^6 - 12*a*b^3*d*e + 108*(2*a^2*b
^2*d*f*x + 2*a^2*b^2*d*e - a^2*b^2*f)*cosh(d*x + c)^5 - 4*a*b^3*f - 180*((4
*a^3*b + a*b^3)*d*f*x + (4*a^3*b + a*b^3)*d*e - (4*a^3*b + a*b^3)*f)*cosh(d
*x + c)^4 + 72*((8*a^4 + 4*a^2*b^2 - b^4)*d^2*f*x^2 + 2*(8*a^4 + 4*a^2*b^2
- b^4)*d^2*e*x)*cosh(d*x + c)^3 - 108*((4*a^3*b + a*b^3)*d*f*x + (4*a^3*b +
 a*b^3)*d*e + (4*a^3*b + a*b^3)*f)*cosh(d*x + c)^2 - 36*(2*a^2*b^2*d*f*x +
2*a^2*b^2*d*e + a^2*b^2*f)*cosh(d*x + c))*sinh(d*x + c))/(b^5*d^2*cosh(d*x
+ c)^4 + 4*b^5*d^2*cosh(d*x + c)^3*sinh(d*x + c) + 6*b^5*d^2*cosh(d*x + c)^
2*sinh(d*x + c)^2 + 4*b^5*d^2*cosh(d*x + c)*sinh(d*x + c)^3 + b^5*d^2*sinh(
d*x + c)^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cosh(dx+c)^2\sinh(dx+c)^3}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)^2*sinh(d*x + c)^3/(b*sinh(d*x + c) + a),
x)
```

maple [B] time = 0.20, size = 1213, normalized size = 2.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/16*f*x^2/b-1/d*a^3/b^3*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/
2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a^3/b^3*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*
```

```
x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d*a^3/b^3*f/(a^2+b^2)^(1/
2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2*a^3/b^3
*f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))
*c-2/d^2*a^3/b^3*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+
b^2)^(1/2))-1/d*a^5/b^5*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)
-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a^5/b^5*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+
c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d*a^5/b^5*f/(a^2+b^2)^(1/2)
*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2*a^5/b^5*f
/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c
-2/d^2*a^5/b^5*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^
2)^(1/2))+2/d*a^3/b^3*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a
^2+b^2)^(1/2))-1/d^2*a^3/b^3*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^
2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d^2*a^3/b^3*f/(a^2+b^2)^(1/2)*dilog((b*
exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/2*a^2*e*x/b^3-1/8*e*x/
b-1/8*a*(4*a^2+b^2)*(d*f*x+d*e+f)/b^4/d^2*exp(-d*x-c)+1/4*a^2*f*x^2/b^3+1/2
*a^4*f*x^2/b^5+2/d*a^5/b^5*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*
a)/(a^2+b^2)^(1/2))-1/d^2*a^5/b^5*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a
^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d^2*a^5/b^5*f/(a^2+b^2)^(1/2)*dilo
g((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+a^4*e*x/b^5-1/72*a*
(3*d*f*x+3*d*e-f)/b^2/d^2*exp(3*d*x+3*c)-1/72*a*(3*d*f*x+3*d*e+f)/b^2/d^2*e
xp(-3*d*x-3*c)+1/256*(4*d*f*x+4*d*e-f)/b/d^2*exp(4*d*x+4*c)-1/256*(4*d*f*x+
4*d*e+f)/b/d^2*exp(-4*d*x-4*c)-1/8*a*(4*a^2*d*f*x+b^2*d*f*x+4*a^2*d*e+b^2*d
*e-4*a^2*f-b^2*f)/b^4/d^2*exp(d*x+c)+1/16*a^2*(2*d*f*x+2*d*e-f)/b^3/d^2*exp
(2*d*x+2*c)-1/16*a^2*(2*d*f*x+2*d*e+f)/b^3/d^2*exp(-2*d*x-2*c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2304}\left(4608\left(a^5e^c+a^3b^2e^c\right)\int\frac{xe^{(dx)}}{b^6e^{(2\,dx+2\,c)}+2\,ab^5e^{(dx+c)}-b^6}\,dx-\frac{\left(144\left(8\,a^4d^2e^{(4\,c)}+4\,a^2b^2d^2e^{(4\,c)}-b^4d^2e^{(4\,c)}\right)x\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/2304*(4608*(a^5*e^c + a^3*b^2*e^c)*integrate(x*e^(d*x)/(b^6*e^(2*d*x + 2
*c) + 2*a*b^5*e^(d*x + c) - b^6), x) - (144*(8*a^4*d^2*e^(4*c) + 4*a^2*b^2*
d^2*e^(4*c) - b^4*d^2*e^(4*c))*x^2 + 9*(4*b^4*d*x*e^(8*c) - b^4*e^(8*c))*e^
(4*d*x) - 32*(3*a*b^3*d*x*e^(7*c) - a*b^3*e^(7*c))*e^(3*d*x) + 144*(2*a^2*b
^2*d*x*e^(6*c) - a^2*b^2*e^(6*c))*e^(2*d*x) + 288*(4*a^3*b*e^(5*c) + a*b^3*
e^(5*c) - (4*a^3*b*d*e^(5*c) + a*b^3*d*e^(5*c))*x)*e^(d*x) - 288*(4*a^3*b*e
^(3*c) + a*b^3*e^(3*c) + (4*a^3*b*d*e^(3*c) + a*b^3*d*e^(3*c))*x)*e^(-d*x)
- 144*(2*a^2*b^2*d*x*e^(2*c) + a^2*b^2*e^(2*c))*e^(-2*d*x) - 32*(3*a*b^3*d*
```

```
x*e^c + a*b^3*e^c)*e^(-3*d*x) - 9*(4*b^4*d*x + b^4)*e^(-4*d*x))*e^(-4*c)/(b
^5*d^2))*f - 1/192*e*(192*sqrt(a^2 + b^2)*a^3*log((b*e^(-d*x - c) - a - sqr
t(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(b^5*d) + (8*a*b^2*e^
(-d*x - c) - 24*a^2*b*e^(-2*d*x - 2*c) - 3*b^3 + 24*(4*a^3 + a*b^2)*e^(-3*d
*x - 3*c))*e^(4*d*x + 4*c)/(b^4*d) - 24*(8*a^4 + 4*a^2*b^2 - b^4)*(d*x + c)
/(b^5*d) + (24*a^2*b*e^(-2*d*x - 2*c) + 8*a*b^2*e^(-3*d*x - 3*c) + 3*b^3*e^
(-4*d*x - 4*c) + 24*(4*a^3 + a*b^2)*e^(-d*x - c))/(b^4*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c + d\,x)^2 \sinh(c + d\,x)^3 \left(e + f\,x\right)}{a + b\sinh(c + d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**2*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.399 $\int \frac{\cosh^2(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=184

$$-\frac{a\left(3a^2+b^2\right)\cosh(c+dx)}{3b^4d}+\frac{\left(4a^2+b^2\right)\sinh(c+dx)\cosh(c+dx)}{8b^3d}+\frac{x\left(8a^4+4a^2b^2-b^4\right)}{8b^5}+\frac{2a^3\sqrt{a^2+b^2}\,\tanh^{-1}\left(\right.}{b^5d}$$

```
[Out] 1/8*(8*a^4+4*a^2*b^2-b^4)*x/b^5-1/3*a*(3*a^2+b^2)*cosh(d*x+c)/b^4/d+1/8*(4*
a^2+b^2)*cosh(d*x+c)*sinh(d*x+c)/b^3/d-1/3*a*cosh(d*x+c)*sinh(d*x+c)^2/b^2/
d+1/4*cosh(d*x+c)*sinh(d*x+c)^3/b/d+2*a^3*arctanh((b-a*tanh(1/2*d*x+1/2*c))
/(a^2+b^2)^(1/2))*(a^2+b^2)^(1/2)/b^5/d
```

Rubi [A] time = 0.79, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2889, 3050, 3049, 3023, 2735, 2660, 618, 204}

$$-\frac{a\left(3a^2+b^2\right)\cosh(c+dx)}{3b^4d}+\frac{2a^3\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^5d}+\frac{\left(4a^2+b^2\right)\sinh(c+dx)\cosh(c+dx)}{8b^3d}+\frac{x\left(4a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]^2*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((8*a^4 + 4*a^2*b^2 - b^4)*x)/(8*b^5) + (2*a^3*Sqrt[a^2 + b^2]*ArcTanh[(b -
 a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(b^5*d) - (a*(3*a^2 + b^2)*Cosh[c +
 d*x])/(3*b^4*d) + ((4*a^2 + b^2)*Cosh[c + d*x]*Sinh[c + d*x])/(8*b^3*d) -
(a*Cosh[c + d*x]*Sinh[c + d*x]^2)/(3*b^2*d) + (Cosh[c + d*x]*Sinh[c + d*x]^
3)/(4*b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2889

```
Int[cos[(e_.) + (f_.)*(x_)]^2*((d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)*((a_) +
(b_.)*sin[(e_.) + (f_.)*(x_)])^(m_), x_Symbol] :> Int[(d*Sin[e + f*x])^n*(a
 + b*Sin[e + f*x])^m*(1 - Sin[e + f*x]^2), x] /; FreeQ[{a, b, d, e, f, m, n
}, x] && NeQ[a^2 - b^2, 0] && (IGtQ[m, 0] || IntegersQ[2*m, 2*n])
```

Rule 3023

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*sin[(e_.)
+ (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[(C*Cos
[e + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b*f*(m + 2)), x] + Dist[1/(b*(m +
2)), Int[(a + b*Sin[e + f*x])^m*Simp[A*b*(m + 2) + b*C*(m + 1) + (b*B*(m +
2) - a*C)*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
  !LtQ[m, -1]
```

Rule 3049

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*sin[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_
.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[(C*Cos[e + f*x]*(a + b*Sin[e + f*x]
)^m*(c + d*Sin[e + f*x])^(n + 1))/(d*f*(m + n + 2)), x] + Dist[1/(d*(m + n
+ 2)), Int[(a + b*Sin[e + f*x])^(m - 1)*(c + d*Sin[e + f*x])^n*Simp[a*A*d*(
m + n + 2) + C*(b*c*m + a*d*(n + 1)) + (d*(A*b + a*B)*(m + n + 2) - C*(a*c
- b*d*(m + n + 1)))*Sin[e + f*x] + (C*(a*d*m - b*c*(m + 1)) + b*B*d*(m + n
+ 2))*Sin[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x
] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && GtQ[m,
0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[a, 0] && NeQ[c, 0])))
```

Rule 3050

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*sin[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :
> -Simp[(C*Cos[e + f*x]*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f*x])^(n + 1)
```

```
)/(d*f*(m + n + 2)), x] + Dist[1/(d*(m + n + 2)), Int[(a + b*Sin[e + f*x])^
(m - 1)*(c + d*Sin[e + f*x])^n*Simp[a*A*d*(m + n + 2) + C*(b*c*m + a*d*(n +
 1)) + (A*b*d*(m + n + 2) - C*(a*c - b*d*(m + n + 1)))*Sin[e + f*x] + C*(a*
d*m - b*c*(m + 1))*Sin[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A
, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
&& GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[a, 0] && NeQ[c, 0])
))
```

Rubi steps

$$\int \frac{\cosh^2(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \int \frac{\sinh^3(c+dx)\left(1+\sinh^2(c+dx)\right)}{a+b\sinh(c+dx)}\,dx$$

$$= \frac{\cosh(c+dx)\sinh^3(c+dx)}{4bd} + \frac{\int \frac{\sinh^2(c+dx)\left(-3a+b\sinh(c+dx)-4a\sinh^2(c+dx)\right)}{a+b\sinh(c+dx)}\,dx}{4b}$$

$$= -\frac{a\cosh(c+dx)\sinh^2(c+dx)}{3b^2d} + \frac{\cosh(c+dx)\sinh^3(c+dx)}{4bd} + \frac{\int \frac{\sinh(c+dx)(}{}}{}$$

$$= \frac{\left(4a^2+b^2\right)\cosh(c+dx)\sinh(c+dx)}{8b^3d} - \frac{a\cosh(c+dx)\sinh^2(c+dx)}{3b^2d} + \frac{\cos}{}$$

$$= -\frac{a\left(3a^2+b^2\right)\cosh(c+dx)}{3b^4d} + \frac{\left(4a^2+b^2\right)\cosh(c+dx)\sinh(c+dx)}{8b^3d} - \frac{a\cos}{}$$

$$= \frac{\left(8a^4+4a^2b^2-b^4\right)x}{8b^5} - \frac{a\left(3a^2+b^2\right)\cosh(c+dx)}{3b^4d} + \frac{\left(4a^2+b^2\right)\cosh(c+dx)}{8b^3d}$$

$$= \frac{\left(8a^4+4a^2b^2-b^4\right)x}{8b^5} - \frac{a\left(3a^2+b^2\right)\cosh(c+dx)}{3b^4d} + \frac{\left(4a^2+b^2\right)\cosh(c+dx)}{8b^3d}$$

$$= \frac{\left(8a^4+4a^2b^2-b^4\right)x}{8b^5} - \frac{a\left(3a^2+b^2\right)\cosh(c+dx)}{3b^4d} + \frac{\left(4a^2+b^2\right)\cosh(c+dx)}{8b^3d}$$

$$= \frac{\left(8a^4+4a^2b^2-b^4\right)x}{8b^5} + \frac{2a^3\sqrt{a^2+b^2}\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b^5d} - \frac{a\left(3a^2+b^2\right.}{3}$$

Mathematica [A] time = 1.81, size = 153, normalized size = 0.83

$$\frac{-24ab\left(4a^2+b^2\right)\cosh(c+dx)+3\left(8a^2b^2\sinh(2(c+dx))+4\left(8a^4+4a^2b^2-b^4\right)(c+dx)+64a^3\sqrt{-a^2-b^2}\ \tan\right.}{96b^5d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]^2*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-24*a*b*(4*a^2 + b^2)*Cosh[c + d*x] - 8*a*b^3*Cosh[3*(c + d*x)] + 3*(4*(8*
a^4 + 4*a^2*b^2 - b^4)*(c + d*x) + 64*a^3*Sqrt[-a^2 - b^2]*ArcTan[(b - a*Ta
nh[(c + d*x)/2])/Sqrt[-a^2 - b^2]] + 8*a^2*b^2*Sinh[2*(c + d*x)] + b^4*Sinh
[4*(c + d*x)]))/(96*b^5*d)
```

fricas [B] time = 0.61, size = 1134, normalized size = 6.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="frica
s")
```

```
[Out] 1/192*(3*b^4*cosh(d*x + c)^8 + 3*b^4*sinh(d*x + c)^8 - 8*a*b^3*cosh(d*x + c
)^7 + 24*a^2*b^2*cosh(d*x + c)^6 + 8*(3*b^4*cosh(d*x + c) - a*b^3)*sinh(d*x
 + c)^7 + 24*(8*a^4 + 4*a^2*b^2 - b^4)*d*x*cosh(d*x + c)^4 + 4*(21*b^4*cosh
(d*x + c)^2 - 14*a*b^3*cosh(d*x + c) + 6*a^2*b^2)*sinh(d*x + c)^6 - 24*a^2*
b^2*cosh(d*x + c)^2 - 24*(4*a^3*b + a*b^3)*cosh(d*x + c)^5 + 24*(7*b^4*cosh
(d*x + c)^3 - 7*a*b^3*cosh(d*x + c)^2 + 6*a^2*b^2*cosh(d*x + c) - 4*a^3*b -
 a*b^3)*sinh(d*x + c)^5 - 8*a*b^3*cosh(d*x + c) + 2*(105*b^4*cosh(d*x + c)^
4 - 140*a*b^3*cosh(d*x + c)^3 + 180*a^2*b^2*cosh(d*x + c)^2 + 12*(8*a^4 + 4
*a^2*b^2 - b^4)*d*x - 60*(4*a^3*b + a*b^3)*cosh(d*x + c))*sinh(d*x + c)^4 -
 3*b^4 - 24*(4*a^3*b + a*b^3)*cosh(d*x + c)^3 + 8*(21*b^4*cosh(d*x + c)^5 -
 35*a*b^3*cosh(d*x + c)^4 + 60*a^2*b^2*cosh(d*x + c)^3 - 12*a^3*b - 3*a*b^3
 + 12*(8*a^4 + 4*a^2*b^2 - b^4)*d*x*cosh(d*x + c) - 30*(4*a^3*b + a*b^3)*co
sh(d*x + c)^2)*sinh(d*x + c)^3 + 12*(7*b^4*cosh(d*x + c)^6 - 14*a*b^3*cosh(
d*x + c)^5 + 30*a^2*b^2*cosh(d*x + c)^4 + 12*(8*a^4 + 4*a^2*b^2 - b^4)*d*x*
cosh(d*x + c)^2 - 2*a^2*b^2 - 20*(4*a^3*b + a*b^3)*cosh(d*x + c)^3 - 6*(4*a
^3*b + a*b^3)*cosh(d*x + c))*sinh(d*x + c)^2 + 192*(a^3*cosh(d*x + c)^4 + 4
*a^3*cosh(d*x + c)^3*sinh(d*x + c) + 6*a^3*cosh(d*x + c)^2*sinh(d*x + c)^2
+ 4*a^3*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*sinh(d*x + c)^4)*sqrt(a^2 + b^2
)*log((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*
a^2 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x + c) + 2*sqrt(a^2 + b^2)*(
b*cosh(d*x + c) + b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c
)^2 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) + 8*(
```

```
3*b^4*cosh(d*x + c)^7 - 7*a*b^3*cosh(d*x + c)^6 + 18*a^2*b^2*cosh(d*x + c)^
5 + 12*(8*a^4 + 4*a^2*b^2 - b^4)*d*x*cosh(d*x + c)^3 - 6*a^2*b^2*cosh(d*x +
 c) - 15*(4*a^3*b + a*b^3)*cosh(d*x + c)^4 - a*b^3 - 9*(4*a^3*b + a*b^3)*co
sh(d*x + c)^2)*sinh(d*x + c))/(b^5*d*cosh(d*x + c)^4 + 4*b^5*d*cosh(d*x + c
)^3*sinh(d*x + c) + 6*b^5*d*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*b^5*d*cosh(
d*x + c)*sinh(d*x + c)^3 + b^5*d*sinh(d*x + c)^4)
```

giac [A] time = 0.42, size = 258, normalized size = 1.40

$$\frac{\frac{24\left(8a^4+4a^2b^2-b^4\right)(dx+c)}{b^5}+\frac{3b^3e^{(4dx+4c)}-8ab^2e^{(3dx+3c)}+24a^2be^{(2dx+2c)}-96a^3e^{(dx+c)}-24ab^2e^{(dx+c)}}{b^4}-\frac{\left(24a^2b^2e^{(2dx+2c)}+8ab^3e^{(dx+c)}+3b^4+24\left(\right.\right.}{b^5}}{192d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac"
)
```

```
[Out] 1/192*(24*(8*a^4 + 4*a^2*b^2 - b^4)*(d*x + c)/b^5 + (3*b^3*e^(4*d*x + 4*c)
- 8*a*b^2*e^(3*d*x + 3*c) + 24*a^2*b*e^(2*d*x + 2*c) - 96*a^3*e^(d*x + c) -
 24*a*b^2*e^(d*x + c))/b^4 - (24*a^2*b^2*e^(2*d*x + 2*c) + 8*a*b^3*e^(d*x +
 c) + 3*b^4 + 24*(4*a^3*b + a*b^3)*e^(3*d*x + 3*c))*e^(-4*d*x - 4*c)/b^5 -
192*(a^5 + a^3*b^2)*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(
2*b*e^(d*x + c) + 2*a + 2*sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*b^5))/d
```

maple [B] time = 0.08, size = 624, normalized size = 3.39

$$\frac{a}{2d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)a^2}{2d\,b^3}-\frac{a}{2d\,b^2\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)a^2}{2d\,b^3}+\frac{}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2/d/b^2/(tanh(1/2*d*x+1/2*c)-1)*a-1/2/d/b^3*ln(tanh(1/2*d*x+1/2*c)-1)*a^2
-1/2/d/b^2/(tanh(1/2*d*x+1/2*c)+1)*a+1/2/d/b^3*ln(tanh(1/2*d*x+1/2*c)+1)*a^
2+1/2/d/b^2/(tanh(1/2*d*x+1/2*c)-1)^2*a+1/2/d/b^3/(tanh(1/2*d*x+1/2*c)-1)*a
^2+1/2/d/b^2/(tanh(1/2*d*x+1/2*c)+1)^2*a+1/2/d/b^3/(tanh(1/2*d*x+1/2*c)+1)*
a^2+1/3/d/b^2/(tanh(1/2*d*x+1/2*c)-1)^3*a+1/2/d/b^3/(tanh(1/2*d*x+1/2*c)-1)
^2*a^2+1/d/b^4/(tanh(1/2*d*x+1/2*c)-1)*a^3-1/d*a^4/b^5*ln(tanh(1/2*d*x+1/2*
c)-1)-1/3/d/b^2/(tanh(1/2*d*x+1/2*c)+1)^3*a-1/2/d/b^3/(tanh(1/2*d*x+1/2*c)+
1)^2*a^2-1/d/b^4/(tanh(1/2*d*x+1/2*c)+1)*a^3+1/d*a^4/b^5*ln(tanh(1/2*d*x+1/
2*c)+1)-1/8/d/b*ln(tanh(1/2*d*x+1/2*c)+1)+1/8/d/b*ln(tanh(1/2*d*x+1/2*c)-1)
```

```
-2/d*a^3*(a^2+b^2)^(1/2)/b^5*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2
+b^2)^(1/2))+1/4/d/b/(tanh(1/2*d*x+1/2*c)-1)^4-1/4/d/b/(tanh(1/2*d*x+1/2*c)
+1)^4+3/8/d/b/(tanh(1/2*d*x+1/2*c)-1)^2-3/8/d/b/(tanh(1/2*d*x+1/2*c)+1)^2+1
/2/d/b/(tanh(1/2*d*x+1/2*c)-1)^3+1/2/d/b/(tanh(1/2*d*x+1/2*c)+1)^3+1/8/d/b/
(tanh(1/2*d*x+1/2*c)-1)+1/8/d/b/(tanh(1/2*d*x+1/2*c)+1)
```

maxima [A] time = 0.53, size = 257, normalized size = 1.40

$$-\frac{\sqrt{a^2+b^2}\,a^3\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{b^5d}-\frac{\left(8\,ab^2e^{(-dx-c)}-24\,a^2be^{(-2\,dx-2\,c)}-3\,b^3+24\left(4\,a^3+ab^2\right)e^{(-3\,dx-3\,c)}\right)e^{(4\,dx+4}}{192\,b^4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxim
a")
```

```
[Out] -sqrt(a^2 + b^2)*a^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x
- c) - a + sqrt(a^2 + b^2)))/(b^5*d) - 1/192*(8*a*b^2*e^(-d*x - c) - 24*a^2
*b*e^(-2*d*x - 2*c) - 3*b^3 + 24*(4*a^3 + a*b^2)*e^(-3*d*x - 3*c))*e^(4*d*x
 + 4*c)/(b^4*d) + 1/8*(8*a^4 + 4*a^2*b^2 - b^4)*(d*x + c)/(b^5*d) - 1/192*(
24*a^2*b*e^(-2*d*x - 2*c) + 8*a*b^2*e^(-3*d*x - 3*c) + 3*b^3*e^(-4*d*x - 4*
c) + 24*(4*a^3 + a*b^2)*e^(-d*x - c))/(b^4*d)
```

mupad [B] time = 0.73, size = 330, normalized size = 1.79

$$\frac{x\left(8\,a^4+4\,a^2\,b^2-b^4\right)}{8\,b^5}-\frac{e^{-4\,c-4\,d\,x}}{64\,b\,d}+\frac{e^{4\,c+4\,d\,x}}{64\,b\,d}-\frac{a\,e^{-3\,c-3\,d\,x}}{24\,b^2\,d}-\frac{a\,e^{3\,c+3\,d\,x}}{24\,b^2\,d}-\frac{e^{c+d\,x}\left(4\,a^3+a\,b^2\right)}{8\,b^4\,d}-\frac{a^2\,e^{-2\,c-2\,d\,x}}{8\,b^3\,d}+\frac{a^2\,e^{2\,c+2}}{8\,b^3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] (x*(8*a^4 - b^4 + 4*a^2*b^2))/(8*b^5) - exp(- 4*c - 4*d*x)/(64*b*d) + exp(4
*c + 4*d*x)/(64*b*d) - (a*exp(- 3*c - 3*d*x))/(24*b^2*d) - (a*exp(3*c + 3*d
*x))/(24*b^2*d) - (exp(c + d*x)*(a*b^2 + 4*a^3))/(8*b^4*d) - (a^2*exp(- 2*c
 - 2*d*x))/(8*b^3*d) + (a^2*exp(2*c + 2*d*x))/(8*b^3*d) - (exp(- c - d*x)*(
a*b^2 + 4*a^3))/(8*b^4*d) - (a^3*log((2*a^3*exp(c + d*x)*(a^2 + b^2))/b^6 -
 (2*a^3*(a^2 + b^2)^(1/2)*(b - a*exp(c + d*x)))/b^6)*(a^2 + b^2)^(1/2))/(b^
5*d) + (a^3*log((2*a^3*(a^2 + b^2)^(1/2)*(b - a*exp(c + d*x)))/b^6 + (2*a^3
*exp(c + d*x)*(a^2 + b^2))/b^6)*(a^2 + b^2)^(1/2))/(b^5*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.400 $\int \frac{\cosh^2(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=39

$$\text{Int}\left(\frac{\sinh^3(c+dx)\cosh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)^2*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh^2(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]^2*Sinh[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]^2*Sinh[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x
])), x]
```

Rubi steps

$$\int \frac{\cosh^2(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\cosh^2(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]^2*Sinh[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x])
),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)^2\sinh(dx+c)^3}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] integral(cosh(d*x + c)^2*sinh(d*x + c)^3/(a*f*x + a*e + (b*f*x + b*e)*sinh(
d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh (dx+c)^2 \sinh (dx+c)^3}{(fx+e)(b\sinh (dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate(cosh(d*x + c)^2*sinh(d*x + c)^3/((f*x + e)*(b*sinh(d*x + c) + a))
, x)
```

maple [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\left(\cosh^2(dx+c)\right)\left(\sinh^3(dx+c)\right)}{(fx+e)\,(a+b\sinh (dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)^2*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2\left(a^5e^c+a^3b^2e^c\right)\int -\frac{e^{(dx)}}{b^6fx+b^6e-\left(b^6fxe^{(2c)}+b^6ee^{(2c)}\right)e^{(2dx)}-2\left(ab^5fxe^c+ab^5ee^c\right)e^{(dx)}}\,dx-\frac{e^{\left(-4c+\frac{4de}{f}\right)}E_1\left(\frac{4(fx}{}\right.}{16bf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -2*(a^5*e^c + a^3*b^2*e^c)*integrate(-e^(d*x)/(b^6*f*x + b^6*e - (b^6*f*x*e
^(2*c) + b^6*e*e^(2*c))*e^(2*d*x) - 2*(a*b^5*f*x*e^c + a*b^5*e*e^c)*e^(d*x)
), x) - 1/16*e^(-4*c + 4*d*e/f)*exp_integral_e(1, 4*(f*x + e)*d/f)/(b*f) -
```

```
1/8*a*e^(-3*c + 3*d*e/f)*exp_integral_e(1, 3*(f*x + e)*d/f)/(b^2*f) - 1/4*a
^2*e^(-2*c + 2*d*e/f)*exp_integral_e(1, 2*(f*x + e)*d/f)/(b^3*f) - 1/4*a^2*
e^(2*c - 2*d*e/f)*exp_integral_e(1, -2*(f*x + e)*d/f)/(b^3*f) + 1/8*a*e^(3*
c - 3*d*e/f)*exp_integral_e(1, -3*(f*x + e)*d/f)/(b^2*f) - 1/16*e^(4*c - 4*
d*e/f)*exp_integral_e(1, -4*(f*x + e)*d/f)/(b*f) - 1/8*(4*a^3 + a*b^2)*e^(-
c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b^4*f) + 1/8*(4*a^3*e^c + a*b^
2*e^c)*e^(-d*e/f)*exp_integral_e(1, -(f*x + e)*d/f)/(b^4*f) + 1/8*(8*a^4 +
4*a^2*b^2 - b^4)*log(f*x + e)/(b^5*f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh (c+d\,x)^2 \sinh (c+d\,x)^3}{\left(e+f\,x\right)\,(a+b\sinh (c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*sinh(c + d*x)^3)/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)^2*sinh(c + d*x)^3)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2*sinh(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.401 $\int \frac{(e+fx)^3 \cosh^3(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1443

$$-\frac{6f^3\cosh(c+dx)a^4}{b^5d^4}-\frac{3f(e+fx)^2\cosh(c+dx)a^4}{b^5d^2}+\frac{(e+fx)^3\sinh(c+dx)a^4}{b^5d}+\frac{6f^2(e+fx)\sinh(c+dx)a^4}{b^5d^3}+\frac{(a^2+$$

```
[Out] -a^3*(a^2+b^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^6/d-a^3*(
a^2+b^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^6/d-6*a^3*(a^2+
b^2)*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^6/d^4-6*a^3*(a^2+b^
2)*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^6/d^4+1/4*a^3*(a^2+b^
2)*(f*x+e)^4/b^6/f-6*a^4*f^3*cosh(d*x+c)/b^5/d^4-2/27*a^2*f^3*cosh(d*x+c)^3
/b^3/d^4-1/4*a*(f*x+e)^3*cosh(d*x+c)^4/b^2/d-1/48*f*(f*x+e)^2*cosh(3*d*x+3*
c)/b/d^2-3/400*f*(f*x+e)^2*cosh(5*d*x+5*c)/b/d^2+2/3*a^2*(f*x+e)^3*sinh(d*x
+c)/b^3/d-1/2*a^3*(f*x+e)^3*sinh(d*x+c)^2/b^4/d+1/72*f^2*(f*x+e)*sinh(3*d*x
+3*c)/b/d^3+3/1000*f^2*(f*x+e)*sinh(5*d*x+5*c)/b/d^3-3/8*a^3*f^3*x/b^4/d^3-
3*a^4*f*(f*x+e)^2*cosh(d*x+c)/b^5/d^2-9/32*a*f^2*(f*x+e)*cosh(d*x+c)^2/b^2/
d^3-1/3*a^2*f*(f*x+e)^2*cosh(d*x+c)^3/b^3/d^2-3/32*a*f^2*(f*x+e)*cosh(d*x+c
)^4/b^2/d^3+6*a^4*f^2*(f*x+e)*sinh(d*x+c)/b^5/d^3+3/8*a^3*f^3*cosh(d*x+c)*s
inh(d*x+c)/b^4/d^4+1/3*a^2*(f*x+e)^3*cosh(d*x+c)^2*sinh(d*x+c)/b^3/d+3/128*
a*f^3*cosh(d*x+c)^3*sinh(d*x+c)/b^2/d^4-3/4*a^3*f^2*(f*x+e)*sinh(d*x+c)^2/b
^4/d^3+3/4*a^3*f*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/b^4/d^2+2/9*a^2*f^2*(f*x
+e)*cosh(d*x+c)^2*sinh(d*x+c)/b^3/d^3+3/16*a*f*(f*x+e)^2*cosh(d*x+c)^3*sinh
(d*x+c)/b^2/d^2+9/32*a*f*(f*x+e)^2*cosh(d*x+c)*sinh(d*x+c)/b^2/d^2-1/4*a^3*
(f*x+e)^3/b^4/d-1/216*f^3*cosh(3*d*x+3*c)/b/d^4-3/5000*f^3*cosh(5*d*x+5*c)/
b/d^4+1/48*(f*x+e)^3*sinh(3*d*x+3*c)/b/d+1/80*(f*x+e)^3*sinh(5*d*x+5*c)/b/d
+3/32*a*(f*x+e)^3/b^2/d-1/8*(f*x+e)^3*sinh(d*x+c)/b/d+3/4*f^3*cosh(d*x+c)/b
/d^4+45/256*a*f^3*x/b^2/d^3-40/9*a^2*f^3*cosh(d*x+c)/b^3/d^4+3/8*f*(f*x+e)^
2*cosh(d*x+c)/b/d^2-3/4*f^2*(f*x+e)*sinh(d*x+c)/b/d^3+40/9*a^2*f^2*(f*x+e)*
sinh(d*x+c)/b^3/d^3+45/256*a*f^3*cosh(d*x+c)*sinh(d*x+c)/b^2/d^4-2*a^2*f*(f
*x+e)^2*cosh(d*x+c)/b^3/d^2-3*a^3*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-b*exp(d*
x+c)/(a-(a^2+b^2)^(1/2)))/b^6/d^2-3*a^3*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-b*
exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^6/d^2+6*a^3*(a^2+b^2)*f^2*(f*x+e)*polylog
(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^6/d^3+6*a^3*(a^2+b^2)*f^2*(f*x+e)*p
olylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^6/d^3+a^4*(f*x+e)^3*sinh(d*x+
c)/b^5/d
```

Rubi [A] time = 2.19, antiderivative size = 1443, normalized size of antiderivative = 1.00, number of steps used = 55, number of rules used = 18, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5579, 5448, 3296, 2638, 5447, 3311, 32, 2635, 8, 3310, 5565, 5446, 5561, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6f^3\cosh(c+dx)a^4}{b^5d^4}-\frac{3f(e+fx)^2\cosh(c+dx)a^4}{b^5d^2}+\frac{(e+fx)^3\sinh(c+dx)a^4}{b^5d}+\frac{6f^2(e+fx)\sinh(c+dx)a^4}{b^5d^3}+\frac{(a^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]^3*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-3*a^3*f^3*x)/(8*b^4*d^3) + (45*a*f^3*x)/(256*b^2*d^3) - (a^3*(e + f*x)^3)
/(4*b^4*d) + (3*a*(e + f*x)^3)/(32*b^2*d) + (a^3*(a^2 + b^2)*(e + f*x)^4)/(
4*b^6*f) - (6*a^4*f^3*Cosh[c + d*x])/(b^5*d^4) - (40*a^2*f^3*Cosh[c + d*x])
/(9*b^3*d^4) + (3*f^3*Cosh[c + d*x])/(4*b*d^4) - (3*a^4*f*(e + f*x)^2*Cosh[
c + d*x])/(b^5*d^2) - (2*a^2*f*(e + f*x)^2*Cosh[c + d*x])/(b^3*d^2) + (3*f*
(e + f*x)^2*Cosh[c + d*x])/(8*b*d^2) - (9*a*f^2*(e + f*x)*Cosh[c + d*x]^2)/
(32*b^2*d^3) - (2*a^2*f^3*Cosh[c + d*x]^3)/(27*b^3*d^4) - (a^2*f*(e + f*x)^
2*Cosh[c + d*x]^3)/(3*b^3*d^2) - (3*a*f^2*(e + f*x)*Cosh[c + d*x]^4)/(32*b^
2*d^3) - (a*(e + f*x)^3*Cosh[c + d*x]^4)/(4*b^2*d) - (f^3*Cosh[3*c + 3*d*x]
)/(216*b*d^4) - (f*(e + f*x)^2*Cosh[3*c + 3*d*x])/(48*b*d^2) - (3*f^3*Cosh[
5*c + 5*d*x])/(5000*b*d^4) - (3*f*(e + f*x)^2*Cosh[5*c + 5*d*x])/(400*b*d^2
) - (a^3*(a^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^
2])])/(b^6*d) - (a^3*(a^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + S
qrt[a^2 + b^2])])/(b^6*d) - (3*a^3*(a^2 + b^2)*f*(e + f*x)^2*PolyLog[2, -((
b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^6*d^2) - (3*a^3*(a^2 + b^2)*f*(e
 + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^6*d^2) +
 (6*a^3*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^
2 + b^2]))])/(b^6*d^3) + (6*a^3*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E
^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^6*d^3) - (6*a^3*(a^2 + b^2)*f^3*Pol
yLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^6*d^4) - (6*a^3*(a^2
+ b^2)*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^6*d^4)
+ (6*a^4*f^2*(e + f*x)*Sinh[c + d*x])/(b^5*d^3) + (40*a^2*f^2*(e + f*x)*Sin
h[c + d*x])/(9*b^3*d^3) - (3*f^2*(e + f*x)*Sinh[c + d*x])/(4*b*d^3) + (a^4*
(e + f*x)^3*Sinh[c + d*x])/(b^5*d) + (2*a^2*(e + f*x)^3*Sinh[c + d*x])/(3*b
^3*d) - ((e + f*x)^3*Sinh[c + d*x])/(8*b*d) + (3*a^3*f^3*Cosh[c + d*x]*Sinh
[c + d*x])/(8*b^4*d^4) + (45*a*f^3*Cosh[c + d*x]*Sinh[c + d*x])/(256*b^2*d^
4) + (3*a^3*f*(e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x])/(4*b^4*d^2) + (9*a*f
*(e + f*x)^2*Cosh[c + d*x]*Sinh[c + d*x])/(32*b^2*d^2) + (2*a^2*f^2*(e + f*
x)*Cosh[c + d*x]^2*Sinh[c + d*x])/(9*b^3*d^3) + (a^2*(e + f*x)^3*Cosh[c + d
*x]^2*Sinh[c + d*x])/(3*b^3*d) + (3*a*f^3*Cosh[c + d*x]^3*Sinh[c + d*x])/(1
28*b^2*d^4) + (3*a*f*(e + f*x)^2*Cosh[c + d*x]^3*Sinh[c + d*x])/(16*b^2*d^2
) - (3*a^3*f^2*(e + f*x)*Sinh[c + d*x]^2)/(4*b^4*d^3) - (a^3*(e + f*x)^3*Si
nh[c + d*x]^2)/(2*b^4*d) + (f^2*(e + f*x)*Sinh[3*c + 3*d*x])/(72*b*d^3) + (
(e + f*x)^3*Sinh[3*c + 3*d*x])/(48*b*d) + (3*f^2*(e + f*x)*Sinh[5*c + 5*d*x
])/(1000*b*d^3) + ((e + f*x)^3*Sinh[5*c + 5*d*x])/(80*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5448

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sinh[a +
b*x]^n*Cosh[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] &
& IGtQ[p, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh^3(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\cosh^3(c+dx)\sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\cosh^3(c+dx}{a+b\sinh(c}}{b}$$

$$= -\frac{a\int (e+fx)^3\cosh^3(c+dx)\sinh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^3\cosh^3(}{a+b\sin}}{b^2}$$

$$= -\frac{a(e+fx)^3\cosh^4(c+dx)}{4b^2d} + \frac{a^2\int (e+fx)^3\cosh^3(c+dx)\,dx}{b^3} - \frac{a}{}$$

$$= -\frac{a^2f(e+fx)^2\cosh^3(c+dx)}{3b^3d^2} - \frac{3af^2(e+fx)\cosh^4(c+dx)}{32b^2d^3} - \frac{a(}{}$$

$$= \frac{a^3\left(a^2+b^2\right)(e+fx)^4}{4b^6f} + \frac{3f(e+fx)^2\cosh(c+dx)}{8bd^2} - \frac{9af^2(e+f}{3}$$

$$= \frac{3a(e+fx)^3}{32b^2d} + \frac{a^3\left(a^2+b^2\right)(e+fx)^4}{4b^6f} - \frac{3a^4f(e+fx)^2\cosh(c+d}{b^5d^2}$$

$$= \frac{45af^3x}{256b^2d^3} - \frac{a^3(e+fx)^3}{4b^4d} + \frac{3a(e+fx)^3}{32b^2d} + \frac{a^3\left(a^2+b^2\right)(e+fx)^4}{4b^6f} -$$

$$= -\frac{3a^3f^3x}{8b^4d^3} + \frac{45af^3x}{256b^2d^3} - \frac{a^3(e+fx)^3}{4b^4d} + \frac{3a(e+fx)^3}{32b^2d} + \frac{a^3\left(a^2+b^2\right)}{4b^6}$$

$$= -\frac{3a^3f^3x}{8b^4d^3} + \frac{45af^3x}{256b^2d^3} - \frac{a^3(e+fx)^3}{4b^4d} + \frac{3a(e+fx)^3}{32b^2d} + \frac{a^3\left(a^2+b^2\right)}{4b^6}$$

$$= -\frac{3a^3f^3x}{8b^4d^3} + \frac{45af^3x}{256b^2d^3} - \frac{a^3(e+fx)^3}{4b^4d} + \frac{3a(e+fx)^3}{32b^2d} + \frac{a^3\left(a^2+b^2\right)}{4b^6}$$

Mathematica [B] time = 18.20, size = 5157, normalized size = 3.57

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^3*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x
]),x]
```

```
[Out] Result too large to show
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="fricas")
```

```
[Out] Timed out
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \cosh(dx+c)^3 \sinh(dx+c)^3}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="giac")
```

```
[Out] integrate((f*x + e)^3*cosh(d*x + c)^3*sinh(d*x + c)^3/(b*sinh(d*x + c) + a)
, x)
```

maple [**F**] time = 0.68, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \left(\cosh^3(dx+c)\right)\left(\sinh^3(dx+c)\right)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="maxima")
```

```
[Out] -1/960*e^3*((15*a*b^3*e^(-d*x - c) - 6*b^4 - 10*(4*a^2*b^2 + b^4)*e^(-2*d*x
 - 2*c) + 60*(2*a^3*b + a*b^3)*e^(-3*d*x - 3*c) - 60*(8*a^4 + 6*a^2*b^2 - b
^4)*e^(-4*d*x - 4*c))*e^(5*d*x + 5*c)/(b^5*d) + 960*(a^5 + a^3*b^2)*(d*x +
```

c)/(b^6*d) + (15*a*b^3*e^(-4*d*x - 4*c) + 6*b^4*e^(-5*d*x - 5*c) + 60*(8*a^
4 + 6*a^2*b^2 - b^4)*e^(-d*x - c) + 60*(2*a^3*b + a*b^3)*e^(-2*d*x - 2*c) +
 10*(4*a^2*b^2 + b^4)*e^(-3*d*x - 3*c))/(b^5*d) + 960*(a^5 + a^3*b^2)*log(-
2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^6*d)) - 1/34560000*(8640000*(
a^5*d^4*f^3*e^(5*c) + a^3*b^2*d^4*f^3*e^(5*c))*x^4 + 34560000*(a^5*d^4*e*f^
2*e^(5*c) + a^3*b^2*d^4*e*f^2*e^(5*c))*x^3 + 51840000*(a^5*d^4*e^2*f*e^(5*c
) + a^3*b^2*d^4*e^2*f*e^(5*c))*x^2 - 1728*(125*b^5*d^3*f^3*x^3*e^(10*c) + 7
5*(5*d^3*e*f^2 - d^2*f^3)*b^5*x^2*e^(10*c) + 15*(25*d^3*e^2*f - 10*d^2*e*f^
2 + 2*d*f^3)*b^5*x*e^(10*c) - 3*(25*d^2*e^2*f - 10*d*e*f^2 + 2*f^3)*b^5*e^(
10*c))*e^(5*d*x) + 16875*(32*a*b^4*d^3*f^3*x^3*e^(9*c) + 24*(4*d^3*e*f^2 -
d^2*f^3)*a*b^4*x^2*e^(9*c) + 12*(8*d^3*e^2*f - 4*d^2*e*f^2 + d*f^3)*a*b^4*x
*e^(9*c) - 3*(8*d^2*e^2*f - 4*d*e*f^2 + f^3)*a*b^4*e^(9*c))*e^(4*d*x) + 400
00*(4*(9*d^2*e^2*f - 6*d*e*f^2 + 2*f^3)*a^2*b^3*e^(8*c) + (9*d^2*e^2*f - 6*
d*e*f^2 + 2*f^3)*b^5*e^(8*c) - 9*(4*a^2*b^3*d^3*f^3*e^(8*c) + b^5*d^3*f^3*e
^(8*c))*x^3 - 9*(4*(3*d^3*e*f^2 - d^2*f^3)*a^2*b^3*e^(8*c) + (3*d^3*e*f^2 -
 d^2*f^3)*b^5*e^(8*c))*x^2 - 3*(4*(9*d^3*e^2*f - 6*d^2*e*f^2 + 2*d*f^3)*a^2
*b^3*e^(8*c) + (9*d^3*e^2*f - 6*d^2*e*f^2 + 2*d*f^3)*b^5*e^(8*c))*x)*e^(3*d
x) - 540000(6*(2*d^2*e^2*f - 2*d*e*f^2 + f^3)*a^3*b^2*e^(7*c) + 3*(2*d^2*
e^2*f - 2*d*e*f^2 + f^3)*a*b^4*e^(7*c) - 4*(2*a^3*b^2*d^3*f^3*e^(7*c) + a*b
^4*d^3*f^3*e^(7*c))*x^3 - 6*(2*(2*d^3*e*f^2 - d^2*f^3)*a^3*b^2*e^(7*c) + (2
*d^3*e*f^2 - d^2*f^3)*a*b^4*e^(7*c))*x^2 - 6*(2*(2*d^3*e^2*f - 2*d^2*e*f^2
+ d*f^3)*a^3*b^2*e^(7*c) + (2*d^3*e^2*f - 2*d^2*e*f^2 + d*f^3)*a*b^4*e^(7*c
))*x)*e^(2*d*x) + 2160000*(24*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a^4*b*e^(6*c)
 + 18*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*a^2*b^3*e^(6*c) - 3*(d^2*e^2*f - 2*d*
e*f^2 + 2*f^3)*b^5*e^(6*c) - (8*a^4*b*d^3*f^3*e^(6*c) + 6*a^2*b^3*d^3*f^3*e
^(6*c) - b^5*d^3*f^3*e^(6*c))*x^3 - 3*(8*(d^3*e*f^2 - d^2*f^3)*a^4*b*e^(6*c
) + 6*(d^3*e*f^2 - d^2*f^3)*a^2*b^3*e^(6*c) - (d^3*e*f^2 - d^2*f^3)*b^5*e^(
6*c))*x^2 - 3*(8*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*a^4*b*e^(6*c) + 6*(d^3
*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*a^2*b^3*e^(6*c) - (d^3*e^2*f - 2*d^2*e*f^2
+ 2*d*f^3)*b^5*e^(6*c))*x)*e^(d*x) + 2160000*(24*(d^2*e^2*f + 2*d*e*f^2 + 2
*f^3)*a^4*b*e^(4*c) + 18*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*a^2*b^3*e^(4*c) -
3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*b^5*e^(4*c) + (8*a^4*b*d^3*f^3*e^(4*c) +
6*a^2*b^3*d^3*f^3*e^(4*c) - b^5*d^3*f^3*e^(4*c))*x^3 + 3*(8*(d^3*e*f^2 + d^
2*f^3)*a^4*b*e^(4*c) + 6*(d^3*e*f^2 + d^2*f^3)*a^2*b^3*e^(4*c) - (d^3*e*f^2
 + d^2*f^3)*b^5*e^(4*c))*x^2 + 3*(8*(d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*a^4
*b*e^(4*c) + 6*(d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*a^2*b^3*e^(4*c) - (d^3*e
^2*f + 2*d^2*e*f^2 + 2*d*f^3)*b^5*e^(4*c))*x)*e^(-d*x) + 540000*(6*(2*d^2*e
^2*f + 2*d*e*f^2 + f^3)*a^3*b^2*e^(3*c) + 3*(2*d^2*e^2*f + 2*d*e*f^2 + f^3)
*a*b^4*e^(3*c) + 4*(2*a^3*b^2*d^3*f^3*e^(3*c) + a*b^4*d^3*f^3*e^(3*c))*x^3
+ 6*(2*(2*d^3*e*f^2 + d^2*f^3)*a^3*b^2*e^(3*c) + (2*d^3*e*f^2 + d^2*f^3)*a*
b^4*e^(3*c))*x^2 + 6*(2*(2*d^3*e^2*f + 2*d^2*e*f^2 + d*f^3)*a^3*b^2*e^(3*c)
 + (2*d^3*e^2*f + 2*d^2*e*f^2 + d*f^3)*a*b^4*e^(3*c))*x)*e^(-2*d*x) + 40000
(4(9*d^2*e^2*f + 6*d*e*f^2 + 2*f^3)*a^2*b^3*e^(2*c) + (9*d^2*e^2*f + 6*d*
e*f^2 + 2*f^3)*b^5*e^(2*c) + 9*(4*a^2*b^3*d^3*f^3*e^(2*c) + b^5*d^3*f^3*e^(
2*c))*x^3 + 9*(4*(3*d^3*e*f^2 + d^2*f^3)*a^2*b^3*e^(2*c) + (3*d^3*e*f^2 + d

```
^2*f^3)*b^5*e^(2*c))*x^2 + 3*(4*(9*d^3*e^2*f + 6*d^2*e*f^2 + 2*d*f^3)*a^2*b
^3*e^(2*c) + (9*d^3*e^2*f + 6*d^2*e*f^2 + 2*d*f^3)*b^5*e^(2*c))*x)*e^(-3*d*
x) + 16875*(32*a*b^4*d^3*f^3*x^3*e^c + 24*(4*d^3*e*f^2 + d^2*f^3)*a*b^4*x^2
*e^c + 12*(8*d^3*e^2*f + 4*d^2*e*f^2 + d*f^3)*a*b^4*x*e^c + 3*(8*d^2*e^2*f
+ 4*d*e*f^2 + f^3)*a*b^4*e^c)*e^(-4*d*x) + 1728*(125*b^5*d^3*f^3*x^3 + 75*(
5*d^3*e*f^2 + d^2*f^3)*b^5*x^2 + 15*(25*d^3*e^2*f + 10*d^2*e*f^2 + 2*d*f^3)
*b^5*x + 3*(25*d^2*e^2*f + 10*d*e*f^2 + 2*f^3)*b^5)*e^(-5*d*x))*e^(-5*c)/(b
^6*d^4) + integrate(-2*((a^5*b*f^3 + a^3*b^3*f^3)*x^3 + 3*(a^5*b*e*f^2 + a^
3*b^3*e*f^2)*x^2 + 3*(a^5*b*e^2*f + a^3*b^3*e^2*f)*x - ((a^6*f^3*e^c + a^4*
b^2*f^3*e^c)*x^3 + 3*(a^6*e*f^2*e^c + a^4*b^2*e*f^2*e^c)*x^2 + 3*(a^6*e^2*f
*e^c + a^4*b^2*e^2*f*e^c)*x)*e^(d*x))/(b^7*e^(2*d*x + 2*c) + 2*a*b^6*e^(d*x
 + c) - b^7), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh (c+d\,x)^3\,\sinh (c+d\,x)^3\,{\left(e+f\,x\right)}^3}{a+b\,\sinh (c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^3*sinh(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**3*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.402 $\int \frac{(e+fx)^2 \cosh^3(c+dx) \sinh^3(c+dx)}{a+b\sinh(c+dx)} dx$

Optimal. Leaf size=1049

$$-\frac{2f(e+fx)\cosh(c+dx)a^4}{b^5d^2}+\frac{2f^2\sinh(c+dx)a^4}{b^5d^3}+\frac{(e+fx)^2\sinh(c+dx)a^4}{b^5d}+\frac{\left(a^2+b^2\right)(e+fx)^3a^3}{3b^6f}-\frac{f^2x^2a^3}{4b^4d}-\frac{f^2}{}$$

```
[Out] -a^3*(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^6/d-a^3*(
a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^6/d+2*a^3*(a^2+
b^2)*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^6/d^3+2*a^3*(a^2+b^
2)*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^6/d^3-1/4*a^3*f^2*x^2
/b^4/d+1/3*a^3*(a^2+b^2)*(f*x+e)^3/b^6/f-3/32*a*f^2*cosh(d*x+c)^2/b^2/d^3-1
/32*a*f^2*cosh(d*x+c)^4/b^2/d^3-1/4*a*(f*x+e)^2*cosh(d*x+c)^4/b^2/d-1/72*f*
(f*x+e)*cosh(3*d*x+3*c)/b/d^2-1/200*f*(f*x+e)*cosh(5*d*x+5*c)/b/d^2+2*a^4*f
^2*sinh(d*x+c)/b^5/d^3+2/3*a^2*(f*x+e)^2*sinh(d*x+c)/b^3/d-1/4*a^3*f^2*sinh
(d*x+c)^2/b^4/d^3-1/2*a^3*(f*x+e)^2*sinh(d*x+c)^2/b^4/d+2/27*a^2*f^2*sinh(d
*x+c)^3/b^3/d^3+1/3*a^2*(f*x+e)^2*cosh(d*x+c)^2*sinh(d*x+c)/b^3/d-1/2*a^3*e
*f*x/b^4/d-2*a^4*f*(f*x+e)*cosh(d*x+c)/b^5/d^2-2/9*a^2*f*(f*x+e)*cosh(d*x+c
)^3/b^3/d^2+1/2*a^3*f*(f*x+e)*cosh(d*x+c)*sinh(d*x+c)/b^4/d^2+1/8*a*f*(f*x+
e)*cosh(d*x+c)^3*sinh(d*x+c)/b^2/d^2+3/16*a*f*(f*x+e)*cosh(d*x+c)*sinh(d*x+
c)/b^2/d^2+1/216*f^2*sinh(3*d*x+3*c)/b/d^3+1/48*(f*x+e)^2*sinh(3*d*x+3*c)/b
/d+1/1000*f^2*sinh(5*d*x+5*c)/b/d^3+1/80*(f*x+e)^2*sinh(5*d*x+5*c)/b/d-1/8*
(f*x+e)^2*sinh(d*x+c)/b/d-1/4*f^2*sinh(d*x+c)/b/d^3+3/32*a*f^2*x^2/b^2/d+14
/9*a^2*f^2*sinh(d*x+c)/b^3/d^3+1/4*f*(f*x+e)*cosh(d*x+c)/b/d^2+3/16*a*e*f*x
/b^2/d-4/3*a^2*f*(f*x+e)*cosh(d*x+c)/b^3/d^2-2*a^3*(a^2+b^2)*f*(f*x+e)*poly
log(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^6/d^2-2*a^3*(a^2+b^2)*f*(f*x+e)*
polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^6/d^2+a^4*(f*x+e)^2*sinh(d*x
+c)/b^5/d
```

Rubi [A] time = 1.62, antiderivative size = 1049, normalized size of antiderivative = 1.00, number of steps used = 40, number of rules used = 15, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {5579, 5448, 3296, 2637, 5447, 3310, 3311, 2633, 5565, 5446, 5561, 2190, 2531, 2282, 6589}

$$-\frac{2f(e+fx)\cosh(c+dx)a^4}{b^5d^2}+\frac{2f^2\sinh(c+dx)a^4}{b^5d^3}+\frac{(e+fx)^2\sinh(c+dx)a^4}{b^5d}+\frac{\left(a^2+b^2\right)(e+fx)^3a^3}{3b^6f}-\frac{f^2x^2a^3}{4b^4d}-\frac{f^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]^3*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a^3*e*f*x)/(2*b^4*d) + (3*a*e*f*x)/(16*b^2*d) - (a^3*f^2*x^2)/(4*b^4*d) +
 (3*a*f^2*x^2)/(32*b^2*d) + (a^3*(a^2 + b^2)*(e + f*x)^3)/(3*b^6*f) - (2*a^
```

```
4*f*(e + f*x)*Cosh[c + d*x])/(b^5*d^2) - (4*a^2*f*(e + f*x)*Cosh[c + d*x])/
(3*b^3*d^2) + (f*(e + f*x)*Cosh[c + d*x])/(4*b*d^2) - (3*a*f^2*Cosh[c + d*x
]^2)/(32*b^2*d^3) - (2*a^2*f*(e + f*x)*Cosh[c + d*x]^3)/(9*b^3*d^2) - (a*f^
2*Cosh[c + d*x]^4)/(32*b^2*d^3) - (a*(e + f*x)^2*Cosh[c + d*x]^4)/(4*b^2*d)
 - (f*(e + f*x)*Cosh[3*c + 3*d*x])/(72*b*d^2) - (f*(e + f*x)*Cosh[5*c + 5*d
*x])/(200*b*d^2) - (a^3*(a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a
- Sqrt[a^2 + b^2])])/(b^6*d) - (a^3*(a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c
 + d*x))/(a + Sqrt[a^2 + b^2])])/(b^6*d) - (2*a^3*(a^2 + b^2)*f*(e + f*x)*P
olyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^6*d^2) - (2*a^3*(a^
2 + b^2)*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/
(b^6*d^2) + (2*a^3*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a
^2 + b^2]))])/(b^6*d^3) + (2*a^3*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2]))])/(b^6*d^3) + (2*a^4*f^2*Sinh[c + d*x])/(b^5*d^3)
 + (14*a^2*f^2*Sinh[c + d*x])/(9*b^3*d^3) - (f^2*Sinh[c + d*x])/(4*b*d^3) +
 (a^4*(e + f*x)^2*Sinh[c + d*x])/(b^5*d) + (2*a^2*(e + f*x)^2*Sinh[c + d*x]
)/(3*b^3*d) - ((e + f*x)^2*Sinh[c + d*x])/(8*b*d) + (a^3*f*(e + f*x)*Cosh[c
 + d*x]*Sinh[c + d*x])/(2*b^4*d^2) + (3*a*f*(e + f*x)*Cosh[c + d*x]*Sinh[c
+ d*x])/(16*b^2*d^2) + (a^2*(e + f*x)^2*Cosh[c + d*x]^2*Sinh[c + d*x])/(3*b
^3*d) + (a*f*(e + f*x)*Cosh[c + d*x]^3*Sinh[c + d*x])/(8*b^2*d^2) - (a^3*f^
2*Sinh[c + d*x]^2)/(4*b^4*d^3) - (a^3*(e + f*x)^2*Sinh[c + d*x]^2)/(2*b^4*d
) + (2*a^2*f^2*Sinh[c + d*x]^3)/(27*b^3*d^3) + (f^2*Sinh[3*c + 3*d*x])/(216
*b*d^3) + ((e + f*x)^2*Sinh[3*c + 3*d*x])/(48*b*d) + (f^2*Sinh[5*c + 5*d*x]
)/(1000*b*d^3) + ((e + f*x)^2*Sinh[5*c + 5*d*x])/(80*b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5448

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sinh[a +
b*x]^n*Cosh[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] &
& IGtQ[p, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^3(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh^3(c+dx)\sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\cosh^3(c+dx}{a+b\sinh(c}}{b}$$

$$= -\frac{a\int (e+fx)^2\cosh^3(c+dx)\sinh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^2\cosh^3(}{a+b\sin}}{b^2}$$

$$= -\frac{a(e+fx)^2\cosh^4(c+dx)}{4b^2d} + \frac{a^2\int (e+fx)^2\cosh^3(c+dx)\,dx}{b^3} - $$

$$= -\frac{2a^2f(e+fx)\cosh^3(c+dx)}{9b^3d^2} - \frac{af^2\cosh^4(c+dx)}{32b^2d^3} - \frac{a(e+fx)^2}{4}$$

$$= \frac{a^3\left(a^2+b^2\right)(e+fx)^3}{3b^6f} + \frac{f(e+fx)\cosh(c+dx)}{4bd^2} - \frac{3af^2\cosh^2(c}{32b^2d^3}$$

$$= \frac{3aefx}{16b^2d} + \frac{3af^2x^2}{32b^2d} + \frac{a^3\left(a^2+b^2\right)(e+fx)^3}{3b^6f} - \frac{2a^4f(e+fx)\cosh(c}{b^5d^2}$$

$$= -\frac{a^3efx}{2b^4d} + \frac{3aefx}{16b^2d} - \frac{a^3f^2x^2}{4b^4d} + \frac{3af^2x^2}{32b^2d} + \frac{a^3\left(a^2+b^2\right)(e+fx)^3}{3b^6f} -$$

$$= -\frac{a^3efx}{2b^4d} + \frac{3aefx}{16b^2d} - \frac{a^3f^2x^2}{4b^4d} + \frac{3af^2x^2}{32b^2d} + \frac{a^3\left(a^2+b^2\right)(e+fx)^3}{3b^6f} -$$

$$= -\frac{a^3efx}{2b^4d} + \frac{3aefx}{16b^2d} - \frac{a^3f^2x^2}{4b^4d} + \frac{3af^2x^2}{32b^2d} + \frac{a^3\left(a^2+b^2\right)(e+fx)^3}{3b^6f} -$$

Mathematica [A] time = 9.95, size = 1545, normalized size = 1.47

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^3*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x
]),x]
```

```
[Out] ((-8*a^3*(a^2 + b^2)*e^2*x*Coth[c])/b^6 - (8*a^3*(a^2 + b^2)*e*f*x^2*Coth[c
])/b^6 - (8*a^3*(a^2 + b^2)*f^2*x^3*Coth[c])/(3*b^6) + (8*a^3*(a^2 + b^2)*(
```

```
6*d^3*e^2*E^(2*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*d^2
*e^2*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^(2*c)*Log[b
 - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d
*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*
E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 +
 (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2
*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2
*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d
^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c
)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^
(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a
^2 + b^2)*E^(2*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*
c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e +
 f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))]
- 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))
] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*
E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2
)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[
(a^2 + b^2)*E^(2*c)]))]))/(3*b^6*d^3*(-1 + E^(2*c))) + ((-8*a^4 - 6*a^2*b^2
 + b^4)*(2*f^2 + 2*d*f*(e + f*x) + d^2*(e + f*x)^2)*(Cosh[c + d*x] - Sinh[c
 + d*x]))/(2*b^5*d^3) + ((8*a^4 + 6*a^2*b^2 - b^4)*(2*f^2 - 2*d*f*(e + f*x)
 + d^2*(e + f*x)^2)*(Cosh[c + d*x] + Sinh[c + d*x]))/(2*b^5*d^3) + (a*(2*a^
2 + b^2)*(f^2 + 2*d*f*(e + f*x) + 2*d^2*(e + f*x)^2)*(-Cosh[2*(c + d*x)] +
Sinh[2*(c + d*x)]))/(4*b^4*d^3) - (a*(2*a^2 + b^2)*(f^2 - 2*d*f*(e + f*x) +
 2*d^2*(e + f*x)^2)*(Cosh[2*(c + d*x)] + Sinh[2*(c + d*x)]))/(4*b^4*d^3) +
((4*a^2 + b^2)*(2*f^2 + 6*d*f*(e + f*x) + 9*d^2*(e + f*x)^2)*(-Cosh[3*(c +
d*x)] + Sinh[3*(c + d*x)]))/(108*b^3*d^3) + ((4*a^2 + b^2)*(2*f^2 - 6*d*f*(
e + f*x) + 9*d^2*(e + f*x)^2)*(Cosh[3*(c + d*x)] + Sinh[3*(c + d*x)]))/(108
*b^3*d^3) + (a*(f^2 + 4*d*f*(e + f*x) + 8*d^2*(e + f*x)^2)*(-Cosh[4*(c + d*
x)] + Sinh[4*(c + d*x)]))/(64*b^2*d^3) - (a*(f^2 - 4*d*f*(e + f*x) + 8*d^2*
(e + f*x)^2)*(Cosh[4*(c + d*x)] + Sinh[4*(c + d*x)]))/(64*b^2*d^3) + ((2*f^
2 + 10*d*f*(e + f*x) + 25*d^2*(e + f*x)^2)*(-Cosh[5*(c + d*x)] + Sinh[5*(c
+ d*x)]))/(500*b*d^3) + ((2*f^2 - 10*d*f*(e + f*x) + 25*d^2*(e + f*x)^2)*(C
osh[5*(c + d*x)] + Sinh[5*(c + d*x)]))/(500*b*d^3))/8
```

fricas [C] time = 0.78, size = 11318, normalized size = 10.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="fricas")
```

```
[Out] -1/1728000*(10800*b^5*d^2*f^2*x^2 - 432*(25*b^5*d^2*f^2*x^2 + 25*b^5*d^2*e^
2 - 10*b^5*d*e*f + 2*b^5*f^2 + 10*(5*b^5*d^2*e*f - b^5*d*f^2)*x)*cosh(d*x +
```

c)^10 - 432*(25*b^5*d^2*f^2*x^2 + 25*b^5*d^2*e^2 - 10*b^5*d*e*f + 2*b^5*f^
2 + 10*(5*b^5*d^2*e*f - b^5*d*f^2)*x)*sinh(d*x + c)^10 + 3375*(8*a*b^4*d^2*
f^2*x^2 + 8*a*b^4*d^2*e^2 - 4*a*b^4*d*e*f + a*b^4*f^2 + 4*(4*a*b^4*d^2*e*f
- a*b^4*d*f^2)*x)*cosh(d*x + c)^9 + 135*(200*a*b^4*d^2*f^2*x^2 + 200*a*b^4*
d^2*e^2 - 100*a*b^4*d*e*f + 25*a*b^4*f^2 + 100*(4*a*b^4*d^2*e*f - a*b^4*d*f
^2)*x - 32*(25*b^5*d^2*f^2*x^2 + 25*b^5*d^2*e^2 - 10*b^5*d*e*f + 2*b^5*f^2
+ 10*(5*b^5*d^2*e*f - b^5*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^9 + 10800*
b^5*d^2*e^2 - 2000*(9*(4*a^2*b^3 + b^5)*d^2*f^2*x^2 + 9*(4*a^2*b^3 + b^5)*d
^2*e^2 - 6*(4*a^2*b^3 + b^5)*d*e*f + 2*(4*a^2*b^3 + b^5)*f^2 + 6*(3*(4*a^2*
b^3 + b^5)*d^2*e*f - (4*a^2*b^3 + b^5)*d*f^2)*x)*cosh(d*x + c)^8 - 5*(3600*
(4*a^2*b^3 + b^5)*d^2*f^2*x^2 + 3600*(4*a^2*b^3 + b^5)*d^2*e^2 - 2400*(4*a^
2*b^3 + b^5)*d*e*f + 800*(4*a^2*b^3 + b^5)*f^2 + 3888*(25*b^5*d^2*f^2*x^2 +
25*b^5*d^2*e^2 - 10*b^5*d*e*f + 2*b^5*f^2 + 10*(5*b^5*d^2*e*f - b^5*d*f^2)
*x)*cosh(d*x + c)^2 + 2400*(3*(4*a^2*b^3 + b^5)*d^2*e*f - (4*a^2*b^3 + b^5)
*d*f^2)*x - 6075*(8*a*b^4*d^2*f^2*x^2 + 8*a*b^4*d^2*e^2 - 4*a*b^4*d*e*f + a
*b^4*f^2 + 4*(4*a*b^4*d^2*e*f - a*b^4*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c
)^8 + 4320*b^5*d*e*f + 54000*(2*(2*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^3*
b^2 + a*b^4)*d^2*e^2 - 2*(2*a^3*b^2 + a*b^4)*d*e*f + (2*a^3*b^2 + a*b^4)*f^
2 + 2*(2*(2*a^3*b^2 + a*b^4)*d^2*e*f - (2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d
x + c)^7 + 20(5400*(2*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 5400*(2*a^3*b^2 + a*
b^4)*d^2*e^2 - 5400*(2*a^3*b^2 + a*b^4)*d*e*f - 2592*(25*b^5*d^2*f^2*x^2 +
25*b^5*d^2*e^2 - 10*b^5*d*e*f + 2*b^5*f^2 + 10*(5*b^5*d^2*e*f - b^5*d*f^2)*
x)*cosh(d*x + c)^3 + 2700*(2*a^3*b^2 + a*b^4)*f^2 + 6075*(8*a*b^4*d^2*f^2*x
^2 + 8*a*b^4*d^2*e^2 - 4*a*b^4*d*e*f + a*b^4*f^2 + 4*(4*a*b^4*d^2*e*f - a*b
^4*d*f^2)*x)*cosh(d*x + c)^2 + 5400*(2*(2*a^3*b^2 + a*b^4)*d^2*e*f - (2*a^3
*b^2 + a*b^4)*d*f^2)*x - 800*(9*(4*a^2*b^3 + b^5)*d^2*f^2*x^2 + 9*(4*a^2*b^
3 + b^5)*d^2*e^2 - 6*(4*a^2*b^3 + b^5)*d*e*f + 2*(4*a^2*b^3 + b^5)*f^2 + 6*
(3*(4*a^2*b^3 + b^5)*d^2*e*f - (4*a^2*b^3 + b^5)*d*f^2)*x)*cosh(d*x + c))*s
inh(d*x + c)^7 + 864*b^5*f^2 - 108000*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*f^2*
x^2 + (8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e^2 - 2*(8*a^4*b + 6*a^2*b^3 - b^5)*d
*e*f + 2*(8*a^4*b + 6*a^2*b^3 - b^5)*f^2 + 2*((8*a^4*b + 6*a^2*b^3 - b^5)*d
^2*e*f - (8*a^4*b + 6*a^2*b^3 - b^5)*d*f^2)*x)*cosh(d*x + c)^6 - 20*(5400*(
8*a^4*b + 6*a^2*b^3 - b^5)*d^2*f^2*x^2 + 5400*(8*a^4*b + 6*a^2*b^3 - b^5)*d
^2*e^2 + 4536*(25*b^5*d^2*f^2*x^2 + 25*b^5*d^2*e^2 - 10*b^5*d*e*f + 2*b^5*f
^2 + 10*(5*b^5*d^2*e*f - b^5*d*f^2)*x)*cosh(d*x + c)^4 - 10800*(8*a^4*b + 6
*a^2*b^3 - b^5)*d*e*f - 14175*(8*a*b^4*d^2*f^2*x^2 + 8*a*b^4*d^2*e^2 - 4*a*
b^4*d*e*f + a*b^4*f^2 + 4*(4*a*b^4*d^2*e*f - a*b^4*d*f^2)*x)*cosh(d*x + c)^
3 + 10800*(8*a^4*b + 6*a^2*b^3 - b^5)*f^2 + 2800*(9*(4*a^2*b^3 + b^5)*d^2*f
^2*x^2 + 9*(4*a^2*b^3 + b^5)*d^2*e^2 - 6*(4*a^2*b^3 + b^5)*d*e*f + 2*(4*a^2
*b^3 + b^5)*f^2 + 6*(3*(4*a^2*b^3 + b^5)*d^2*e*f - (4*a^2*b^3 + b^5)*d*f^2)
*x)*cosh(d*x + c)^2 + 10800*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e*f - (8*a^4*b
+ 6*a^2*b^3 - b^5)*d*f^2)*x - 18900*(2*(2*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2
*(2*a^3*b^2 + a*b^4)*d^2*e^2 - 2*(2*a^3*b^2 + a*b^4)*d*e*f + (2*a^3*b^2 + a
*b^4)*f^2 + 2*(2*(2*a^3*b^2 + a*b^4)*d^2*e*f - (2*a^3*b^2 + a*b^4)*d*f^2)*x
)*cosh(d*x + c))*sinh(d*x + c)^6 - 576000*((a^5 + a^3*b^2)*d^3*f^2*x^3 + 3*

(a^5 + a^3*b^2)*d^3*e*f*x^2 + 3*(a^5 + a^3*b^2)*d^3*e^2*x + 6*(a^5 + a^3*b^2)*c*d^2*e^2 - 6*(a^5 + a^3*b^2)*c^2*d*e*f + 2*(a^5 + a^3*b^2)*c^3*f^2)*cosh(d*x + c)^5 - 2*(288000*(a^5 + a^3*b^2)*d^3*f^2*x^3 + 864000*(a^5 + a^3*b^2)*d^3*e*f*x^2 + 864000*(a^5 + a^3*b^2)*d^3*e^2*x + 1728000*(a^5 + a^3*b^2)*c*d^2*e^2 - 1728000*(a^5 + a^3*b^2)*c^2*d*e*f + 576000*(a^5 + a^3*b^2)*c^3*f^2 + 54432*(25*b^5*d^2*f^2*x^2 + 25*b^5*d^2*e^2 - 10*b^5*d*e*f + 2*b^5*f^2 + 10*(5*b^5*d^2*e*f - b^5*d*f^2)*x)*cosh(d*x + c)^5 - 212625*(8*a*b^4*d^2*f^2*x^2 + 8*a*b^4*d^2*e^2 - 4*a*b^4*d*e*f + a*b^4*f^2 + 4*(4*a*b^4*d^2*e*f - a*b^4*d*f^2)*x)*cosh(d*x + c)^4 + 56000*(9*(4*a^2*b^3 + b^5)*d^2*f^2*x^2 + 9*(4*a^2*b^3 + b^5)*d^2*e^2 - 6*(4*a^2*b^3 + b^5)*d*e*f + 2*(4*a^2*b^3 + b^5)*f^2 + 6*(3*(4*a^2*b^3 + b^5)*d^2*e*f - (4*a^2*b^3 + b^5)*d*f^2)*x)*cosh(d*x + c)^3 - 567000*(2*(2*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^3*b^2 + a*b^4)*d^2*e^2 - 2*(2*a^3*b^2 + a*b^4)*d*e*f + (2*a^3*b^2 + a*b^4)*f^2 + 2*(2*(2*a^3*b^2 + a*b^4)*d^2*e*f - (2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^2 + 324000*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*f^2*x^2 + (8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e^2 - 2*(8*a^4*b + 6*a^2*b^3 - b^5)*d*e*f + 2*(8*a^4*b + 6*a^2*b^3 - b^5)*f^2 + 2*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e*f - (8*a^4*b + 6*a^2*b^3 - b^5)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^5 + 108000*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*f^2*x^2 + (8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e^2 + 2*(8*a^4*b + 6*a^2*b^3 - b^5)*d*e*f + 2*(8*a^4*b + 6*a^2*b^3 - b^5)*f^2 + 2*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e*f + (8*a^4*b + 6*a^2*b^3 - b^5)*d*f^2)*x)*cosh(d*x + c)^4 + 10*(10800*(8*a^4*b + 6*a^2*b^3 - b^5)*d^2*f^2*x^2 - 9072*(25*b^5*d^2*f^2*x^2 + 25*b^5*d^2*e^2 - 10*b^5*d*e*f + 2*b^5*f^2 + 10*(5*b^5*d^2*e*f - b^5*d*f^2)*x)*cosh(d*x + c)^6 + 42525*(8*a*b^4*d^2*f^2*x^2 + 8*a*b^4*d^2*e^2 - 4*a*b^4*d*e*f + a*b^4*f^2 + 4*(4*a*b^4*d^2*e*f - a*b^4*d*f^2)*x)*cosh(d*x + c)^5 + 10800*(8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e^2 - 14000*(9*(4*a^2*b^3 + b^5)*d^2*f^2*x^2 + 9*(4*a^2*b^3 + b^5)*d^2*e^2 - 6*(4*a^2*b^3 + b^5)*d*e*f + 2*(4*a^2*b^3 + b^5)*f^2 + 6*(3*(4*a^2*b^3 + b^5)*d^2*e*f - (4*a^2*b^3 + b^5)*d*f^2)*x)*cosh(d*x + c)^4 + 21600*(8*a^4*b + 6*a^2*b^3 - b^5)*d*e*f + 189000*(2*(2*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^3*b^2 + a*b^4)*d^2*e^2 - 2*(2*a^3*b^2 + a*b^4)*d*e*f + (2*a^3*b^2 + a*b^4)*f^2 + 2*(2*(2*a^3*b^2 + a*b^4)*d^2*e*f - (2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^3 + 21600*(8*a^4*b + 6*a^2*b^3 - b^5)*f^2 - 162000*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*f^2*x^2 + (8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e^2 - 2*(8*a^4*b + 6*a^2*b^3 - b^5)*d*e*f + 2*(8*a^4*b + 6*a^2*b^3 - b^5)*f^2 + 2*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e*f - (8*a^4*b + 6*a^2*b^3 - b^5)*d*f^2)*x)*cosh(d*x + c)^2 + 21600*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e*f + (8*a^4*b + 6*a^2*b^3 - b^5)*d*f^2)*x - 288000*((a^5 + a^3*b^2)*d^3*f^2*x^3 + 3*(a^5 + a^3*b^2)*d^3*e*f*x^2 + 3*(a^5 + a^3*b^2)*d^3*e^2*x + 6*(a^5 + a^3*b^2)*c*d^2*e^2 - 6*(a^5 + a^3*b^2)*c^2*d*e*f + 2*(a^5 + a^3*b^2)*c^3*f^2)*cosh(d*x + c))*sinh(d*x + c)^4 + 54000*(2*(2*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^3*b^2 + a*b^4)*d^2*e^2 + 2*(2*a^3*b^2 + a*b^4)*d*e*f + (2*a^3*b^2 + a*b^4)*f^2 + 2*(2*(2*a^3*b^2 + a*b^4)*d^2*e*f + (2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^3 - 20*(2592*(25*b^5*d^2*f^2*x^2 + 25*b^5*d^2*e^2 - 10*b^5*d*e*f + 2*b^5*f^2 + 10*(5*b^5*d^2*e*f - b^5*d*f^2)*x)*cosh(d*x + c)^7 - 5400*(2*a^3*b^2 + a*b^4)*d^2*f^2

x^2 - 14175(8*a*b^4*d^2*f^2*x^2 + 8*a*b^4*d^2*e^2 - 4*a*b^4*d*e*f + a*b^4
f^2 + 4(4*a*b^4*d^2*e*f - a*b^4*d*f^2)*x)*cosh(d*x + c)^6 + 5600*(9*(4*a^
2*b^3 + b^5)*d^2*f^2*x^2 + 9*(4*a^2*b^3 + b^5)*d^2*e^2 - 6*(4*a^2*b^3 + b^5
)*d*e*f + 2*(4*a^2*b^3 + b^5)*f^2 + 6*(3*(4*a^2*b^3 + b^5)*d^2*e*f - (4*a^2
*b^3 + b^5)*d*f^2)*x)*cosh(d*x + c)^5 - 5400*(2*a^3*b^2 + a*b^4)*d^2*e^2 -
94500*(2*(2*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^3*b^2 + a*b^4)*d^2*e^2 -
2*(2*a^3*b^2 + a*b^4)*d*e*f + (2*a^3*b^2 + a*b^4)*f^2 + 2*(2*(2*a^3*b^2 + a
*b^4)*d^2*e*f - (2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^4 - 5400*(2*a^3
*b^2 + a*b^4)*d*e*f + 108000*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*f^2*x^2 + (8*
a^4*b + 6*a^2*b^3 - b^5)*d^2*e^2 - 2*(8*a^4*b + 6*a^2*b^3 - b^5)*d*e*f + 2*
(8*a^4*b + 6*a^2*b^3 - b^5)*f^2 + 2*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e*f -
(8*a^4*b + 6*a^2*b^3 - b^5)*d*f^2)*x)*cosh(d*x + c)^3 - 2700*(2*a^3*b^2 + a
*b^4)*f^2 + 288000*((a^5 + a^3*b^2)*d^3*f^2*x^3 + 3*(a^5 + a^3*b^2)*d^3*e*f
x^2 + 3(a^5 + a^3*b^2)*d^3*e^2*x + 6*(a^5 + a^3*b^2)*c*d^2*e^2 - 6*(a^5 +
 a^3*b^2)*c^2*d*e*f + 2*(a^5 + a^3*b^2)*c^3*f^2)*cosh(d*x + c)^2 - 5400*(2*
(2*a^3*b^2 + a*b^4)*d^2*e*f + (2*a^3*b^2 + a*b^4)*d*f^2)*x - 21600*((8*a^4*
b + 6*a^2*b^3 - b^5)*d^2*f^2*x^2 + (8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e^2 + 2*
(8*a^4*b + 6*a^2*b^3 - b^5)*d*e*f + 2*(8*a^4*b + 6*a^2*b^3 - b^5)*f^2 + 2*(
(8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e*f + (8*a^4*b + 6*a^2*b^3 - b^5)*d*f^2)*x)
*cosh(d*x + c))*sinh(d*x + c)^3 + 2000*(9*(4*a^2*b^3 + b^5)*d^2*f^2*x^2 + 9
*(4*a^2*b^3 + b^5)*d^2*e^2 + 6*(4*a^2*b^3 + b^5)*d*e*f + 2*(4*a^2*b^3 + b^5
)*f^2 + 6*(3*(4*a^2*b^3 + b^5)*d^2*e*f + (4*a^2*b^3 + b^5)*d*f^2)*x)*cosh(d
x + c)^2 - 20(972*(25*b^5*d^2*f^2*x^2 + 25*b^5*d^2*e^2 - 10*b^5*d*e*f + 2
*b^5*f^2 + 10*(5*b^5*d^2*e*f - b^5*d*f^2)*x)*cosh(d*x + c)^8 - 6075*(8*a*b^
4*d^2*f^2*x^2 + 8*a*b^4*d^2*e^2 - 4*a*b^4*d*e*f + a*b^4*f^2 + 4*(4*a*b^4*d^
2*e*f - a*b^4*d*f^2)*x)*cosh(d*x + c)^7 - 900*(4*a^2*b^3 + b^5)*d^2*f^2*x^2
 + 2800*(9*(4*a^2*b^3 + b^5)*d^2*f^2*x^2 + 9*(4*a^2*b^3 + b^5)*d^2*e^2 - 6*
(4*a^2*b^3 + b^5)*d*e*f + 2*(4*a^2*b^3 + b^5)*f^2 + 6*(3*(4*a^2*b^3 + b^5)*
d^2*e*f - (4*a^2*b^3 + b^5)*d*f^2)*x)*cosh(d*x + c)^6 - 56700*(2*(2*a^3*b^2
 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^3*b^2 + a*b^4)*d^2*e^2 - 2*(2*a^3*b^2 + a*b^
4)*d*e*f + (2*a^3*b^2 + a*b^4)*f^2 + 2*(2*(2*a^3*b^2 + a*b^4)*d^2*e*f - (2*
a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^5 - 900*(4*a^2*b^3 + b^5)*d^2*e^2
+ 81000*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*f^2*x^2 + (8*a^4*b + 6*a^2*b^3 - b
^5)*d^2*e^2 - 2*(8*a^4*b + 6*a^2*b^3 - b^5)*d*e*f + 2*(8*a^4*b + 6*a^2*b^3
- b^5)*f^2 + 2*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e*f - (8*a^4*b + 6*a^2*b^3
- b^5)*d*f^2)*x)*cosh(d*x + c)^4 - 600*(4*a^2*b^3 + b^5)*d*e*f + 288000*((a
^5 + a^3*b^2)*d^3*f^2*x^3 + 3*(a^5 + a^3*b^2)*d^3*e*f*x^2 + 3*(a^5 + a^3*b^
2)*d^3*e^2*x + 6*(a^5 + a^3*b^2)*c*d^2*e^2 - 6*(a^5 + a^3*b^2)*c^2*d*e*f +
2*(a^5 + a^3*b^2)*c^3*f^2)*cosh(d*x + c)^3 - 200*(4*a^2*b^3 + b^5)*f^2 - 32
400*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*f^2*x^2 + (8*a^4*b + 6*a^2*b^3 - b^5)*
d^2*e^2 + 2*(8*a^4*b + 6*a^2*b^3 - b^5)*d*e*f + 2*(8*a^4*b + 6*a^2*b^3 - b^
5)*f^2 + 2*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e*f + (8*a^4*b + 6*a^2*b^3 - b^
5)*d*f^2)*x)*cosh(d*x + c)^2 - 600*(3*(4*a^2*b^3 + b^5)*d^2*e*f + (4*a^2*b^
3 + b^5)*d*f^2)*x - 8100*(2*(2*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^3*b^2
+ a*b^4)*d^2*e^2 + 2*(2*a^3*b^2 + a*b^4)*d*e*f + (2*a^3*b^2 + a*b^4)*f^2 +

```
2*(2*(2*a^3*b^2 + a*b^4)*d^2*e*f + (2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x +
 c))*sinh(d*x + c)^2 + 4320*(5*b^5*d^2*e*f + b^5*d*f^2)*x + 3375*(8*a*b^4*d
^2*f^2*x^2 + 8*a*b^4*d^2*e^2 + 4*a*b^4*d*e*f + a*b^4*f^2 + 4*(4*a*b^4*d^2*e
*f + a*b^4*d*f^2)*x)*cosh(d*x + c) + 3456000*(((a^5 + a^3*b^2)*d*f^2*x + (a
^5 + a^3*b^2)*d*e*f)*cosh(d*x + c)^5 + 5*((a^5 + a^3*b^2)*d*f^2*x + (a^5 +
a^3*b^2)*d*e*f)*cosh(d*x + c)^4*sinh(d*x + c) + 10*((a^5 + a^3*b^2)*d*f^2*x
 + (a^5 + a^3*b^2)*d*e*f)*cosh(d*x + c)^3*sinh(d*x + c)^2 + 10*((a^5 + a^3*
b^2)*d*f^2*x + (a^5 + a^3*b^2)*d*e*f)*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*(
(a^5 + a^3*b^2)*d*f^2*x + (a^5 + a^3*b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x + c
)^4 + ((a^5 + a^3*b^2)*d*f^2*x + (a^5 + a^3*b^2)*d*e*f)*sinh(d*x + c)^5)*di
log((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 3456000*(((a^5 + a^3*b^2)*d*f^2*x + (
a^5 + a^3*b^2)*d*e*f)*cosh(d*x + c)^5 + 5*((a^5 + a^3*b^2)*d*f^2*x + (a^5 +
 a^3*b^2)*d*e*f)*cosh(d*x + c)^4*sinh(d*x + c) + 10*((a^5 + a^3*b^2)*d*f^2*
x + (a^5 + a^3*b^2)*d*e*f)*cosh(d*x + c)^3*sinh(d*x + c)^2 + 10*((a^5 + a^3
*b^2)*d*f^2*x + (a^5 + a^3*b^2)*d*e*f)*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*
((a^5 + a^3*b^2)*d*f^2*x + (a^5 + a^3*b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x +
c)^4 + ((a^5 + a^3*b^2)*d*f^2*x + (a^5 + a^3*b^2)*d*e*f)*sinh(d*x + c)^5)*d
ilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 1728000*(((a^5 + a^3*b^2)*d^2*e^2 -
2*(a^5 + a^3*b^2)*c*d*e*f + (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x + c)^5 + 5*((
a^5 + a^3*b^2)*d^2*e^2 - 2*(a^5 + a^3*b^2)*c*d*e*f + (a^5 + a^3*b^2)*c^2*f^
2)*cosh(d*x + c)^4*sinh(d*x + c) + 10*((a^5 + a^3*b^2)*d^2*e^2 - 2*(a^5 + a
^3*b^2)*c*d*e*f + (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x + c)^3*sinh(d*x + c)^2
+ 10*((a^5 + a^3*b^2)*d^2*e^2 - 2*(a^5 + a^3*b^2)*c*d*e*f + (a^5 + a^3*b^2)
*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*((a^5 + a^3*b^2)*d^2*e^2 - 2*
(a^5 + a^3*b^2)*c*d*e*f + (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x +
 c)^4 + ((a^5 + a^3*b^2)*d^2*e^2 - 2*(a^5 + a^3*b^2)*c*d*e*f + (a^5 + a^3*b
^2)*c^2*f^2)*sinh(d*x + c)^5)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2
*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 1728000*(((a^5 + a^3*b^2)*d^2*e^2 - 2*(a^
5 + a^3*b^2)*c*d*e*f + (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x + c)^5 + 5*((a^5 +
 a^3*b^2)*d^2*e^2 - 2*(a^5 + a^3*b^2)*c*d*e*f + (a^5 + a^3*b^2)*c^2*f^2)*co
sh(d*x + c)^4*sinh(d*x + c) + 10*((a^5 + a^3*b^2)*d^2*e^2 - 2*(a^5 + a^3*b^
2)*c*d*e*f + (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x + c)^3*sinh(d*x + c)^2 + 10*
((a^5 + a^3*b^2)*d^2*e^2 - 2*(a^5 + a^3*b^2)*c*d*e*f + (a^5 + a^3*b^2)*c^2*
f^2)*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*((a^5 + a^3*b^2)*d^2*e^2 - 2*(a^5
+ a^3*b^2)*c*d*e*f + (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^4
 + ((a^5 + a^3*b^2)*d^2*e^2 - 2*(a^5 + a^3*b^2)*c*d*e*f + (a^5 + a^3*b^2)*c
^2*f^2)*sinh(d*x + c)^5)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sq
rt((a^2 + b^2)/b^2) + 2*a) + 1728000*(((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5
 + a^3*b^2)*d^2*e*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2
)*cosh(d*x + c)^5 + 5*((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5 + a^3*b^2)*d^2*
e*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x + c)^
4*sinh(d*x + c) + 10*((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5 + a^3*b^2)*d^2*e
*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x + c)^3
```

*sinh(d*x + c)^2 + 10*((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5 + a^3*b^2)*d^2*
e*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x + c)^
2*sinh(d*x + c)^3 + 5*((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5 + a^3*b^2)*d^2*
e*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x + c)*
sinh(d*x + c)^4 + ((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5 + a^3*b^2)*d^2*e*f*
x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2)*sinh(d*x + c)^5)*l
og(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2) - b)/b) + 1728000*(((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2
*(a^5 + a^3*b^2)*d^2*e*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^
2*f^2)*cosh(d*x + c)^5 + 5*((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5 + a^3*b^2)
*d^2*e*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x
+ c)^4*sinh(d*x + c) + 10*((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5 + a^3*b^2)*
d^2*e*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x +
 c)^3*sinh(d*x + c)^2 + 10*((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5 + a^3*b^2)
*d^2*e*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x
+ c)^2*sinh(d*x + c)^3 + 5*((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5 + a^3*b^2)
*d^2*e*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2)*cosh(d*x
+ c)*sinh(d*x + c)^4 + ((a^5 + a^3*b^2)*d^2*f^2*x^2 + 2*(a^5 + a^3*b^2)*d^2
*e*f*x + 2*(a^5 + a^3*b^2)*c*d*e*f - (a^5 + a^3*b^2)*c^2*f^2)*sinh(d*x + c)
^5)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 3456000*((a^5 + a^3*b^2)*f^2*cosh(d*
x + c)^5 + 5*(a^5 + a^3*b^2)*f^2*cosh(d*x + c)^4*sinh(d*x + c) + 10*(a^5 +
a^3*b^2)*f^2*cosh(d*x + c)^3*sinh(d*x + c)^2 + 10*(a^5 + a^3*b^2)*f^2*cosh(
d*x + c)^2*sinh(d*x + c)^3 + 5*(a^5 + a^3*b^2)*f^2*cosh(d*x + c)*sinh(d*x +
 c)^4 + (a^5 + a^3*b^2)*f^2*sinh(d*x + c)^5)*polylog(3, (a*cosh(d*x + c) +
a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
)/b) - 3456000*((a^5 + a^3*b^2)*f^2*cosh(d*x + c)^5 + 5*(a^5 + a^3*b^2)*f^2
*cosh(d*x + c)^4*sinh(d*x + c) + 10*(a^5 + a^3*b^2)*f^2*cosh(d*x + c)^3*sin
h(d*x + c)^2 + 10*(a^5 + a^3*b^2)*f^2*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*(
a^5 + a^3*b^2)*f^2*cosh(d*x + c)*sinh(d*x + c)^4 + (a^5 + a^3*b^2)*f^2*sinh
(d*x + c)^5)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 5*(5400*a*b^4*d^2*f^2*x^2
 - 864*(25*b^5*d^2*f^2*x^2 + 25*b^5*d^2*e^2 - 10*b^5*d*e*f + 2*b^5*f^2 + 10
*(5*b^5*d^2*e*f - b^5*d*f^2)*x)*cosh(d*x + c)^9 + 5400*a*b^4*d^2*e^2 + 6075
*(8*a*b^4*d^2*f^2*x^2 + 8*a*b^4*d^2*e^2 - 4*a*b^4*d*e*f + a*b^4*f^2 + 4*(4*
a*b^4*d^2*e*f - a*b^4*d*f^2)*x)*cosh(d*x + c)^8 + 2700*a*b^4*d*e*f - 3200*(
9*(4*a^2*b^3 + b^5)*d^2*f^2*x^2 + 9*(4*a^2*b^3 + b^5)*d^2*e^2 - 6*(4*a^2*b^
3 + b^5)*d*e*f + 2*(4*a^2*b^3 + b^5)*f^2 + 6*(3*(4*a^2*b^3 + b^5)*d^2*e*f -
 (4*a^2*b^3 + b^5)*d*f^2)*x)*cosh(d*x + c)^7 + 675*a*b^4*f^2 + 75600*(2*(2*
a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^3*b^2 + a*b^4)*d^2*e^2 - 2*(2*a^3*b^2
 + a*b^4)*d*e*f + (2*a^3*b^2 + a*b^4)*f^2 + 2*(2*(2*a^3*b^2 + a*b^4)*d^2*e*
f - (2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^6 - 129600*((8*a^4*b + 6*a^
2*b^3 - b^5)*d^2*f^2*x^2 + (8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e^2 - 2*(8*a^4*b
 + 6*a^2*b^3 - b^5)*d*e*f + 2*(8*a^4*b + 6*a^2*b^3 - b^5)*f^2 + 2*((8*a^4*b
 + 6*a^2*b^3 - b^5)*d^2*e*f - (8*a^4*b + 6*a^2*b^3 - b^5)*d*f^2)*x)*cosh(d*

```
x + c)^5 - 576000*((a^5 + a^3*b^2)*d^3*f^2*x^3 + 3*(a^5 + a^3*b^2)*d^3*e*f*
x^2 + 3*(a^5 + a^3*b^2)*d^3*e^2*x + 6*(a^5 + a^3*b^2)*c*d^2*e^2 - 6*(a^5 +
a^3*b^2)*c^2*d*e*f + 2*(a^5 + a^3*b^2)*c^3*f^2)*cosh(d*x + c)^4 + 86400*((8
*a^4*b + 6*a^2*b^3 - b^5)*d^2*f^2*x^2 + (8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e^2
 + 2*(8*a^4*b + 6*a^2*b^3 - b^5)*d*e*f + 2*(8*a^4*b + 6*a^2*b^3 - b^5)*f^2
+ 2*((8*a^4*b + 6*a^2*b^3 - b^5)*d^2*e*f + (8*a^4*b + 6*a^2*b^3 - b^5)*d*f^
2)*x)*cosh(d*x + c)^3 + 32400*(2*(2*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^3
*b^2 + a*b^4)*d^2*e^2 + 2*(2*a^3*b^2 + a*b^4)*d*e*f + (2*a^3*b^2 + a*b^4)*f
^2 + 2*(2*(2*a^3*b^2 + a*b^4)*d^2*e*f + (2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(
d*x + c)^2 + 2700*(4*a*b^4*d^2*e*f + a*b^4*d*f^2)*x + 800*(9*(4*a^2*b^3 + b
^5)*d^2*f^2*x^2 + 9*(4*a^2*b^3 + b^5)*d^2*e^2 + 6*(4*a^2*b^3 + b^5)*d*e*f +
 2*(4*a^2*b^3 + b^5)*f^2 + 6*(3*(4*a^2*b^3 + b^5)*d^2*e*f + (4*a^2*b^3 + b^
5)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/(b^6*d^3*cosh(d*x + c)^5 + 5*b^6
*d^3*cosh(d*x + c)^4*sinh(d*x + c) + 10*b^6*d^3*cosh(d*x + c)^3*sinh(d*x +
c)^2 + 10*b^6*d^3*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*b^6*d^3*cosh(d*x + c)
*sinh(d*x + c)^4 + b^6*d^3*sinh(d*x + c)^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \cosh\left(dx+c\right)^{3} \sinh\left(dx+c\right)^{3}}{b \sinh\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="giac")
```

```
[Out] integrate((f*x + e)^2*cosh(d*x + c)^3*sinh(d*x + c)^3/(b*sinh(d*x + c) + a)
, x)
```

maple [F] time = 0.51, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \left(\cosh^{3}\left(dx+c\right)\right) \left(\sinh^{3}\left(dx+c\right)\right)}{a+b \sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algori
thm="maxima")

[Out] -1/960*e^2*((15*a*b^3*e^(-d*x - c) - 6*b^4 - 10*(4*a^2*b^2 + b^4)*e^(-2*d*x
 - 2*c) + 60*(2*a^3*b + a*b^3)*e^(-3*d*x - 3*c) - 60*(8*a^4 + 6*a^2*b^2 - b
^4)*e^(-4*d*x - 4*c))*e^(5*d*x + 5*c)/(b^5*d) + 960*(a^5 + a^3*b^2)*(d*x +
c)/(b^6*d) + (15*a*b^3*e^(-4*d*x - 4*c) + 6*b^4*e^(-5*d*x - 5*c) + 60*(8*a^
4 + 6*a^2*b^2 - b^4)*e^(-d*x - c) + 60*(2*a^3*b + a*b^3)*e^(-2*d*x - 2*c) +
 10*(4*a^2*b^2 + b^4)*e^(-3*d*x - 3*c))/(b^5*d) + 960*(a^5 + a^3*b^2)*log(-
2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^6*d)) - 1/1728000*(576000*(a^
5*d^3*f^2*e^(5*c) + a^3*b^2*d^3*f^2*e^(5*c))*x^3 + 1728000*(a^5*d^3*e*f*e^(
5*c) + a^3*b^2*d^3*e*f*e^(5*c))*x^2 - 432*(25*b^5*d^2*f^2*x^2*e^(10*c) + 10
*(5*d^2*e*f - d*f^2)*b^5*x*e^(10*c) - 2*(5*d*e*f - f^2)*b^5*e^(10*c))*e^(5*
d*x) + 3375*(8*a*b^4*d^2*f^2*x^2*e^(9*c) + 4*(4*d^2*e*f - d*f^2)*a*b^4*x*e^
(9*c) - (4*d*e*f - f^2)*a*b^4*e^(9*c))*e^(4*d*x) + 2000*(8*(3*d*e*f - f^2)*
a^2*b^3*e^(8*c) + 2*(3*d*e*f - f^2)*b^5*e^(8*c) - 9*(4*a^2*b^3*d^2*f^2*e^(8
*c) + b^5*d^2*f^2*e^(8*c))*x^2 - 6*(4*(3*d^2*e*f - d*f^2)*a^2*b^3*e^(8*c) +
 (3*d^2*e*f - d*f^2)*b^5*e^(8*c))*x)*e^(3*d*x) - 54000*(2*(2*d*e*f - f^2)*a
^3*b^2*e^(7*c) + (2*d*e*f - f^2)*a*b^4*e^(7*c) - 2*(2*a^3*b^2*d^2*f^2*e^(7*
c) + a*b^4*d^2*f^2*e^(7*c))*x^2 - 2*(2*(2*d^2*e*f - d*f^2)*a^3*b^2*e^(7*c)
+ (2*d^2*e*f - d*f^2)*a*b^4*e^(7*c))*x)*e^(2*d*x) + 108000*(16*(d*e*f - f^2
)*a^4*b*e^(6*c) + 12*(d*e*f - f^2)*a^2*b^3*e^(6*c) - 2*(d*e*f - f^2)*b^5*e^
(6*c) - (8*a^4*b*d^2*f^2*e^(6*c) + 6*a^2*b^3*d^2*f^2*e^(6*c) - b^5*d^2*f^2*
e^(6*c))*x^2 - 2*(8*(d^2*e*f - d*f^2)*a^4*b*e^(6*c) + 6*(d^2*e*f - d*f^2)*a
^2*b^3*e^(6*c) - (d^2*e*f - d*f^2)*b^5*e^(6*c))*x)*e^(d*x) + 108000*(16*(d*
e*f + f^2)*a^4*b*e^(4*c) + 12*(d*e*f + f^2)*a^2*b^3*e^(4*c) - 2*(d*e*f + f^
2)*b^5*e^(4*c) + (8*a^4*b*d^2*f^2*e^(4*c) + 6*a^2*b^3*d^2*f^2*e^(4*c) - b^5
*d^2*f^2*e^(4*c))*x^2 + 2*(8*(d^2*e*f + d*f^2)*a^4*b*e^(4*c) + 6*(d^2*e*f +
 d*f^2)*a^2*b^3*e^(4*c) - (d^2*e*f + d*f^2)*b^5*e^(4*c))*x)*e^(-d*x) + 5400
0*(2*(2*d*e*f + f^2)*a^3*b^2*e^(3*c) + (2*d*e*f + f^2)*a*b^4*e^(3*c) + 2*(2
*a^3*b^2*d^2*f^2*e^(3*c) + a*b^4*d^2*f^2*e^(3*c))*x^2 + 2*(2*(2*d^2*e*f + d
*f^2)*a^3*b^2*e^(3*c) + (2*d^2*e*f + d*f^2)*a*b^4*e^(3*c))*x)*e^(-2*d*x) +
2000*(8*(3*d*e*f + f^2)*a^2*b^3*e^(2*c) + 2*(3*d*e*f + f^2)*b^5*e^(2*c) + 9
*(4*a^2*b^3*d^2*f^2*e^(2*c) + b^5*d^2*f^2*e^(2*c))*x^2 + 6*(4*(3*d^2*e*f +
d*f^2)*a^2*b^3*e^(2*c) + (3*d^2*e*f + d*f^2)*b^5*e^(2*c))*x)*e^(-3*d*x) + 3
375*(8*a*b^4*d^2*f^2*x^2*e^c + 4*(4*d^2*e*f + d*f^2)*a*b^4*x*e^c + (4*d*e*f
 + f^2)*a*b^4*e^c)*e^(-4*d*x) + 432*(25*b^5*d^2*f^2*x^2 + 10*(5*d^2*e*f + d
*f^2)*b^5*x + 2*(5*d*e*f + f^2)*b^5)*e^(-5*d*x))*e^(-5*c)/(b^6*d^3) + integ
rate(-2*((a^5*b*f^2 + a^3*b^3*f^2)*x^2 + 2*(a^5*b*e*f + a^3*b^3*e*f)*x - ((
a^6*f^2*e^c + a^4*b^2*f^2*e^c)*x^2 + 2*(a^6*e*f*e^c + a^4*b^2*e*f*e^c)*x)*e
^(d*x))/(b^7*e^(2*d*x + 2*c) + 2*a*b^6*e^(d*x + c) - b^7), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)^3\,\sinh\left(c+d\,x\right)^3\,{\left(e+f\,x\right)}^2}{a+b\,\sinh\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^3*sinh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)**3*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.403 $\int \frac{(e+fx)\cosh^3(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=641

$$-\frac{a^4 f\cosh(c+dx)}{b^5d^2}+\frac{a^4(e+fx)\sinh(c+dx)}{b^5d}+\frac{a^3 f\sinh(c+dx)\cosh(c+dx)}{4b^4d^2}-\frac{a^3(e+fx)\sinh^2(c+dx)}{2b^4d}-\frac{a^3fx}{4b^4d}-$$

```
[Out] -1/4*a^3*f*x/b^4/d+3/32*a*f*x/b^2/d+1/2*a^3*(a^2+b^2)*(f*x+e)^2/b^6/f-a^4*f
*cosh(d*x+c)/b^5/d^2-2/3*a^2*f*cosh(d*x+c)/b^3/d^2+1/8*f*cosh(d*x+c)/b/d^2-
1/9*a^2*f*cosh(d*x+c)^3/b^3/d^2-1/4*a*(f*x+e)*cosh(d*x+c)^4/b^2/d-1/144*f*c
osh(3*d*x+3*c)/b/d^2-1/400*f*cosh(5*d*x+5*c)/b/d^2-a^3*(a^2+b^2)*(f*x+e)*ln
(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^6/d-a^3*(a^2+b^2)*(f*x+e)*ln(1+b*exp
(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^6/d-a^3*(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/
(a-(a^2+b^2)^(1/2)))/b^6/d^2-a^3*(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/(a+(a^
2+b^2)^(1/2)))/b^6/d^2+a^4*(f*x+e)*sinh(d*x+c)/b^5/d+2/3*a^2*(f*x+e)*sinh(d
*x+c)/b^3/d-1/8*(f*x+e)*sinh(d*x+c)/b/d+1/4*a^3*f*cosh(d*x+c)*sinh(d*x+c)/b
^4/d^2+3/32*a*f*cosh(d*x+c)*sinh(d*x+c)/b^2/d^2+1/3*a^2*(f*x+e)*cosh(d*x+c)
^2*sinh(d*x+c)/b^3/d+1/16*a*f*cosh(d*x+c)^3*sinh(d*x+c)/b^2/d^2-1/2*a^3*(f*
x+e)*sinh(d*x+c)^2/b^4/d+1/48*(f*x+e)*sinh(3*d*x+3*c)/b/d+1/80*(f*x+e)*sinh
(5*d*x+5*c)/b/d
```

Rubi [A] time = 0.94, antiderivative size = 641, normalized size of antiderivative = 1.00, number of steps used = 31, number of rules used = 14, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.412, Rules used = {5579, 5448, 3296, 2638, 5447, 2635, 8, 3310, 5565, 5446, 5561, 2190, 2279, 2391}

$$-\frac{a^3 f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^6d^2}-\frac{a^3 f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^6d^2}-\frac{a^2 f\cosh^3(c+dx)}{9b^3d^2}-\frac{a^4 f\cosh(}{b^5d^}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^3*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a^3*f*x)/(4*b^4*d) + (3*a*f*x)/(32*b^2*d) + (a^3*(a^2 + b^2)*(e + f*x)^2)
/(2*b^6*f) - (a^4*f*Cosh[c + d*x])/(b^5*d^2) - (2*a^2*f*Cosh[c + d*x])/(3*b
^3*d^2) + (f*Cosh[c + d*x])/(8*b*d^2) - (a^2*f*Cosh[c + d*x]^3)/(9*b^3*d^2)
 - (a*(e + f*x)*Cosh[c + d*x]^4)/(4*b^2*d) - (f*Cosh[3*c + 3*d*x])/(144*b*d
^2) - (f*Cosh[5*c + 5*d*x])/(400*b*d^2) - (a^3*(a^2 + b^2)*(e + f*x)*Log[1
+ (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^6*d) - (a^3*(a^2 + b^2)*(e + f
*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^6*d) - (a^3*(a^2 + b
^2)*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^6*d^2) - (a^
3*(a^2 + b^2)*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^6*
```

```
d^2) + (a^4*(e + f*x)*Sinh[c + d*x])/(b^5*d) + (2*a^2*(e + f*x)*Sinh[c + d*
x])/(3*b^3*d) - ((e + f*x)*Sinh[c + d*x])/(8*b*d) + (a^3*f*Cosh[c + d*x]*Si
nh[c + d*x])/(4*b^4*d^2) + (3*a*f*Cosh[c + d*x]*Sinh[c + d*x])/(32*b^2*d^2)
 + (a^2*(e + f*x)*Cosh[c + d*x]^2*Sinh[c + d*x])/(3*b^3*d) + (a*f*Cosh[c +
d*x]^3*Sinh[c + d*x])/(16*b^2*d^2) - (a^3*(e + f*x)*Sinh[c + d*x]^2)/(2*b^4
*d) + ((e + f*x)*Sinh[3*c + 3*d*x])/(48*b*d) + ((e + f*x)*Sinh[5*c + 5*d*x]
)/(80*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5447

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)], x_Symbol] :> Simp[((c + d*x)^m*Cosh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cosh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5448

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sinh[a +
b*x]^n*Cosh[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] &
& IGtQ[p, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
```

```
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5579

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1), x], x] - Di
st[a/b, Int[((e + f*x)^m*Cosh[c + d*x]^p*Sinh[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh^3(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh^3(c+dx)\sinh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\cosh^3(c+dx)\sinh}{a+b\sinh(c+dx)}}{b}$$

$$= -\frac{a\int (e+fx)\cosh^3(c+dx)\sinh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)\cosh^3(c+dx)}{a+b\sinh(c+}}{b^2}$$

$$= -\frac{a(e+fx)\cosh^4(c+dx)}{4b^2d} + \frac{a^2\int (e+fx)\cosh^3(c+dx)\,dx}{b^3} - \frac{a^3\int}{}$$

$$= -\frac{a^2f\cosh^3(c+dx)}{9b^3d^2} - \frac{a(e+fx)\cosh^4(c+dx)}{4b^2d} - \frac{(e+fx)\sinh(c+}{8bd}$$

$$= \frac{a^3\left(a^2+b^2\right)(e+fx)^2}{2b^6f} + \frac{f\cosh(c+dx)}{8bd^2} - \frac{a^2f\cosh^3(c+dx)}{9b^3d^2} - a(e$$

$$= \frac{3afx}{32b^2d} + \frac{a^3\left(a^2+b^2\right)(e+fx)^2}{2b^6f} - \frac{a^4f\cosh(c+dx)}{b^5d^2} - \frac{2a^2f\cosh(c}{3b^3d^2}$$

$$= -\frac{a^3fx}{4b^4d} + \frac{3afx}{32b^2d} + \frac{a^3\left(a^2+b^2\right)(e+fx)^2}{2b^6f} - \frac{a^4f\cosh(c+dx)}{b^5d^2} - 2a^2$$

$$= -\frac{a^3fx}{4b^4d} + \frac{3afx}{32b^2d} + \frac{a^3\left(a^2+b^2\right)(e+fx)^2}{2b^6f} - \frac{a^4f\cosh(c+dx)}{b^5d^2} - 2a^2$$

Mathematica [A] time = 4.11, size = 958, normalized size = 1.49

$$-\frac{-14400d^2fx^2a^5-14400c^2fa^5-28800cdfxa^5+28800cf\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)a^5+28800dfx\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]^3*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/28800*(-14400*a^5*c^2*f - 14400*a^3*b^2*c^2*f - 28800*a^5*c*d*f*x - 2880
0*a^3*b^2*c*d*f*x - 14400*a^5*d^2*f*x^2 - 14400*a^3*b^2*d^2*f*x^2 + 28800*a
^4*b*f*Cosh[c + d*x] + 21600*a^2*b^3*f*Cosh[c + d*x] - 3600*b^5*f*Cosh[c +
d*x] + 7200*a^3*b^2*d*e*Cosh[2*(c + d*x)] + 3600*a*b^4*d*e*Cosh[2*(c + d*x)
] + 7200*a^3*b^2*d*f*x*Cosh[2*(c + d*x)] + 3600*a*b^4*d*f*x*Cosh[2*(c + d*x
)] + 800*a^2*b^3*f*Cosh[3*(c + d*x)] + 200*b^5*f*Cosh[3*(c + d*x)] + 900*a*
b^4*d*e*Cosh[4*(c + d*x)] + 900*a*b^4*d*f*x*Cosh[4*(c + d*x)] + 72*b^5*f*Co
sh[5*(c + d*x)] + 28800*a^5*c*f*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
])] + 28800*a^3*b^2*c*f*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 28
800*a^5*d*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 28800*a^3*b^
2*d*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 28800*a^5*c*f*Log[
1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 28800*a^3*b^2*c*f*Log[1 + (b*E
^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 28800*a^5*d*f*x*Log[1 + (b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2])] + 28800*a^3*b^2*d*f*x*Log[1 + (b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2])] + 28800*a^5*d*e*Log[a + b*Sinh[c + d*x]] + 28800*a^3*b^2
*d*e*Log[a + b*Sinh[c + d*x]] - 28800*a^5*c*f*Log[a + b*Sinh[c + d*x]] - 28
800*a^3*b^2*c*f*Log[a + b*Sinh[c + d*x]] + 28800*a^3*(a^2 + b^2)*f*PolyLog[
2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 28800*a^3*(a^2 + b^2)*f*PolyLo
g[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 28800*a^4*b*d*e*Sinh[c + d
*x] - 21600*a^2*b^3*d*e*Sinh[c + d*x] + 3600*b^5*d*e*Sinh[c + d*x] - 28800*
a^4*b*d*f*x*Sinh[c + d*x] - 21600*a^2*b^3*d*f*x*Sinh[c + d*x] + 3600*b^5*d*
f*x*Sinh[c + d*x] - 3600*a^3*b^2*f*Sinh[2*(c + d*x)] - 1800*a*b^4*f*Sinh[2*
(c + d*x)] - 2400*a^2*b^3*d*e*Sinh[3*(c + d*x)] - 600*b^5*d*e*Sinh[3*(c + d
*x)] - 2400*a^2*b^3*d*f*x*Sinh[3*(c + d*x)] - 600*b^5*d*f*x*Sinh[3*(c + d*x
)] - 225*a*b^4*f*Sinh[4*(c + d*x)] - 360*b^5*d*e*Sinh[5*(c + d*x)] - 360*b^
5*d*f*x*Sinh[5*(c + d*x)])/(b^6*d^2)
```

fricas [B] time = 0.62, size = 5548, normalized size = 8.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

[Out] 1/57600*(72*(5*b^5*d*f*x + 5*b^5*d*e - b^5*f)*cosh(d*x + c)^10 + 72*(5*b^5*d*f*x + 5*b^5*d*e - b^5*f)*sinh(d*x + c)^10 - 225*(4*a*b^4*d*f*x + 4*a*b^4*d*e - a*b^4*f)*cosh(d*x + c)^9 - 45*(20*a*b^4*d*f*x + 20*a*b^4*d*e - 5*a*b^4*f - 16*(5*b^5*d*f*x + 5*b^5*d*e - b^5*f)*cosh(d*x + c))*sinh(d*x + c)^9 + 200*(3*(4*a^2*b^3 + b^5)*d*f*x + 3*(4*a^2*b^3 + b^5)*d*e - (4*a^2*b^3 + b^5)*f)*cosh(d*x + c)^8 + 5*(120*(4*a^2*b^3 + b^5)*d*f*x + 120*(4*a^2*b^3 + b^5)*d*e + 648*(5*b^5*d*f*x + 5*b^5*d*e - b^5*f)*cosh(d*x + c)^2 - 40*(4*a^2*b^3 + b^5)*f - 405*(4*a*b^4*d*f*x + 4*a*b^4*d*e - a*b^4*f)*cosh(d*x + c))*sinh(d*x + c)^8 - 360*b^5*d*f*x - 1800*(2*(2*a^3*b^2 + a*b^4)*d*f*x + 2*(2*a^3*b^2 + a*b^4)*d*e - (2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c)^7 - 20*(180*(2*a^3*b^2 + a*b^4)*d*f*x - 432*(5*b^5*d*f*x + 5*b^5*d*e - b^5*f)*cosh(d*x + c)^3 + 180*(2*a^3*b^2 + a*b^4)*d*e + 405*(4*a*b^4*d*f*x + 4*a*b^4*d*e - a*b^4*f)*cosh(d*x + c)^2 - 90*(2*a^3*b^2 + a*b^4)*f - 80*(3*(4*a^2*b^3 + b^5)*d*f*x + 3*(4*a^2*b^3 + b^5)*d*e - (4*a^2*b^3 + b^5)*f)*cosh(d*x + c))*sinh(d*x + c)^7 - 360*b^5*d*e + 3600*((8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x + (8*a^4*b + 6*a^2*b^3 - b^5)*d*e - (8*a^4*b + 6*a^2*b^3 - b^5)*f)*cosh(d*x + c)^6 + 20*(756*(5*b^5*d*f*x + 5*b^5*d*e - b^5*f)*cosh(d*x + c)^4 + 180*(8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x - 945*(4*a*b^4*d*f*x + 4*a*b^4*d*e - a*b^4*f)*cosh(d*x + c)^3 + 180*(8*a^4*b + 6*a^2*b^3 - b^5)*d*e + 280*(3*(4*a^2*b^3 + b^5)*d*f*x + 3*(4*a^2*b^3 + b^5)*d*e - (4*a^2*b^3 + b^5)*f)*cosh(d*x + c)^2 - 180*(8*a^4*b + 6*a^2*b^3 - b^5)*f - 630*(2*(2*a^3*b^2 + a*b^4)*d*f*x + 2*(2*a^3*b^2 + a*b^4)*d*e - (2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c))*sinh(d*x + c)^6 - 72*b^5*f + 28800*((a^5 + a^3*b^2)*d^2*f*x^2 + 2*(a^5 + a^3*b^2)*d^2*e*x + 4*(a^5 + a^3*b^2)*c*d*e - 2*(a^5 + a^3*b^2)*c^2*f)*cosh(d*x + c)^5 + 2*(14400*(a^5 + a^3*b^2)*d^2*f*x^2 + 9072*(5*b^5*d*f*x + 5*b^5*d*e - b^5*f)*cosh(d*x + c)^5 + 28800*(a^5 + a^3*b^2)*d^2*e*x - 14175*(4*a*b^4*d*f*x + 4*a*b^4*d*e - a*b^4*f)*cosh(d*x + c)^4 + 57600*(a^5 + a^3*b^2)*c*d*e - 28800*(a^5 + a^3*b^2)*c^2*f + 5600*(3*(4*a^2*b^3 + b^5)*d*f*x + 3*(4*a^2*b^3 + b^5)*d*e - (4*a^2*b^3 + b^5)*f)*cosh(d*x + c)^3 - 18900*(2*(2*a^3*b^2 + a*b^4)*d*f*x + 2*(2*a^3*b^2 + a*b^4)*d*e - (2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c)^2 + 10800*((8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x + (8*a^4*b + 6*a^2*b^3 - b^5)*d*e - (8*a^4*b + 6*a^2*b^3 - b^5)*f)*cosh(d*x + c))*sinh(d*x + c)^5 - 3600*((8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x + (8*a^4*b + 6*a^2*b^3 - b^5)*d*e + (8*a^4*b + 6*a^2*b^3 - b^5)*f)*cosh(d*x + c)^4 + 10*(1512*(5*b^5*d*f*x + 5*b^5*d*e - b^5*f)*cosh(d*x + c)^6 - 2835*(4*a*b^4*d*f*x + 4*a*b^4*d*e - a*b^4*f)*cosh(d*x + c)^5 + 1400*(3*(4*a^2*b^3 + b^5)*d*f*x + 3*(4*a^2*b^3 + b^5)*d*e - (4*a^2*b^3 + b^5)*f)*cosh(d*x + c)^4 - 360*(8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x - 6300*(2*(2*a^3*b^2 + a*b^4)*d*f*x + 2*(2*a^3*b^2 + a*b^4)*d*e - (2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c)^3 - 360*(8*a^4*b + 6*a^2*b^3 - b^5)*d*e + 5400*((8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x + (8*a^4*b + 6*a^2*b^3 - b^5)*d*e - (8*a^4*b + 6*a^2*b^3 - b^5)*f)*cosh(d*x + c)^2 - 360*(8*a^4*b + 6*a^2*b^3 - b^5)*f + 14400*((a^5 + a^3*b^2)*d^2*f*x^2 + 2*(a^5 + a^3*b^2)*d^2*e*x + 4*(a^5 + a^3*b^2)*c*d*e - 2*(a^5 + a^3*b^2)*c^2*f)*cosh(d*x + c))*sinh(d*x + c)^4 - 1800*(2*(2*a^3*b^2 + a*b^4)*d*f*x + 2*(2*a^3*b^2 + a*b^4)*d*e + (2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c)^3 + 20*(432*(5*b^5*d*f*x + 5*b^5*d*e - b^5 *f)*cosh(d*x + c)^7 - 945*(4*a*b^4*d*f*x + 4*a*b^4*d*e - a*b^4*f)*cosh(d*x + c)^6 + 560*(3*(4*a^2*b^3 + b^5)*d*f*x + 3*(4*a^2*b^3 + b^5)*d*e - (4*a^2*b^3 + b^5)*f)*cosh(d*x + c)^5 - 3150*(2*(2*a^3*b^2 + a*b^4)*d*f*x + 2*(2*a^3*b^2 + a*b^4)*d*e - (2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c)^4 - 180*(2*a^3*b^2 + a*b^4)*d*f*x + 3600*((8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x + (8*a^4*b + 6*a^2*b^3 - b^5)*d*e - (8*a^4*b + 6*a^2*b^3 - b^5)*f)*cosh(d*x + c)^3 - 180*(2*a^3*b^2 + a*b^4)*d*e + 14400*((a^5 + a^3*b^2)*d^2*f*x^2 + 2*(a^5 + a^3*b^2)*d^2*e*x + 4*(a^5 + a^3*b^2)*c*d*e - 2*(a^5 + a^3*b^2)*c^2*f)*cosh(d*x + c)^2 - 90*(2*a^3*b^2 + a*b^4)*f - 720*((8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x + (8*a^4*b + 6*a^2*b^3 - b^5)*d*e + (8*a^4*b + 6*a^2*b^3 - b^5)*f)*cosh(d*x + c))*sinh(d*x + c)^3 - 200*(3*(4*a^2*b^3 + b^5)*d*f*x + 3*(4*a^2*b^3 + b^5)*d*e + (4*a^2*b^3 + b^5)*f)*cosh(d*x + c)^2 + 20*(162*(5*b^5*d*f*x + 5*b^5*d*e - b^5*f)*cosh(d*x + c)^8 - 405*(4*a*b^4*d*f*x + 4*a*b^4*d*e - a*b^4*f)*cosh(d*x + c)^7 + 280*(3*(4*a^2*b^3 + b^5)*d*f*x + 3*(4*a^2*b^3 + b^5)*d*e - (4*a^2*b^3 + b^5)*f)*cosh(d*x + c)^6 - 1890*(2*(2*a^3*b^2 + a*b^4)*d*f*x + 2*(2*a^3*b^2 + a*b^4)*d*e - (2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c)^5 + 2700*((8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x + (8*a^4*b + 6*a^2*b^3 - b^5)*d*e - (8*a^4*b + 6*a^2*b^3 - b^5)*f)*cosh(d*x + c)^4 - 30*(4*a^2*b^3 + b^5)*d*f*x + 14400*((a^5 + a^3*b^2)*d^2*f*x^2 + 2*(a^5 + a^3*b^2)*d^2*e*x + 4*(a^5 + a^3*b^2)*c*d*e - 2*(a^5 + a^3*b^2)*c^2*f)*cosh(d*x + c)^3 - 30*(4*a^2*b^3 + b^5)*d*e - 1080*((8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x + (8*a^4*b + 6*a^2*b^3 - b^5)*d*e + (8*a^4*b + 6*a^2*b^3 - b^5)*f)*cosh(d*x + c)^2 - 10*(4*a^2*b^3 + b^5)*f - 270*(2*(2*a^3*b^2 + a*b^4)*d*f*x + 2*(2*a^3*b^2 + a*b^4)*d*e + (2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c))*sinh(d*x + c)^2 - 225*(4*a*b^4*d*f*x + 4*a*b^4*d*e + a*b^4*f)*cosh(d*x + c) - 57600*((a^5 + a^3*b^2)*f*cosh(d*x + c)^5 + 5*(a^5 + a^3*b^2)*f*cosh(d*x + c)^4*sinh(d*x + c) + 10*(a^5 + a^3*b^2)*f*cosh(d*x + c)^3*sinh(d*x + c)^2 + 10*(a^5 + a^3*b^2)*f*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*(a^5 + a^3*b^2)*f*cosh(d*x + c)*sinh(d*x + c)^4 + (a^5 + a^3*b^2)*f*sinh(d*x + c)^5)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 57600*((a^5 + a^3*b^2)*f*cosh(d*x + c)^5 + 5*(a^5 + a^3*b^2)*f*cosh(d*x + c)^4*sinh(d*x + c) + 10*(a^5 + a^3*b^2)*f*cosh(d*x + c)^3*sinh(d*x + c)^2 + 10*(a^5 + a^3*b^2)*f*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*(a^5 + a^3*b^2)*f*cosh(d*x + c)*sinh(d*x + c)^4 + (a^5 + a^3*b^2)*f*sinh(d*x + c)^5)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 57600*(((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)^5 + 5*((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)^4*sinh(d*x + c) + 10*((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)^3*sinh(d*x + c)^2 + 10*((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^4 + ((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^2)*c*f)*sinh(d*x + c)^5)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 57600*(((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)^5 + 5*((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)^4*sinh(d*x + c) + 10*((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^2)*c*f)*cos

```
h(d*x + c)^3*sinh(d*x + c)^2 + 10*((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^2)*c*
f)*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b^
2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^4 + ((a^5 + a^3*b^2)*d*e - (a^5 + a^3*b
^2)*c*f)*sinh(d*x + c)^5)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*s
qrt((a^2 + b^2)/b^2) + 2*a) - 57600*(((a^5 + a^3*b^2)*d*f*x + (a^5 + a^3*b^
2)*c*f)*cosh(d*x + c)^5 + 5*((a^5 + a^3*b^2)*d*f*x + (a^5 + a^3*b^2)*c*f)*c
osh(d*x + c)^4*sinh(d*x + c) + 10*((a^5 + a^3*b^2)*d*f*x + (a^5 + a^3*b^2)*
c*f)*cosh(d*x + c)^3*sinh(d*x + c)^2 + 10*((a^5 + a^3*b^2)*d*f*x + (a^5 + a
^3*b^2)*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*((a^5 + a^3*b^2)*d*f*x + (
a^5 + a^3*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^4 + ((a^5 + a^3*b^2)*d*f*x
+ (a^5 + a^3*b^2)*c*f)*sinh(d*x + c)^5)*log(-(a*cosh(d*x + c) + a*sinh(d*x
+ c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) -
57600*(((a^5 + a^3*b^2)*d*f*x + (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)^5 + 5*((
a^5 + a^3*b^2)*d*f*x + (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)^4*sinh(d*x + c) +
 10*((a^5 + a^3*b^2)*d*f*x + (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)^3*sinh(d*x
+ c)^2 + 10*((a^5 + a^3*b^2)*d*f*x + (a^5 + a^3*b^2)*c*f)*cosh(d*x + c)^2*s
inh(d*x + c)^3 + 5*((a^5 + a^3*b^2)*d*f*x + (a^5 + a^3*b^2)*c*f)*cosh(d*x +
 c)*sinh(d*x + c)^4 + ((a^5 + a^3*b^2)*d*f*x + (a^5 + a^3*b^2)*c*f)*sinh(d*
x + c)^5)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*si
nh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 5*(144*(5*b^5*d*f*x + 5*b^5*d*
e - b^5*f)*cosh(d*x + c)^9 - 405*(4*a*b^4*d*f*x + 4*a*b^4*d*e - a*b^4*f)*co
sh(d*x + c)^8 - 180*a*b^4*d*f*x + 320*(3*(4*a^2*b^3 + b^5)*d*f*x + 3*(4*a^2
*b^3 + b^5)*d*e - (4*a^2*b^3 + b^5)*f)*cosh(d*x + c)^7 - 180*a*b^4*d*e - 25
20*(2*(2*a^3*b^2 + a*b^4)*d*f*x + 2*(2*a^3*b^2 + a*b^4)*d*e - (2*a^3*b^2 +
a*b^4)*f)*cosh(d*x + c)^6 - 45*a*b^4*f + 4320*((8*a^4*b + 6*a^2*b^3 - b^5)*
d*f*x + (8*a^4*b + 6*a^2*b^3 - b^5)*d*e - (8*a^4*b + 6*a^2*b^3 - b^5)*f)*co
sh(d*x + c)^5 + 28800*((a^5 + a^3*b^2)*d^2*f*x^2 + 2*(a^5 + a^3*b^2)*d^2*e*
x + 4*(a^5 + a^3*b^2)*c*d*e - 2*(a^5 + a^3*b^2)*c^2*f)*cosh(d*x + c)^4 - 28
80*((8*a^4*b + 6*a^2*b^3 - b^5)*d*f*x + (8*a^4*b + 6*a^2*b^3 - b^5)*d*e + (
8*a^4*b + 6*a^2*b^3 - b^5)*f)*cosh(d*x + c)^3 - 1080*(2*(2*a^3*b^2 + a*b^4)
*d*f*x + 2*(2*a^3*b^2 + a*b^4)*d*e + (2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c)^2
 - 80*(3*(4*a^2*b^3 + b^5)*d*f*x + 3*(4*a^2*b^3 + b^5)*d*e + (4*a^2*b^3 + b
^5)*f)*cosh(d*x + c))*sinh(d*x + c))/(b^6*d^2*cosh(d*x + c)^5 + 5*b^6*d^2*c
osh(d*x + c)^4*sinh(d*x + c) + 10*b^6*d^2*cosh(d*x + c)^3*sinh(d*x + c)^2 +
 10*b^6*d^2*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*b^6*d^2*cosh(d*x + c)*sinh(
d*x + c)^4 + b^6*d^2*sinh(d*x + c)^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cosh(dx+c)^3\sinh(dx+c)^3}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
```

```
m="giac")
```

```
[Out] integrate((f*x + e)*cosh(d*x + c)^3*sinh(d*x + c)^3/(b*sinh(d*x + c) + a),
x)
```

maple [B] time = 0.23, size = 1363, normalized size = 2.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] -a^3*e*x/b^4+1/800*(5*d*f*x+5*d*e-f)/b/d^2*exp(5*d*x+5*c)+1/16*(8*a^4*d*f*x
+6*a^2*b^2*d*f*x-b^4*d*f*x+8*a^4*d*e+6*a^2*b^2*d*e-b^4*d*e-8*a^4*f-6*a^2*b^
2*f+b^4*f)/b^5/d^2*exp(d*x+c)-1/32*a*(2*a^2+b^2)*(2*d*f*x+2*d*e+f)/b^4/d^2*
exp(-2*d*x-2*c)+1/d^2*a^3/b^4*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/d
^2*a^3/b^4*f*c*ln(exp(d*x+c))+2/d*a^3/b^4*f*c*x-1/d*a^3/b^4*f*ln((-b*exp(d*
x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a^3/b^4*f*ln((-b*exp(
d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a^3/b^4*f*ln((b*exp(d
*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*a^3/b^4*f*ln((b*exp(d
*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/800*(5*d*f*x+5*d*e+f)/b/d
^2*exp(-5*d*x-5*c)+1/288*(12*a^2*d*f*x+3*b^2*d*f*x+12*a^2*d*e+3*b^2*d*e-4*a
^2*f-b^2*f)/b^3/d^2*exp(3*d*x+3*c)+1/2*a^3*f*x^2/b^4-1/d^2*a^5/b^6*f*ln((b*
exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/d^2*a^5/b^6*f*c*ln(b
*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/d^2*a^5/b^6*f*c*ln(exp(d*x+c))-1/d*a^5/
b^6*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a^
5/b^6*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a^
5/b^6*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+2/d*a^5/
b^6*f*c*x+1/d^2*a^5/b^6*f*c^2-1/d*a^5/b^6*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x
+c)-b)+2/d*a^5/b^6*e*ln(exp(d*x+c))-1/d^2*a^5/b^6*f*dilog((b*exp(d*x+c)+(a^
2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/d^2*a^5/b^6*f*dilog((-b*exp(d*x+c)+(
a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/2*a^5/b^6*f*x^2-a^5/b^6*e*x-1/256
*a*(4*d*f*x+4*d*e-f)/b^2/d^2*exp(4*d*x+4*c)-1/32*a*(4*a^2*d*f*x+2*b^2*d*f*x
+4*a^2*d*e+2*b^2*d*e-2*a^2*f-b^2*f)/b^4/d^2*exp(2*d*x+2*c)-1/16*(8*a^4+6*a^
2*b^2-b^4)*(d*f*x+d*e+f)/b^5/d^2*exp(-d*x-c)-1/288*(4*a^2+b^2)*(3*d*f*x+3*d
*e+f)/b^3/d^2*exp(-3*d*x-3*c)-1/256*a*(4*d*f*x+4*d*e+f)/b^2/d^2*exp(-4*d*x-
4*c)+1/d^2*a^3/b^4*f*c^2-1/d^2*a^3/b^4*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2
)+a)/(a+(a^2+b^2)^(1/2)))-1/d^2*a^3/b^4*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1
/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d*a^3/b^4*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+
c)-b)+2/d*a^3/b^4*e*ln(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/960*e*((15*a*b^3*e^(-d*x - c) - 6*b^4 - 10*(4*a^2*b^2 + b^4)*e^(-2*d*x -
 2*c) + 60*(2*a^3*b + a*b^3)*e^(-3*d*x - 3*c) - 60*(8*a^4 + 6*a^2*b^2 - b^4
)*e^(-4*d*x - 4*c))*e^(5*d*x + 5*c)/(b^5*d) + 960*(a^5 + a^3*b^2)*(d*x + c)
/(b^6*d) + (15*a*b^3*e^(-4*d*x - 4*c) + 6*b^4*e^(-5*d*x - 5*c) + 60*(8*a^4
+ 6*a^2*b^2 - b^4)*e^(-d*x - c) + 60*(2*a^3*b + a*b^3)*e^(-2*d*x - 2*c) + 1
0*(4*a^2*b^2 + b^4)*e^(-3*d*x - 3*c))/(b^5*d) + 960*(a^5 + a^3*b^2)*log(-2*
a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^6*d)) - 1/57600*f*((28800*(a^5*
d^2*e^(5*c) + a^3*b^2*d^2*e^(5*c))*x^2 - 72*(5*b^5*d*x*e^(10*c) - b^5*e^(10
*c))*e^(5*d*x) + 225*(4*a*b^4*d*x*e^(9*c) - a*b^4*e^(9*c))*e^(4*d*x) + 200*
(4*a^2*b^3*e^(8*c) + b^5*e^(8*c) - 3*(4*a^2*b^3*d*e^(8*c) + b^5*d*e^(8*c))*
x)*e^(3*d*x) - 1800*(2*a^3*b^2*e^(7*c) + a*b^4*e^(7*c) - 2*(2*a^3*b^2*d*e^(
7*c) + a*b^4*d*e^(7*c))*x)*e^(2*d*x) + 3600*(8*a^4*b*e^(6*c) + 6*a^2*b^3*e^
(6*c) - b^5*e^(6*c) - (8*a^4*b*d*e^(6*c) + 6*a^2*b^3*d*e^(6*c) - b^5*d*e^(6
*c))*x)*e^(d*x) + 3600*(8*a^4*b*e^(4*c) + 6*a^2*b^3*e^(4*c) - b^5*e^(4*c) +
 (8*a^4*b*d*e^(4*c) + 6*a^2*b^3*d*e^(4*c) - b^5*d*e^(4*c))*x)*e^(-d*x) + 18
00*(2*a^3*b^2*e^(3*c) + a*b^4*e^(3*c) + 2*(2*a^3*b^2*d*e^(3*c) + a*b^4*d*e^
(3*c))*x)*e^(-2*d*x) + 200*(4*a^2*b^3*e^(2*c) + b^5*e^(2*c) + 3*(4*a^2*b^3*
d*e^(2*c) + b^5*d*e^(2*c))*x)*e^(-3*d*x) + 225*(4*a*b^4*d*x*e^c + a*b^4*e^c
)*e^(-4*d*x) + 72*(5*b^5*d*x + b^5)*e^(-5*d*x))*e^(-5*c)/(b^6*d^2) - 900*in
tegrate(128*((a^6*e^c + a^4*b^2*e^c)*x*e^(d*x) - (a^5*b + a^3*b^3)*x)/(b^7*
e^(2*d*x + 2*c) + 2*a*b^6*e^(d*x + c) - b^7), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+dx)^3 \sinh(c+dx)^3 \left(e+fx\right)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^3*sinh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**3*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.404 $\int \frac{\cosh^3(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=141

$$\frac{a^2\left(a^2+b^2\right)\sinh(c+dx)}{b^5d}-\frac{a\left(a^2+b^2\right)\sinh^2(c+dx)}{2b^4d}+\frac{\left(a^2+b^2\right)\sinh^3(c+dx)}{3b^3d}-\frac{a^3\left(a^2+b^2\right)\log(a+b\sinh(c+a}{b^6d}$$

```
[Out] -a^3*(a^2+b^2)*ln(a+b*sinh(d*x+c))/b^6/d+a^2*(a^2+b^2)*sinh(d*x+c)/b^5/d-1/
2*a*(a^2+b^2)*sinh(d*x+c)^2/b^4/d+1/3*(a^2+b^2)*sinh(d*x+c)^3/b^3/d-1/4*a*s
inh(d*x+c)^4/b^2/d+1/5*sinh(d*x+c)^5/b/d
```

Rubi [A] time = 0.22, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {2837, 12, 894}

$$\frac{\left(a^2+b^2\right)\sinh^3(c+dx)}{3b^3d}-\frac{a\left(a^2+b^2\right)\sinh^2(c+dx)}{2b^4d}+\frac{a^2\left(a^2+b^2\right)\sinh(c+dx)}{b^5d}-\frac{a^3\left(a^2+b^2\right)\log(a+b\sinh(c+a}{b^6d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]^3*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a^3*(a^2 + b^2)*Log[a + b*Sinh[c + d*x]])/(b^6*d)) + (a^2*(a^2 + b^2)*Si
nh[c + d*x])/(b^5*d) - (a*(a^2 + b^2)*Sinh[c + d*x]^2)/(2*b^4*d) + ((a^2 +
b^2)*Sinh[c + d*x]^3)/(3*b^3*d) - (a*Sinh[c + d*x]^4)/(4*b^2*d) + Sinh[c +
d*x]^5/(5*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
```

```
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\cosh^3(c+dx)\sinh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\text{Subst}\left(\int \frac{x^3\left(-b^2-x^2\right)}{b^3(a+x)}\,dx, x, b\sinh(c+dx)\right)}{b^3 d}$$

$$= -\frac{\text{Subst}\left(\int \frac{x^3\left(-b^2-x^2\right)}{a+x}\,dx, x, b\sinh(c+dx)\right)}{b^6 d}$$

$$= -\frac{\text{Subst}\left(\int \left(-a^2\left(a^2+b^2\right)+a\left(a^2+b^2\right)x-\left(a^2+b^2\right)x^2+ax^3-x^4+\frac{a^3\left(a^2+b\right.}{a+x}\right.\right.}{b^6 d}$$

$$= -\frac{a^3\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{b^6 d}+\frac{a^2\left(a^2+b^2\right)\sinh(c+dx)}{b^5 d}-\frac{a\left(a^2+\right.}{}$$

Mathematica [A] time = 0.36, size = 123, normalized size = 0.87

$$-\frac{-\frac{60a^2\left(a^2+b^2\right)\sinh(c+dx)}{b^5}+\frac{30a\left(a^2+b^2\right)\sinh^2(c+dx)}{b^4}-\frac{20\left(a^2+b^2\right)\sinh^3(c+dx)}{b^3}+\frac{60a^3\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{b^6}+\frac{15a\sinh^4(c+dx)}{b^2}-12}{60d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]^3*Sinh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/60*((60*a^3*(a^2 + b^2)*Log[a + b*Sinh[c + d*x]])/b^6 - (60*a^2*(a^2 + b
^2)*Sinh[c + d*x])/b^5 + (30*a*(a^2 + b^2)*Sinh[c + d*x]^2)/b^4 - (20*(a^2
+ b^2)*Sinh[c + d*x]^3)/b^3 + (15*a*Sinh[c + d*x]^4)/b^2 - (12*Sinh[c + d*x
]^5)/b)/d
```

fricas [B] time = 0.48, size = 1660, normalized size = 11.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="frica
s")
```

```
[Out] 1/960*(6*b^5*cosh(d*x + c)^10 + 6*b^5*sinh(d*x + c)^10 - 15*a*b^4*cosh(d*x
+ c)^9 + 15*(4*b^5*cosh(d*x + c) - a*b^4)*sinh(d*x + c)^9 + 10*(4*a^2*b^3 +
```

```
 b^5)*cosh(d*x + c)^8 + 5*(54*b^5*cosh(d*x + c)^2 - 27*a*b^4*cosh(d*x + c)
+ 8*a^2*b^3 + 2*b^5)*sinh(d*x + c)^8 + 960*(a^5 + a^3*b^2)*d*x*cosh(d*x + c
)^5 - 60*(2*a^3*b^2 + a*b^4)*cosh(d*x + c)^7 + 20*(36*b^5*cosh(d*x + c)^3 -
 27*a*b^4*cosh(d*x + c)^2 - 6*a^3*b^2 - 3*a*b^4 + 4*(4*a^2*b^3 + b^5)*cosh(
d*x + c))*sinh(d*x + c)^7 + 60*(8*a^4*b + 6*a^2*b^3 - b^5)*cosh(d*x + c)^6
+ 20*(63*b^5*cosh(d*x + c)^4 - 63*a*b^4*cosh(d*x + c)^3 + 24*a^4*b + 18*a^2
*b^3 - 3*b^5 + 14*(4*a^2*b^3 + b^5)*cosh(d*x + c)^2 - 21*(2*a^3*b^2 + a*b^4
)*cosh(d*x + c))*sinh(d*x + c)^6 - 15*a*b^4*cosh(d*x + c) + 2*(756*b^5*cosh
(d*x + c)^5 - 945*a*b^4*cosh(d*x + c)^4 + 280*(4*a^2*b^3 + b^5)*cosh(d*x +
c)^3 + 480*(a^5 + a^3*b^2)*d*x - 630*(2*a^3*b^2 + a*b^4)*cosh(d*x + c)^2 +
180*(8*a^4*b + 6*a^2*b^3 - b^5)*cosh(d*x + c))*sinh(d*x + c)^5 - 6*b^5 - 60
*(8*a^4*b + 6*a^2*b^3 - b^5)*cosh(d*x + c)^4 + 10*(126*b^5*cosh(d*x + c)^6
- 189*a*b^4*cosh(d*x + c)^5 - 48*a^4*b - 36*a^2*b^3 + 6*b^5 + 70*(4*a^2*b^3
 + b^5)*cosh(d*x + c)^4 + 480*(a^5 + a^3*b^2)*d*x*cosh(d*x + c) - 210*(2*a^
3*b^2 + a*b^4)*cosh(d*x + c)^3 + 90*(8*a^4*b + 6*a^2*b^3 - b^5)*cosh(d*x +
c)^2)*sinh(d*x + c)^4 - 60*(2*a^3*b^2 + a*b^4)*cosh(d*x + c)^3 + 20*(36*b^5
*cosh(d*x + c)^7 - 63*a*b^4*cosh(d*x + c)^6 + 28*(4*a^2*b^3 + b^5)*cosh(d*x
 + c)^5 - 6*a^3*b^2 - 3*a*b^4 + 480*(a^5 + a^3*b^2)*d*x*cosh(d*x + c)^2 - 1
05*(2*a^3*b^2 + a*b^4)*cosh(d*x + c)^4 + 60*(8*a^4*b + 6*a^2*b^3 - b^5)*cos
h(d*x + c)^3 - 12*(8*a^4*b + 6*a^2*b^3 - b^5)*cosh(d*x + c))*sinh(d*x + c)^
3 - 10*(4*a^2*b^3 + b^5)*cosh(d*x + c)^2 + 10*(27*b^5*cosh(d*x + c)^8 - 54*
a*b^4*cosh(d*x + c)^7 + 28*(4*a^2*b^3 + b^5)*cosh(d*x + c)^6 + 960*(a^5 + a
^3*b^2)*d*x*cosh(d*x + c)^3 - 126*(2*a^3*b^2 + a*b^4)*cosh(d*x + c)^5 - 4*a
^2*b^3 - b^5 + 90*(8*a^4*b + 6*a^2*b^3 - b^5)*cosh(d*x + c)^4 - 36*(8*a^4*b
 + 6*a^2*b^3 - b^5)*cosh(d*x + c)^2 - 18*(2*a^3*b^2 + a*b^4)*cosh(d*x + c))
*sinh(d*x + c)^2 - 960*((a^5 + a^3*b^2)*cosh(d*x + c)^5 + 5*(a^5 + a^3*b^2)
*cosh(d*x + c)^4*sinh(d*x + c) + 10*(a^5 + a^3*b^2)*cosh(d*x + c)^3*sinh(d*
x + c)^2 + 10*(a^5 + a^3*b^2)*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*(a^5 + a^
3*b^2)*cosh(d*x + c)*sinh(d*x + c)^4 + (a^5 + a^3*b^2)*sinh(d*x + c)^5)*log
(2*(b*sinh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) + 5*(12*b^5*cosh(
d*x + c)^9 - 27*a*b^4*cosh(d*x + c)^8 + 16*(4*a^2*b^3 + b^5)*cosh(d*x + c)^
7 + 960*(a^5 + a^3*b^2)*d*x*cosh(d*x + c)^4 - 84*(2*a^3*b^2 + a*b^4)*cosh(d
*x + c)^6 + 72*(8*a^4*b + 6*a^2*b^3 - b^5)*cosh(d*x + c)^5 - 3*a*b^4 - 48*(
8*a^4*b + 6*a^2*b^3 - b^5)*cosh(d*x + c)^3 - 36*(2*a^3*b^2 + a*b^4)*cosh(d*
x + c)^2 - 4*(4*a^2*b^3 + b^5)*cosh(d*x + c))*sinh(d*x + c))/(b^6*d*cosh(d*
x + c)^5 + 5*b^6*d*cosh(d*x + c)^4*sinh(d*x + c) + 10*b^6*d*cosh(d*x + c)^3
*sinh(d*x + c)^2 + 10*b^6*d*cosh(d*x + c)^2*sinh(d*x + c)^3 + 5*b^6*d*cosh(
d*x + c)*sinh(d*x + c)^4 + b^6*d*sinh(d*x + c)^5)
```

giac [A] time = 0.36, size = 258, normalized size = 1.83

$$\frac{\frac{6\,b^4\left(e^{(dx+c)}-e^{(-dx-c)}\right)^5-15\,ab^3\left(e^{(dx+c)}-e^{(-dx-c)}\right)^4+40\,a^2b^2\left(e^{(dx+c)}-e^{(-dx-c)}\right)^3+40\,b^4\left(e^{(dx+c)}-e^{(-dx-c)}\right)^3-120\,a^3b\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2-120\,ab^3\left(e^{(dx+c)}-e\right.}{b^5}}{960\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac"
)
```

```
[Out] 1/960*((6*b^4*(e^(d*x + c) - e^(-d*x - c))^5 - 15*a*b^3*(e^(d*x + c) - e^(-
d*x - c))^4 + 40*a^2*b^2*(e^(d*x + c) - e^(-d*x - c))^3 + 40*b^4*(e^(d*x +
c) - e^(-d*x - c))^3 - 120*a^3*b*(e^(d*x + c) - e^(-d*x - c))^2 - 120*a*b^3
*(e^(d*x + c) - e^(-d*x - c))^2 + 480*a^4*(e^(d*x + c) - e^(-d*x - c)) + 48
0*a^2*b^2*(e^(d*x + c) - e^(-d*x - c)))/b^5 - 960*(a^5 + a^3*b^2)*log(abs(b
*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/b^6)/d
```

maple [B] time = 0.14, size = 804, normalized size = 5.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/2/d/b^4/(tanh(1/2*d*x+1/2*c)+1)^2*a^3-1/d*a^4/b^5/(tanh(1/2*d*x+1/2*c)+1
)-1/4/d/b^2/(tanh(1/2*d*x+1/2*c)-1)^4*a-1/3/d/b^3/(tanh(1/2*d*x+1/2*c)-1)^3
*a^2-1/2/d/b^4/(tanh(1/2*d*x+1/2*c)-1)^2*a^3-1/d*a^4/b^5/(tanh(1/2*d*x+1/2*
c)-1)-3/8/d/b^2/(tanh(1/2*d*x+1/2*c)-1)*a+3/8/d/b^2/(tanh(1/2*d*x+1/2*c)+1)
*a+1/d*a^3/b^4*ln(tanh(1/2*d*x+1/2*c)+1)-1/d*a^3/b^4*ln(tanh(1/2*d*x+1/2*c)
^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)-5/8/d/b^2/(tanh(1/2*d*x+1/2*c)-1)^2*a-1/d/b
^3/(tanh(1/2*d*x+1/2*c)-1)*a^2+1/d*a^3/b^4*ln(tanh(1/2*d*x+1/2*c)-1)-5/8/d/
b^2/(tanh(1/2*d*x+1/2*c)+1)^2*a-1/d/b^3/(tanh(1/2*d*x+1/2*c)+1)*a^2+1/d*a^5
/b^6*ln(tanh(1/2*d*x+1/2*c)+1)-1/d*a^5/b^6*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tan
h(1/2*d*x+1/2*c)*b-a)+1/d*a^5/b^6*ln(tanh(1/2*d*x+1/2*c)-1)-1/4/d/b^2/(tanh
(1/2*d*x+1/2*c)+1)^4*a-1/3/d/b^3/(tanh(1/2*d*x+1/2*c)+1)^3*a^2-1/2/d/b^2/(t
anh(1/2*d*x+1/2*c)-1)^3*a-1/2/d/b^3/(tanh(1/2*d*x+1/2*c)-1)^2*a^2-1/2/d/b^4
/(tanh(1/2*d*x+1/2*c)-1)*a^3+1/2/d/b^2/(tanh(1/2*d*x+1/2*c)+1)^3*a+1/2/d/b^
3/(tanh(1/2*d*x+1/2*c)+1)^2*a^2+1/2/d/b^4/(tanh(1/2*d*x+1/2*c)+1)*a^3-1/5/d
/b/(tanh(1/2*d*x+1/2*c)-1)^5-1/5/d/b/(tanh(1/2*d*x+1/2*c)+1)^5-1/2/d/b/(tan
h(1/2*d*x+1/2*c)-1)^4+1/2/d/b/(tanh(1/2*d*x+1/2*c)+1)^4-3/8/d/b/(tanh(1/2*d
*x+1/2*c)-1)^2+3/8/d/b/(tanh(1/2*d*x+1/2*c)+1)^2-7/12/d/b/(tanh(1/2*d*x+1/2
*c)-1)^3-7/12/d/b/(tanh(1/2*d*x+1/2*c)+1)^3
```

maxima [B] time = 0.36, size = 300, normalized size = 2.13

$$-\frac{\left(15\,ab^{3}e^{(-dx-c)} - 6\,b^{4} - 10\left(4\,a^{2}b^{2} + b^{4}\right)e^{(-2\,dx-2\,c)} + 60\left(2\,a^{3}b + ab^{3}\right)e^{(-3\,dx-3\,c)} - 60\left(8\,a^{4} + 6\,a^{2}b^{2} - b^{4}\right)e^{(-4\,dx-4\,c)}}{960\,b^{5}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxim
a")
```

```
[Out] -1/960*(15*a*b^3*e^(-d*x - c) - 6*b^4 - 10*(4*a^2*b^2 + b^4)*e^(-2*d*x - 2*
c) + 60*(2*a^3*b + a*b^3)*e^(-3*d*x - 3*c) - 60*(8*a^4 + 6*a^2*b^2 - b^4)*e
^(-4*d*x - 4*c))*e^(5*d*x + 5*c)/(b^5*d) - (a^5 + a^3*b^2)*(d*x + c)/(b^6*d
) - 1/960*(15*a*b^3*e^(-4*d*x - 4*c) + 6*b^4*e^(-5*d*x - 5*c) + 60*(8*a^4 +
 6*a^2*b^2 - b^4)*e^(-d*x - c) + 60*(2*a^3*b + a*b^3)*e^(-2*d*x - 2*c) + 10
*(4*a^2*b^2 + b^4)*e^(-3*d*x - 3*c))/(b^5*d) - (a^5 + a^3*b^2)*log(-2*a*e^(
-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(b^6*d)
```

mupad [B] time = 0.75, size = 307, normalized size = 2.18

$$\frac{e^{5c+5dx}}{160\,b\,d}-\frac{e^{-5c-5dx}}{160\,b\,d}-\frac{a\,e^{-4c-4dx}}{64\,b^2\,d}-\frac{a\,e^{4c+4dx}}{64\,b^2\,d}-\frac{\ln\left(2\,a\,e^{d\,x}\,e^{c}-b+b\,e^{2\,c}\,e^{2\,d\,x}\right)\,\left(a^5+a^3\,b^2\right)}{b^6\,d}-\frac{e^{-c-d\,x}\,\left(8\,a^4+6\,a^2\,b^2\right.}{16\,b^5\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] exp(5*c + 5*d*x)/(160*b*d) - exp(- 5*c - 5*d*x)/(160*b*d) - (a*exp(- 4*c -
4*d*x))/(64*b^2*d) - (a*exp(4*c + 4*d*x))/(64*b^2*d) - (log(2*a*exp(d*x)*ex
p(c) - b + b*exp(2*c)*exp(2*d*x))*(a^5 + a^3*b^2))/(b^6*d) - (exp(- c - d*x
)*(8*a^4 - b^4 + 6*a^2*b^2))/(16*b^5*d) + (a^3*x*(a^2 + b^2))/b^6 - (exp(-
2*c - 2*d*x)*(a*b^2 + 2*a^3))/(16*b^4*d) - (exp(2*c + 2*d*x)*(a*b^2 + 2*a^3
))/(16*b^4*d) + (exp(c + d*x)*(8*a^4 - b^4 + 6*a^2*b^2))/(16*b^5*d) - (exp(
- 3*c - 3*d*x)*(4*a^2 + b^2))/(96*b^3*d) + (exp(3*c + 3*d*x)*(4*a^2 + b^2))
/(96*b^3*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**3*sinh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.405 $\int \frac{\cosh^3(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=39

$$\text{Int}\left(\frac{\sinh^3(c+dx)\cosh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)^3*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh^3(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]^3*Sinh[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]^3*Sinh[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x
])), x]
```

Rubi steps

$$\int \frac{\cosh^3(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\cosh^3(c+dx)\sinh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]^3*Sinh[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x]
)),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)^3\sinh(dx+c)^3}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] integral(cosh(d*x + c)^3*sinh(d*x + c)^3/(a*f*x + a*e + (b*f*x + b*e)*sinh(
d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh\left(dx+c\right)^{3}\sinh\left(dx+c\right)^{3}}{\left(fx+e\right)\left(b\sinh\left(dx+c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] integrate(cosh(d*x + c)^3*sinh(d*x + c)^3/((f*x + e)*(b*sinh(d*x + c) + a))
, x)
```

maple [A] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{\left(\cosh^{3}\left(dx+c\right)\right)\left(\sinh^{3}\left(dx+c\right)\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^3*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)^3*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{e^{\left(-5\,c+\frac{5\,de}{f}\right)}E_{1}\left(\frac{5\left(fx+e\right)d}{f}\right)}{32\,bf}-\frac{ae^{\left(-4\,c+\frac{4\,de}{f}\right)}E_{1}\left(\frac{4\left(fx+e\right)d}{f}\right)}{16\,b^{2}f}+\frac{ae^{\left(4\,c-\frac{4\,de}{f}\right)}E_{1}\left(-\frac{4\left(fx+e\right)d}{f}\right)}{16\,b^{2}f}-\frac{e^{\left(5\,c-\frac{5\,de}{f}\right)}E_{1}\left(-\frac{5\left(fx+e\right)d}{f}\right)}{32\,bf}-\frac{\left(4\,a^{2}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^3*sinh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/32*e^(-5*c + 5*d*e/f)*exp_integral_e(1, 5*(f*x + e)*d/f)/(b*f) - 1/16*a*
e^(-4*c + 4*d*e/f)*exp_integral_e(1, 4*(f*x + e)*d/f)/(b^2*f) + 1/16*a*e^(4
*c - 4*d*e/f)*exp_integral_e(1, -4*(f*x + e)*d/f)/(b^2*f) - 1/32*e^(5*c - 5
```

```
*d*e/f)*exp_integral_e(1, -5*(f*x + e)*d/f)/(b*f) - 1/32*(4*a^2 + b^2)*e^(-
3*c + 3*d*e/f)*exp_integral_e(1, 3*(f*x + e)*d/f)/(b^3*f) - 1/32*(4*a^2*e^(
3*c) + b^2*e^(3*c))*e^(-3*d*e/f)*exp_integral_e(1, -3*(f*x + e)*d/f)/(b^3*f
) - 1/8*(2*a^3 + a*b^2)*e^(-2*c + 2*d*e/f)*exp_integral_e(1, 2*(f*x + e)*d/
f)/(b^4*f) + 1/8*(2*a^3*e^(2*c) + a*b^2*e^(2*c))*e^(-2*d*e/f)*exp_integral_
e(1, -2*(f*x + e)*d/f)/(b^4*f) - 1/16*(8*a^4 + 6*a^2*b^2 - b^4)*e^(-c + d*e
/f)*exp_integral_e(1, (f*x + e)*d/f)/(b^5*f) - 1/16*(8*a^4*e^c + 6*a^2*b^2*
e^c - b^4*e^c)*e^(-d*e/f)*exp_integral_e(1, -(f*x + e)*d/f)/(b^5*f) - (a^5
+ a^3*b^2)*log(f*x + e)/(b^6*f) + 1/64*integrate(128*(a^5*b + a^3*b^3 - (a^
6*e^c + a^4*b^2*e^c)*e^(d*x))/(b^7*f*x + b^7*e - (b^7*f*x*e^(2*c) + b^7*e*e
^(2*c))*e^(2*d*x) - 2*(a*b^6*f*x*e^c + a*b^6*e*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh(c+d\,x)^3\sinh(c+d\,x)^3}{\left(e+f\,x\right)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^3*sinh(c + d*x)^3)/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)^3*sinh(c + d*x)^3)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**3*sinh(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.406 $\int \frac{(e+fx)^3 \sinh^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1519

$$-\frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d}+\frac{3if(e+fx)^2\text{Li}_2\left(-ie^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d^2}-\frac{3if(e+fx)^2\text{Li}_2\left(ie^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d^2}-\frac{6if^2(e+fx)\text{Li}_3\left(-ie^{c+d}\right.}{b^3\left(a^2+b^2\right)d^3}$$

```
[Out] -6*a^3*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d^4-6
*a^3*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d^4+a^3
*(f*x+e)^3*ln(1+exp(2*d*x+2*c))/b^2/(a^2+b^2)/d-a^3*(f*x+e)^3*ln(1+b*exp(d*
x+c)/(a-(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d-a^3*(f*x+e)^3*ln(1+b*exp(d*x+c)/(
a+(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d+2*a^2*(f*x+e)^3*arctan(exp(d*x+c))/b^3/
d-3/4*a*f^3*polylog(4,-exp(2*d*x+2*c))/b^2/d^4-6*I*f^3*polylog(4,I*exp(d*x+
c))/b/d^4+3/2*a*f^2*(f*x+e)*polylog(3,-exp(2*d*x+2*c))/b^2/d^3+3/4*a^3*f^3*
polylog(4,-exp(2*d*x+2*c))/b^2/(a^2+b^2)/d^4-3*I*f*(f*x+e)^2*polylog(2,I*ex
p(d*x+c))/b/d^2-6*I*f^2*(f*x+e)*polylog(3,-I*exp(d*x+c))/b/d^3-6*I*a^2*f^3*
polylog(4,-I*exp(d*x+c))/b^3/d^4-2*a^4*(f*x+e)^3*arctan(exp(d*x+c))/b^3/(a^
2+b^2)/d-3/2*a*f*(f*x+e)^2*polylog(2,-exp(2*d*x+2*c))/b^2/d^2+3*I*a^2*f*(f*
x+e)^2*polylog(2,I*exp(d*x+c))/b^3/d^2+6*I*a^2*f^2*(f*x+e)*polylog(3,-I*exp
(d*x+c))/b^3/d^3+6*I*a^4*f^3*polylog(4,-I*exp(d*x+c))/b^3/(a^2+b^2)/d^4-3*I
*a^4*f*(f*x+e)^2*polylog(2,I*exp(d*x+c))/b^3/(a^2+b^2)/d^2-6*I*a^4*f^2*(f*x
+e)*polylog(3,-I*exp(d*x+c))/b^3/(a^2+b^2)/d^3+3*I*f*(f*x+e)^2*polylog(2,-I
*exp(d*x+c))/b/d^2+3/2*a^3*f*(f*x+e)^2*polylog(2,-exp(2*d*x+2*c))/b^2/(a^2+
b^2)/d^2+6*I*f^2*(f*x+e)*polylog(3,I*exp(d*x+c))/b/d^3-3/2*a^3*f^2*(f*x+e)*
polylog(3,-exp(2*d*x+2*c))/b^2/(a^2+b^2)/d^3+6*I*a^2*f^3*polylog(4,I*exp(d*
x+c))/b^3/d^4-3*I*a^2*f*(f*x+e)^2*polylog(2,-I*exp(d*x+c))/b^3/d^2-6*I*a^2*
f^2*(f*x+e)*polylog(3,I*exp(d*x+c))/b^3/d^3-6*I*a^4*f^3*polylog(4,I*exp(d*x
+c))/b^3/(a^2+b^2)/d^4+(f*x+e)^3*sinh(d*x+c)/b/d-2*(f*x+e)^3*arctan(exp(d*x
+c))/b/d-6*f^3*cosh(d*x+c)/b/d^4-3*f*(f*x+e)^2*cosh(d*x+c)/b/d^2+6*f^2*(f*x
+e)*sinh(d*x+c)/b/d^3+6*I*f^3*polylog(4,-I*exp(d*x+c))/b/d^4+1/4*a*(f*x+e)^
4/b^2/f+6*I*a^4*f^2*(f*x+e)*polylog(3,I*exp(d*x+c))/b^3/(a^2+b^2)/d^3+3*I*a
^4*f*(f*x+e)^2*polylog(2,-I*exp(d*x+c))/b^3/(a^2+b^2)/d^2-3*a^3*f*(f*x+e)^2
*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d^2-3*a^3*f*(f*
x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d^2+6*a^3
*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d^3
+6*a^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/(a^2+b^
2)/d^3-a*(f*x+e)^3*ln(1+exp(2*d*x+2*c))/b^2/d
```

Rubi [A] time = 2.15, antiderivative size = 1519, normalized size of antiderivative = 1.00, number of steps used = 61, number of rules used = 15, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.441, Rules used = {5581, 5449, 3296, 2638, 4180, 2531, 6609, 2282, 6589, 3718, 2190, 5567, 5573, 5561, 6742}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sinh[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(e + f*x)^4)/(4*b^2*f) + (2*a^2*(e + f*x)^3*ArcTan[E^(c + d*x)])/(b^3*d)
 - (2*(e + f*x)^3*ArcTan[E^(c + d*x)])/(b*d) - (2*a^4*(e + f*x)^3*ArcTan[E^
(c + d*x)])/(b^3*(a^2 + b^2)*d) - (6*f^3*Cosh[c + d*x])/(b*d^4) - (3*f*(e +
 f*x)^2*Cosh[c + d*x])/(b*d^2) - (a^3*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2])])/(b^2*(a^2 + b^2)*d) - (a^3*(e + f*x)^3*Log[1 + (b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^2*(a^2 + b^2)*d) - (a*(e + f*x)^3*Log
[1 + E^(2*(c + d*x))])/(b^2*d) + (a^3*(e + f*x)^3*Log[1 + E^(2*(c + d*x))])
/(b^2*(a^2 + b^2)*d) - ((3*I)*a^2*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)
])/(b^3*d^2) + ((3*I)*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)])/(b*d^2) +
 ((3*I)*a^4*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^
2) + ((3*I)*a^2*f*(e + f*x)^2*PolyLog[2, I*E^(c + d*x)])/(b^3*d^2) - ((3*I)
*f*(e + f*x)^2*PolyLog[2, I*E^(c + d*x)])/(b*d^2) - ((3*I)*a^4*f*(e + f*x)^
2*PolyLog[2, I*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^2) - (3*a^3*f*(e + f*x)^2*P
olyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*(a^2 + b^2)*d^2)
- (3*a^3*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]
)/(b^2*(a^2 + b^2)*d^2) - (3*a*f*(e + f*x)^2*PolyLog[2, -E^(2*(c + d*x))])/
(2*b^2*d^2) + (3*a^3*f*(e + f*x)^2*PolyLog[2, -E^(2*(c + d*x))])/(2*b^2*(a^
2 + b^2)*d^2) + ((6*I)*a^2*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/(b^3
*d^3) - ((6*I)*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/(b*d^3) - ((6*I)
*a^4*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^3) - ((
6*I)*a^2*f^2*(e + f*x)*PolyLog[3, I*E^(c + d*x)])/(b^3*d^3) + ((6*I)*f^2*(e
 + f*x)*PolyLog[3, I*E^(c + d*x)])/(b*d^3) + ((6*I)*a^4*f^2*(e + f*x)*PolyL
og[3, I*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^3) + (6*a^3*f^2*(e + f*x)*PolyLog[
3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*(a^2 + b^2)*d^3) + (6*a^
3*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*
(a^2 + b^2)*d^3) + (3*a*f^2*(e + f*x)*PolyLog[3, -E^(2*(c + d*x))])/(2*b^2*
d^3) - (3*a^3*f^2*(e + f*x)*PolyLog[3, -E^(2*(c + d*x))])/(2*b^2*(a^2 + b^2
)*d^3) - ((6*I)*a^2*f^3*PolyLog[4, (-I)*E^(c + d*x)])/(b^3*d^4) + ((6*I)*f^
3*PolyLog[4, (-I)*E^(c + d*x)])/(b*d^4) + ((6*I)*a^4*f^3*PolyLog[4, (-I)*E^
(c + d*x)])/(b^3*(a^2 + b^2)*d^4) + ((6*I)*a^2*f^3*PolyLog[4, I*E^(c + d*x)
])/(b^3*d^4) - ((6*I)*f^3*PolyLog[4, I*E^(c + d*x)])/(b*d^4) - ((6*I)*a^4*f
^3*PolyLog[4, I*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^4) - (6*a^3*f^3*PolyLog[4,
 -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*(a^2 + b^2)*d^4) - (6*a^3*
f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*(a^2 + b^2)*
d^4) - (3*a*f^3*PolyLog[4, -E^(2*(c + d*x))])/(4*b^2*d^4) + (3*a^3*f^3*Poly
Log[4, -E^(2*(c + d*x))])/(4*b^2*(a^2 + b^2)*d^4) + (6*f^2*(e + f*x)*Sinh[c
 + d*x])/(b*d^3) + ((e + f*x)^3*Sinh[c + d*x])/(b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
```

```
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5449

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> Int[(c + d*x)^m*Sinh[a + b*x]^n*Tanh[a + b*
x]^(p - 2), x] - Int[(c + d*x)^m*Sinh[a + b*x]^(n - 2)*Tanh[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5581

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n, x], x] - Di
st[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n)/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3 \sinh^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\sinh(c+dx)\tanh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\sinh(c+dx)\tanh(c}{a+b\sinh(c+dx)}}{b}$$

$$= -\frac{a\int (e+fx)^3\tanh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^3\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b^2} + \frac{\int (e+$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd} + \frac{(e+fx)^3\sinh(c+dx)}{bd} + \frac{a}{}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{a^3(e+fx)^4}{4b^2\left(a^2+b^2\right)f} + \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+}{}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{a^3(e+fx)^4}{4b^2\left(a^2+b^2\right)f} + \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+}{}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{2a^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{bd}$$

Mathematica [A] time = 23.37, size = 2861, normalized size = 1.88

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sinh[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/4*(8*b*d^3*e^3*(1 + E^(2*c))*ArcTan[E^(c + d*x)] - 4*a*d^3*e^3*E^(2*c)*(
2*d*x - Log[1 + E^(2*(c + d*x))]) + 4*a*d^3*e^3*Log[1 + E^(2*(c + d*x))] +
(12*I)*b*d^2*e^2*(1 + E^(2*c))*f*(d*x*(Log[1 - I*E^(c + d*x)] - Log[1 + I*E
^(c + d*x)]) - PolyLog[2, (-I)*E^(c + d*x)] + PolyLog[2, I*E^(c + d*x)]) -
6*a*d^2*e^2*E^(2*c)*f*(2*d*x*(d*x - Log[1 + E^(2*(c + d*x))]) - PolyLog[2,
-E^(2*(c + d*x))]) + 6*a*d^2*e^2*f*(2*d*x*Log[1 + E^(2*(c + d*x))] + PolyLo
g[2, -E^(2*(c + d*x))]) + (12*I)*b*d*e*(1 + E^(2*c))*f^2*(d^2*x^2*Log[1 - I
*E^(c + d*x)] - d^2*x^2*Log[1 + I*E^(c + d*x)] - 2*d*x*PolyLog[2, (-I)*E^(c
 + d*x)] + 2*d*x*PolyLog[2, I*E^(c + d*x)] + 2*PolyLog[3, (-I)*E^(c + d*x)]
 - 2*PolyLog[3, I*E^(c + d*x)]) + 6*a*d*e*f^2*(2*d^2*x^2*Log[1 + E^(2*(c +
d*x))] + 2*d*x*PolyLog[2, -E^(2*(c + d*x))] - PolyLog[3, -E^(2*(c + d*x))])
 - 2*a*d*e*E^(2*c)*f^2*(2*d^2*x^2*(2*d*x - 3*Log[1 + E^(2*(c + d*x))]) - 6*
d*x*PolyLog[2, -E^(2*(c + d*x))] + 3*PolyLog[3, -E^(2*(c + d*x))]) + (4*I)*
b*(1 + E^(2*c))*f^3*(d^3*x^3*Log[1 - I*E^(c + d*x)] - d^3*x^3*Log[1 + I*E^(
c + d*x)] - 3*d^2*x^2*PolyLog[2, (-I)*E^(c + d*x)] + 3*d^2*x^2*PolyLog[2, I
*E^(c + d*x)] + 6*d*x*PolyLog[3, (-I)*E^(c + d*x)] - 6*d*x*PolyLog[3, I*E^(
c + d*x)] - 6*PolyLog[4, (-I)*E^(c + d*x)] + 6*PolyLog[4, I*E^(c + d*x)]) -
 a*E^(2*c)*f^3*(2*d^4*x^4 - 4*d^3*x^3*Log[1 + E^(2*(c + d*x))] - 6*d^2*x^2*
PolyLog[2, -E^(2*(c + d*x))] + 6*d*x*PolyLog[3, -E^(2*(c + d*x))] - 3*PolyL
og[4, -E^(2*(c + d*x))]) + a*f^3*(4*d^3*x^3*Log[1 + E^(2*(c + d*x))] + 6*d^
2*x^2*PolyLog[2, -E^(2*(c + d*x))] - 6*d*x*PolyLog[3, -E^(2*(c + d*x))] + 3
*PolyLog[4, -E^(2*(c + d*x))]))/((a^2 + b^2)*d^4*(1 + E^(2*c))) + (a^3*(4*e
^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*x^2 + 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*f^3*x^4
+ (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^
2 - b^2]])/((a^2 + b^2)^(3/2)*d) + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*Ar
cTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (2*e^3
*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))])/d - (2*e^3*E^(2*c)*Log[2*a*E
^(c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c +
d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 +
(b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Lo
g[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2
*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])
/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)
])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 +
b^2)*E^(2*c)])])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^
2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^
```

```
c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))
/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*
E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 +
 (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3
*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6
*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[
(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -
((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (12*e*f^2*P
olyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 +
(12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*
E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(
a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*
x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*e*f^2*PolyLog[3, -((b*
E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f
^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^
3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2
*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sq
rt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a
*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*
E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 + (12*f^3*PolyLog
[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^
(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]
))])/d^4))/(2*b^2*(a^2 + b^2)*(-1 + E^(2*c))) - (a*e^3*x*(a^2 - b^2 + (a^2
+ b^2)*Cosh[2*c])*Csch[c]*Sech[c])/(2*b^2*(a^2 + b^2)) - (3*a*e^2*f*x^2*(a^
2 - b^2 + (a^2 + b^2)*Cosh[2*c])*Csch[c]*Sech[c])/(4*b^2*(a^2 + b^2)) - (a*
e*f^2*x^3*(a^2 - b^2 + (a^2 + b^2)*Cosh[2*c])*Csch[c]*Sech[c])/(2*b^2*(a^2
+ b^2)) - (a*f^3*x^4*(a^2 - b^2 + (a^2 + b^2)*Cosh[2*c])*Csch[c]*Sech[c])/(
8*b^2*(a^2 + b^2)) + ((6*f^3 + 6*d*f^2*(e + f*x) + 3*d^2*f*(e + f*x)^2 + d^
3*(e + f*x)^3)*(-Cosh[c + d*x] + Sinh[c + d*x]))/(2*b*d^4) + ((-6*f^3 + 6*d
*f^2*(e + f*x) - 3*d^2*f*(e + f*x)^2 + d^3*(e + f*x)^3)*(Cosh[c + d*x] + Si
nh[c + d*x]))/(2*b*d^4)
```

fricas [C] time = 0.74, size = 4546, normalized size = 2.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -1/4*(2*(a^2*b + b^3)*d^3*f^3*x^3 + 2*(a^2*b + b^3)*d^3*e^3 + 6*(a^2*b + b^
3)*d^2*e^2*f + 12*(a^2*b + b^3)*d*e*f^2 + 12*(a^2*b + b^3)*f^3 + 6*((a^2*b
+ b^3)*d^3*e*f^2 + (a^2*b + b^3)*d^2*f^3)*x^2 - 2*((a^2*b + b^3)*d^3*f^3*x^
3 + (a^2*b + b^3)*d^3*e^3 - 3*(a^2*b + b^3)*d^2*e^2*f + 6*(a^2*b + b^3)*d*e
*f^2 - 6*(a^2*b + b^3)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^2*b + b^3)*d^2
```

```
*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^2*b + b^3)*d^2*e*f^2 + 2*(a^2
*b + b^3)*d*f^3)*x)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^3*f^3*x^3 + (a^2*b
 + b^3)*d^3*e^3 - 3*(a^2*b + b^3)*d^2*e^2*f + 6*(a^2*b + b^3)*d*e*f^2 - 6*(
a^2*b + b^3)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^2*b + b^3)*d^2*f^3)*x^2
+ 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^2*b + b^3)*d^2*e*f^2 + 2*(a^2*b + b^3)*
d*f^3)*x)*sinh(d*x + c)^2 + 6*((a^2*b + b^3)*d^3*e^2*f + 2*(a^2*b + b^3)*d^
2*e*f^2 + 2*(a^2*b + b^3)*d*f^3)*x - ((a^3 + a*b^2)*d^4*f^3*x^4 + 4*(a^3 +
a*b^2)*d^4*e*f^2*x^3 + 6*(a^3 + a*b^2)*d^4*e^2*f*x^2 + 4*(a^3 + a*b^2)*d^4*
e^3*x + 8*(a^3 + a*b^2)*c*d^3*e^3 - 12*(a^3 + a*b^2)*c^2*d^2*e^2*f + 8*(a^3
 + a*b^2)*c^3*d*e*f^2 - 2*(a^3 + a*b^2)*c^4*f^3)*cosh(d*x + c) + 12*((a^3*d
^2*f^3*x^2 + 2*a^3*d^2*e*f^2*x + a^3*d^2*e^2*f)*cosh(d*x + c) + (a^3*d^2*f^
3*x^2 + 2*a^3*d^2*e*f^2*x + a^3*d^2*e^2*f)*sinh(d*x + c))*dilog((a*cosh(d*x
 + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2) - b)/b + 1) + 12*((a^3*d^2*f^3*x^2 + 2*a^3*d^2*e*f^2*x + a^3*d^2*e
^2*f)*cosh(d*x + c) + (a^3*d^2*f^3*x^2 + 2*a^3*d^2*e*f^2*x + a^3*d^2*e^2*f)
*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
 + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + ((12*a*b^2*d^2*f^3*
x^2 + 12*I*b^3*d^2*f^3*x^2 + 24*a*b^2*d^2*e*f^2*x + 24*I*b^3*d^2*e*f^2*x +
12*a*b^2*d^2*e^2*f + 12*I*b^3*d^2*e^2*f)*cosh(d*x + c) + (12*a*b^2*d^2*f^3*
x^2 + 12*I*b^3*d^2*f^3*x^2 + 24*a*b^2*d^2*e*f^2*x + 24*I*b^3*d^2*e*f^2*x +
12*a*b^2*d^2*e^2*f + 12*I*b^3*d^2*e^2*f)*sinh(d*x + c))*dilog(I*cosh(d*x +
c) + I*sinh(d*x + c)) + ((12*a*b^2*d^2*f^3*x^2 - 12*I*b^3*d^2*f^3*x^2 + 24*
a*b^2*d^2*e*f^2*x - 24*I*b^3*d^2*e*f^2*x + 12*a*b^2*d^2*e^2*f - 12*I*b^3*d^
2*e^2*f)*cosh(d*x + c) + (12*a*b^2*d^2*f^3*x^2 - 12*I*b^3*d^2*f^3*x^2 + 24*
a*b^2*d^2*e*f^2*x - 24*I*b^3*d^2*e*f^2*x + 12*a*b^2*d^2*e^2*f - 12*I*b^3*d^
2*e^2*f)*sinh(d*x + c))*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + 4*((a^3
*d^3*e^3 - 3*a^3*c*d^2*e^2*f + 3*a^3*c^2*d*e*f^2 - a^3*c^3*f^3)*cosh(d*x +
c) + (a^3*d^3*e^3 - 3*a^3*c*d^2*e^2*f + 3*a^3*c^2*d*e*f^2 - a^3*c^3*f^3)*si
nh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^
2)/b^2) + 2*a) + 4*((a^3*d^3*e^3 - 3*a^3*c*d^2*e^2*f + 3*a^3*c^2*d*e*f^2 -
a^3*c^3*f^3)*cosh(d*x + c) + (a^3*d^3*e^3 - 3*a^3*c*d^2*e^2*f + 3*a^3*c^2*d
*e*f^2 - a^3*c^3*f^3)*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x +
 c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 4*((a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*
f^2*x^2 + 3*a^3*d^3*e^2*f*x + 3*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c
^3*f^3)*cosh(d*x + c) + (a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2*x^2 + 3*a^3*d^3*
e^2*f*x + 3*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*f^3)*sinh(d*x + c
))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 4*((a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2
*x^2 + 3*a^3*d^3*e^2*f*x + 3*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*
f^3)*cosh(d*x + c) + (a^3*d^3*f^3*x^3 + 3*a^3*d^3*e*f^2*x^2 + 3*a^3*d^3*e^2
*f*x + 3*a^3*c*d^2*e^2*f - 3*a^3*c^2*d*e*f^2 + a^3*c^3*f^3)*sinh(d*x + c))*
log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2) - b)/b) + ((4*a*b^2*d^3*e^3 + 4*I*b^3*d^3*e^3 - 12
*a*b^2*c*d^2*e^2*f - 12*I*b^3*c*d^2*e^2*f + 12*a*b^2*c^2*d*e*f^2 + 12*I*b^3
*c^2*d*e*f^2 - 4*a*b^2*c^3*f^3 - 4*I*b^3*c^3*f^3)*cosh(d*x + c) + (4*a*b^2*
```

d^3*e^3 + 4*I*b^3*d^3*e^3 - 12*a*b^2*c*d^2*e^2*f - 12*I*b^3*c*d^2*e^2*f + 1
2*a*b^2*c^2*d*e*f^2 + 12*I*b^3*c^2*d*e*f^2 - 4*a*b^2*c^3*f^3 - 4*I*b^3*c^3*
f^3)*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + I) + ((4*a*b^2*d^3*
e^3 - 4*I*b^3*d^3*e^3 - 12*a*b^2*c*d^2*e^2*f + 12*I*b^3*c*d^2*e^2*f + 12*a*
b^2*c^2*d*e*f^2 - 12*I*b^3*c^2*d*e*f^2 - 4*a*b^2*c^3*f^3 + 4*I*b^3*c^3*f^3)
*cosh(d*x + c) + (4*a*b^2*d^3*e^3 - 4*I*b^3*d^3*e^3 - 12*a*b^2*c*d^2*e^2*f
+ 12*I*b^3*c*d^2*e^2*f + 12*a*b^2*c^2*d*e*f^2 - 12*I*b^3*c^2*d*e*f^2 - 4*a*
b^2*c^3*f^3 + 4*I*b^3*c^3*f^3)*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x
+ c) - I) + ((4*a*b^2*d^3*f^3*x^3 - 4*I*b^3*d^3*f^3*x^3 + 12*a*b^2*d^3*e*f^
2*x^2 - 12*I*b^3*d^3*e*f^2*x^2 + 12*a*b^2*d^3*e^2*f*x - 12*I*b^3*d^3*e^2*f*
x + 12*a*b^2*c*d^2*e^2*f - 12*I*b^3*c*d^2*e^2*f - 12*a*b^2*c^2*d*e*f^2 + 12
*I*b^3*c^2*d*e*f^2 + 4*a*b^2*c^3*f^3 - 4*I*b^3*c^3*f^3)*cosh(d*x + c) + (4*
a*b^2*d^3*f^3*x^3 - 4*I*b^3*d^3*f^3*x^3 + 12*a*b^2*d^3*e*f^2*x^2 - 12*I*b^3
*d^3*e*f^2*x^2 + 12*a*b^2*d^3*e^2*f*x - 12*I*b^3*d^3*e^2*f*x + 12*a*b^2*c*d
^2*e^2*f - 12*I*b^3*c*d^2*e^2*f - 12*a*b^2*c^2*d*e*f^2 + 12*I*b^3*c^2*d*e*f
^2 + 4*a*b^2*c^3*f^3 - 4*I*b^3*c^3*f^3)*sinh(d*x + c))*log(I*cosh(d*x + c)
+ I*sinh(d*x + c) + 1) + ((4*a*b^2*d^3*f^3*x^3 + 4*I*b^3*d^3*f^3*x^3 + 12*a
*b^2*d^3*e*f^2*x^2 + 12*I*b^3*d^3*e*f^2*x^2 + 12*a*b^2*d^3*e^2*f*x + 12*I*b
^3*d^3*e^2*f*x + 12*a*b^2*c*d^2*e^2*f + 12*I*b^3*c*d^2*e^2*f - 12*a*b^2*c^2
*d*e*f^2 - 12*I*b^3*c^2*d*e*f^2 + 4*a*b^2*c^3*f^3 + 4*I*b^3*c^3*f^3)*cosh(d
*x + c) + (4*a*b^2*d^3*f^3*x^3 + 4*I*b^3*d^3*f^3*x^3 + 12*a*b^2*d^3*e*f^2*x
^2 + 12*I*b^3*d^3*e*f^2*x^2 + 12*a*b^2*d^3*e^2*f*x + 12*I*b^3*d^3*e^2*f*x +
 12*a*b^2*c*d^2*e^2*f + 12*I*b^3*c*d^2*e^2*f - 12*a*b^2*c^2*d*e*f^2 - 12*I*
b^3*c^2*d*e*f^2 + 4*a*b^2*c^3*f^3 + 4*I*b^3*c^3*f^3)*sinh(d*x + c))*log(-I*
cosh(d*x + c) - I*sinh(d*x + c) + 1) + 24*(a^3*f^3*cosh(d*x + c) + a^3*f^3*
sinh(d*x + c))*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*(a^3*f^3*cosh(d*x +
c) + a^3*f^3*sinh(d*x + c))*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) -
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + ((24*a*b^2
*f^3 + 24*I*b^3*f^3)*cosh(d*x + c) + (24*a*b^2*f^3 + 24*I*b^3*f^3)*sinh(d*x
 + c))*polylog(4, I*cosh(d*x + c) + I*sinh(d*x + c)) + ((24*a*b^2*f^3 - 24*
I*b^3*f^3)*cosh(d*x + c) + (24*a*b^2*f^3 - 24*I*b^3*f^3)*sinh(d*x + c))*pol
ylog(4, -I*cosh(d*x + c) - I*sinh(d*x + c)) - 24*((a^3*d*f^3*x + a^3*d*e*f^
2)*cosh(d*x + c) + (a^3*d*f^3*x + a^3*d*e*f^2)*sinh(d*x + c))*polylog(3, (a
*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2))/b) - 24*((a^3*d*f^3*x + a^3*d*e*f^2)*cosh(d*x + c) + (a^
3*d*f^3*x + a^3*d*e*f^2)*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sin
h(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b)
- ((24*a*b^2*d*f^3*x + 24*I*b^3*d*f^3*x + 24*a*b^2*d*e*f^2 + 24*I*b^3*d*e*f
^2)*cosh(d*x + c) + (24*a*b^2*d*f^3*x + 24*I*b^3*d*f^3*x + 24*a*b^2*d*e*f^2
 + 24*I*b^3*d*e*f^2)*sinh(d*x + c))*polylog(3, I*cosh(d*x + c) + I*sinh(d*x
 + c)) - ((24*a*b^2*d*f^3*x - 24*I*b^3*d*f^3*x + 24*a*b^2*d*e*f^2 - 24*I*b^
3*d*e*f^2)*cosh(d*x + c) + (24*a*b^2*d*f^3*x - 24*I*b^3*d*f^3*x + 24*a*b^2*
d*e*f^2 - 24*I*b^3*d*e*f^2)*sinh(d*x + c))*polylog(3, -I*cosh(d*x + c) - I*
sinh(d*x + c)) - ((a^3 + a*b^2)*d^4*f^3*x^4 + 4*(a^3 + a*b^2)*d^4*e*f^2*x^3

```
 + 6*(a^3 + a*b^2)*d^4*e^2*f*x^2 + 4*(a^3 + a*b^2)*d^4*e^3*x + 8*(a^3 + a*b
^2)*c*d^3*e^3 - 12*(a^3 + a*b^2)*c^2*d^2*e^2*f + 8*(a^3 + a*b^2)*c^3*d*e*f^
2 - 2*(a^3 + a*b^2)*c^4*f^3 + 4*((a^2*b + b^3)*d^3*f^3*x^3 + (a^2*b + b^3)*
d^3*e^3 - 3*(a^2*b + b^3)*d^2*e^2*f + 6*(a^2*b + b^3)*d*e*f^2 - 6*(a^2*b +
b^3)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^2*b + b^3)*d^2*f^3)*x^2 + 3*((a^
2*b + b^3)*d^3*e^2*f - 2*(a^2*b + b^3)*d^2*e*f^2 + 2*(a^2*b + b^3)*d*f^3)*x
)*cosh(d*x + c))*sinh(d*x + c))/((a^2*b^2 + b^4)*d^4*cosh(d*x + c) + (a^2*b
^2 + b^4)*d^4*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.37, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\left(\sinh^{2}\left(dx+c\right)\right)\tanh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{2\,a^{3}\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^{2}b^{2}+b^{4}\right)d}-\frac{4\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^{2}+b^{2}\right)d}+\frac{2\,a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d}+\frac{2\,(dx+c)a}{b^{2}d}-\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/2*(2*a^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^2*b^2 + b^4
)*d) - 4*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + 2*a*log(e^(-2*d*x - 2*c)
+ 1)/((a^2 + b^2)*d) + 2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) + e^(-d*x
- c)/(b*d))*e^3 - 1/4*(a*d^4*f^3*x^4*e^c + 4*a*d^4*e*f^2*x^3*e^c + 6*a*d^4*
e^2*f*x^2*e^c - 2*(b*d^3*f^3*x^3*e^(2*c) + 3*(d^3*e*f^2 - d^2*f^3)*b*x^2*e^
```

```
(2*c) + 3*(d^3*e^2*f - 2*d^2*e*f^2 + 2*d*f^3)*b*x*e^(2*c) - 3*(d^2*e^2*f -
2*d*e*f^2 + 2*f^3)*b*e^(2*c))*e^(d*x) + 2*(b*d^3*f^3*x^3 + 3*(d^3*e*f^2 + d
^2*f^3)*b*x^2 + 3*(d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*b*x + 3*(d^2*e^2*f +
2*d*e*f^2 + 2*f^3)*b)*e^(-d*x))*e^(-c)/(b^2*d^4) + integrate(2*(a^3*b*f^3*x
^3 + 3*a^3*b*e*f^2*x^2 + 3*a^3*b*e^2*f*x - (a^4*f^3*x^3*e^c + 3*a^4*e*f^2*x
^2*e^c + 3*a^4*e^2*f*x*e^c)*e^(d*x))/(a^2*b^3 + b^5 - (a^2*b^3*e^(2*c) + b^
5*e^(2*c))*e^(2*d*x) - 2*(a^3*b^2*e^c + a*b^4*e^c)*e^(d*x)), x) - integrate
(-2*(a*f^3*x^3 + 3*a*e*f^2*x^2 + 3*a*e^2*f*x - (b*f^3*x^3*e^c + 3*b*e*f^2*x
^2*e^c + 3*b*e^2*f*x*e^c)*e^(d*x))/(a^2 + b^2 + (a^2*e^(2*c) + b^2*e^(2*c))
*e^(2*d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh\left(c+d\,x\right)^2\,\tanh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{a+b\,\sinh\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*tanh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((sinh(c + d*x)^2*tanh(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + f x\right)^{3} \sinh^{2}{\left(c + d x \right)} \tanh{\left(c + d x \right)}}{a + b \sinh{\left(c + d x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sinh(d*x+c)**2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*sinh(c + d*x)**2*tanh(c + d*x)/(a + b*sinh(c + d*x)),
 x)
```

3.407 $\int \frac{(e+fx)^2 \sinh^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1067

$$-\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d}+\frac{2if(e+fx)\text{Li}_2\left(-ie^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d^2}-\frac{2if(e+fx)\text{Li}_2\left(ie^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d^2}-\frac{2if^2\text{Li}_3\left(-ie^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d^3}+\frac{2if}{b}$$

```
[Out] a^3*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/b^2/(a^2+b^2)/d-a^3*(f*x+e)^2*ln(1+b*exp
(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d-a^3*(f*x+e)^2*ln(1+b*exp(d*x+c
)/(a+(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d+2*a^3*f^2*polylog(3,-b*exp(d*x+c)/(a
-(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d^3+2*a^3*f^2*polylog(3,-b*exp(d*x+c)/(a+(
a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d^3-2*I*f^2*polylog(3,-I*exp(d*x+c))/b/d^3+2
*a^2*(f*x+e)^2*arctan(exp(d*x+c))/b^3/d+1/2*a*f^2*polylog(3,-exp(2*d*x+2*c)
)/b^2/d^3-2*a^4*(f*x+e)^2*arctan(exp(d*x+c))/b^3/(a^2+b^2)/d-a*f*(f*x+e)*po
lylog(2,-exp(2*d*x+2*c))/b^2/d^2+2*I*f^2*polylog(3,I*exp(d*x+c))/b/d^3-1/2*
a^3*f^2*polylog(3,-exp(2*d*x+2*c))/b^2/(a^2+b^2)/d^3-2*I*f*(f*x+e)*polylog(
2,I*exp(d*x+c))/b/d^2-2*I*a^2*f^2*polylog(3,I*exp(d*x+c))/b^3/d^3+2*I*a^2*f
*(f*x+e)*polylog(2,I*exp(d*x+c))/b^3/d^2+2*I*a^4*f^2*polylog(3,I*exp(d*x+c)
)/b^3/(a^2+b^2)/d^3-2*I*a^4*f*(f*x+e)*polylog(2,I*exp(d*x+c))/b^3/(a^2+b^2)
/d^2+2*I*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b/d^2+a^3*f*(f*x+e)*polylog(2,-
exp(2*d*x+2*c))/b^2/(a^2+b^2)/d^2+2*I*a^2*f^2*polylog(3,-I*exp(d*x+c))/b^3/
d^3-2*I*a^2*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b^3/d^2-2*I*a^4*f^2*polylog(
3,-I*exp(d*x+c))/b^3/(a^2+b^2)/d^3+(f*x+e)^2*sinh(d*x+c)/b/d-2*(f*x+e)^2*ar
ctan(exp(d*x+c))/b/d+2*f^2*sinh(d*x+c)/b/d^3-2*f*(f*x+e)*cosh(d*x+c)/b/d^2+
1/3*a*(f*x+e)^3/b^2/f+2*I*a^4*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b^3/(a^2+b
^2)/d^2-2*a^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/(a
^2+b^2)/d^2-2*a^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^
2/(a^2+b^2)/d^2-a*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/b^2/d
```

Rubi [A] time = 1.69, antiderivative size = 1067, normalized size of antiderivative = 1.00, number of steps used = 50, number of rules used = 14, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.412$, Rules used = {5581, 5449, 3296, 2637, 4180, 2531, 2282, 6589, 3718, 2190, 5567, 5573, 5561, 6742}

$$-\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d}+\frac{2if(e+fx)\text{PolyLog}\left(2,-ie^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d^2}-\frac{2if(e+fx)\text{PolyLog}\left(2,ie^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d^2}-\frac{2if^2\text{Poly}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sinh[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(e + f*x)^3)/(3*b^2*f) + (2*a^2*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b^3*d)
 - (2*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b*d) - (2*a^4*(e + f*x)^2*ArcTan[E^
```

```
(c + d*x)])/(b^3*(a^2 + b^2)*d) - (2*f*(e + f*x)*Cosh[c + d*x])/(b*d^2) - (
a^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^2*(a^2 +
 b^2)*d) - (a^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])
/(b^2*(a^2 + b^2)*d) - (a*(e + f*x)^2*Log[1 + E^(2*(c + d*x))])/(b^2*d) + (
a^3*(e + f*x)^2*Log[1 + E^(2*(c + d*x))])/(b^2*(a^2 + b^2)*d) - ((2*I)*a^2*
f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(b^3*d^2) + ((2*I)*f*(e + f*x)*Po
lyLog[2, (-I)*E^(c + d*x)])/(b*d^2) + ((2*I)*a^4*f*(e + f*x)*PolyLog[2, (-I
)*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^2) + ((2*I)*a^2*f*(e + f*x)*PolyLog[2, I
*E^(c + d*x)])/(b^3*d^2) - ((2*I)*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b
*d^2) - ((2*I)*a^4*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b^3*(a^2 + b^2)*
d^2) - (2*a^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]
))])/(b^2*(a^2 + b^2)*d^2) - (2*a^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2]))])/(b^2*(a^2 + b^2)*d^2) - (a*f*(e + f*x)*PolyLog[2
, -E^(2*(c + d*x))])/(b^2*d^2) + (a^3*f*(e + f*x)*PolyLog[2, -E^(2*(c + d*x
))])/(b^2*(a^2 + b^2)*d^2) + ((2*I)*a^2*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(
b^3*d^3) - ((2*I)*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(b*d^3) - ((2*I)*a^4*f^
2*PolyLog[3, (-I)*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^3) - ((2*I)*a^2*f^2*Poly
Log[3, I*E^(c + d*x)])/(b^3*d^3) + ((2*I)*f^2*PolyLog[3, I*E^(c + d*x)])/(b
*d^3) + ((2*I)*a^4*f^2*PolyLog[3, I*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^3) + (
2*a^3*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*(a^2 +
 b^2)*d^3) + (2*a^3*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
])/(b^2*(a^2 + b^2)*d^3) + (a*f^2*PolyLog[3, -E^(2*(c + d*x))])/(2*b^2*d^3)
 - (a^3*f^2*PolyLog[3, -E^(2*(c + d*x))])/(2*b^2*(a^2 + b^2)*d^3) + (2*f^2*
Sinh[c + d*x])/(b*d^3) + ((e + f*x)^2*Sinh[c + d*x])/(b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
```

```
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5449

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> Int[(c + d*x)^m*Sinh[a + b*x]^n*Tanh[a + b*
x]^(p - 2), x] - Int[(c + d*x)^m*Sinh[a + b*x]^(n - 2)*Tanh[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5581

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n, x], x] - Di
st[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n)/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\sinh^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\sinh(c+dx)\tanh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\sinh(c+dx)\tanh}{a+b\sinh(c+dx)}}{b}$$

$$= -\frac{a\int (e+fx)^2\tanh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^2\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b^2} + \int(e+$$

$$= \frac{a(e+fx)^3}{3b^2f} - \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{bd} + \frac{(e+fx)^2\sinh(c+dx)}{bd} +$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{bd}$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{a^3(e+fx)^3}{3b^2\left(a^2+b^2\right)f} + \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+}{}$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{a^3(e+fx)^3}{3b^2\left(a^2+b^2\right)f} + \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+}{}$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{bd}$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{bd}$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{bd}$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{bd}$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{2a^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{bd}$$

Mathematica [A] time = 11.65, size = 1948, normalized size = 1.83

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sinh[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (6*a^3*d^3*e^2*E^c*x + 6*a*b^2*d^3*e^2*E^c*x + 6*a^3*d^3*e*E^c*f*x^2 + 6*a*
b^2*d^3*e*E^c*f*x^2 + 2*a^3*d^3*E^c*f^2*x^3 + 2*a*b^2*d^3*E^c*f^2*x^3 - 12*
b^3*d^2*e^2*E^c*ArcTan[E^(c + d*x)] - 3*a^2*b*d^2*e^2*Cosh[d*x] - 3*b^3*d^2
*e^2*Cosh[d*x] + 3*a^2*b*d^2*e^2*E^(2*c)*Cosh[d*x] + 3*b^3*d^2*e^2*E^(2*c)*
Cosh[d*x] - 6*a^2*b*d*e*f*Cosh[d*x] - 6*b^3*d*e*f*Cosh[d*x] - 6*a^2*b*d*e*E
^(2*c)*f*Cosh[d*x] - 6*b^3*d*e*E^(2*c)*f*Cosh[d*x] - 6*a^2*b*f^2*Cosh[d*x]
- 6*b^3*f^2*Cosh[d*x] + 6*a^2*b*E^(2*c)*f^2*Cosh[d*x] + 6*b^3*E^(2*c)*f^2*C
osh[d*x] - 6*a^2*b*d^2*e*f*x*Cosh[d*x] - 6*b^3*d^2*e*f*x*Cosh[d*x] + 6*a^2*
b*d^2*e*E^(2*c)*f*x*Cosh[d*x] + 6*b^3*d^2*e*E^(2*c)*f*x*Cosh[d*x] - 6*a^2*b
*d*f^2*x*Cosh[d*x] - 6*b^3*d*f^2*x*Cosh[d*x] - 6*a^2*b*d*E^(2*c)*f^2*x*Cosh
[d*x] - 6*b^3*d*E^(2*c)*f^2*x*Cosh[d*x] - 3*a^2*b*d^2*f^2*x^2*Cosh[d*x] - 3
*b^3*d^2*f^2*x^2*Cosh[d*x] + 3*a^2*b*d^2*E^(2*c)*f^2*x^2*Cosh[d*x] + 3*b^3*
d^2*E^(2*c)*f^2*x^2*Cosh[d*x] - (12*I)*b^3*d^2*e*E^c*f*x*Log[1 - I*E^(c + d
*x)] - (6*I)*b^3*d^2*E^c*f^2*x^2*Log[1 - I*E^(c + d*x)] + (12*I)*b^3*d^2*e*
E^c*f*x*Log[1 + I*E^(c + d*x)] + (6*I)*b^3*d^2*E^c*f^2*x^2*Log[1 + I*E^(c +
 d*x)] - 6*a*b^2*d^2*e^2*E^c*Log[1 + E^(2*(c + d*x))] - 12*a*b^2*d^2*e*E^c*
f*x*Log[1 + E^(2*(c + d*x))] - 6*a*b^2*d^2*E^c*f^2*x^2*Log[1 + E^(2*(c + d*
x))] - 6*a^3*d^2*e^2*E^c*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 12*
a^3*d^2*e*E^c*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*
c)])] - 6*a^3*d^2*E^c*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2
+ b^2)*E^(2*c)])] - 12*a^3*d^2*e*E^c*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c +
 Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*a^3*d^2*E^c*f^2*x^2*Log[1 + (b*E^(2*c + d*
x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + (12*I)*b^3*d*E^c*f*(e + f*x)*Pol
yLog[2, (-I)*E^(c + d*x)] - (12*I)*b^3*d*E^c*f*(e + f*x)*PolyLog[2, I*E^(c
+ d*x)] - 6*a*b^2*d*e*E^c*f*PolyLog[2, -E^(2*(c + d*x))] - 6*a*b^2*d*E^c*f^
2*x*PolyLog[2, -E^(2*(c + d*x))] - 12*a^3*d*e*E^c*f*PolyLog[2, -((b*E^(2*c
+ d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 12*a^3*d*E^c*f^2*x*PolyLog[
2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 12*a^3*d*e*E
^c*f*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] -
 12*a^3*d*E^c*f^2*x*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2
)*E^(2*c)]))] - (12*I)*b^3*E^c*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (12*I)*b^
3*E^c*f^2*PolyLog[3, I*E^(c + d*x)] + 3*a*b^2*E^c*f^2*PolyLog[3, -E^(2*(c +
 d*x))] + 12*a^3*E^c*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2
+ b^2)*E^(2*c)]))] + 12*a^3*E^c*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c +
 Sqrt[(a^2 + b^2)*E^(2*c)]))] + 3*a^2*b*d^2*e^2*Sinh[d*x] + 3*b^3*d^2*e^2*S
inh[d*x] + 3*a^2*b*d^2*e^2*E^(2*c)*Sinh[d*x] + 3*b^3*d^2*e^2*E^(2*c)*Sinh[d
*x] + 6*a^2*b*d*e*f*Sinh[d*x] + 6*b^3*d*e*f*Sinh[d*x] - 6*a^2*b*d*e*E^(2*c)
*f*Sinh[d*x] - 6*b^3*d*e*E^(2*c)*f*Sinh[d*x] + 6*a^2*b*f^2*Sinh[d*x] + 6*b^
3*f^2*Sinh[d*x] + 6*a^2*b*E^(2*c)*f^2*Sinh[d*x] + 6*b^3*E^(2*c)*f^2*Sinh[d*
x] + 6*a^2*b*d^2*e*f*x*Sinh[d*x] + 6*b^3*d^2*e*f*x*Sinh[d*x] + 6*a^2*b*d^2*
e*E^(2*c)*f*x*Sinh[d*x] + 6*b^3*d^2*e*E^(2*c)*f*x*Sinh[d*x] + 6*a^2*b*d*f^2
*x*Sinh[d*x] + 6*b^3*d*f^2*x*Sinh[d*x] - 6*a^2*b*d*E^(2*c)*f^2*x*Sinh[d*x]
```

```
- 6*b^3*d*E^(2*c)*f^2*x*Sinh[d*x] + 3*a^2*b*d^2*f^2*x^2*Sinh[d*x] + 3*b^3*d
^2*f^2*x^2*Sinh[d*x] + 3*a^2*b*d^2*E^(2*c)*f^2*x^2*Sinh[d*x] + 3*b^3*d^2*E^
(2*c)*f^2*x^2*Sinh[d*x])/(6*b^2*(a^2 + b^2)*d^3*E^c)
```

fricas [C] time = 0.65, size = 2793, normalized size = 2.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -1/6*(3*(a^2*b + b^3)*d^2*f^2*x^2 + 3*(a^2*b + b^3)*d^2*e^2 + 6*(a^2*b + b^
3)*d*e*f + 6*(a^2*b + b^3)*f^2 - 3*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^
3)*d^2*e^2 - 2*(a^2*b + b^3)*d*e*f + 2*(a^2*b + b^3)*f^2 + 2*((a^2*b + b^3)
*d^2*e*f - (a^2*b + b^3)*d*f^2)*x)*cosh(d*x + c)^2 - 3*((a^2*b + b^3)*d^2*f
^2*x^2 + (a^2*b + b^3)*d^2*e^2 - 2*(a^2*b + b^3)*d*e*f + 2*(a^2*b + b^3)*f^
2 + 2*((a^2*b + b^3)*d^2*e*f - (a^2*b + b^3)*d*f^2)*x)*sinh(d*x + c)^2 + 6*
((a^2*b + b^3)*d^2*e*f + (a^2*b + b^3)*d*f^2)*x - 2*((a^3 + a*b^2)*d^3*f^2*
x^3 + 3*(a^3 + a*b^2)*d^3*e*f*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*x + 6*(a^3 + a*
b^2)*c*d^2*e^2 - 6*(a^3 + a*b^2)*c^2*d*e*f + 2*(a^3 + a*b^2)*c^3*f^2)*cosh(
d*x + c) + 12*((a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c) + (a^3*d*f^2*x + a^3
*d*e*f)*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d
*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 12*((a^3*d*f
^2*x + a^3*d*e*f)*cosh(d*x + c) + (a^3*d*f^2*x + a^3*d*e*f)*sinh(d*x + c))*
dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + ((12*a*b^2*d*f^2*x + 12*I*b^3*d*f^2
*x + 12*a*b^2*d*e*f + 12*I*b^3*d*e*f)*cosh(d*x + c) + (12*a*b^2*d*f^2*x + 1
2*I*b^3*d*f^2*x + 12*a*b^2*d*e*f + 12*I*b^3*d*e*f)*sinh(d*x + c))*dilog(I*c
osh(d*x + c) + I*sinh(d*x + c)) + ((12*a*b^2*d*f^2*x - 12*I*b^3*d*f^2*x + 1
2*a*b^2*d*e*f - 12*I*b^3*d*e*f)*cosh(d*x + c) + (12*a*b^2*d*f^2*x - 12*I*b^
3*d*f^2*x + 12*a*b^2*d*e*f - 12*I*b^3*d*e*f)*sinh(d*x + c))*dilog(-I*cosh(d
*x + c) - I*sinh(d*x + c)) + 6*((a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)
*cosh(d*x + c) + (a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*sinh(d*x + c))
*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*
a) + 6*((a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*cosh(d*x + c) + (a^3*d^
2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*sinh(d*x + c))*log(2*b*cosh(d*x + c) +
 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 6*((a^3*d^2*f^2*x^2
 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c) + (a^3*d^2*
f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*sinh(d*x + c))*log
(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*
sqrt((a^2 + b^2)/b^2) - b)/b) + 6*((a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a
^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c) + (a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*
x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*s
inh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) -
```

```
b)/b) + ((6*a*b^2*d^2*e^2 + 6*I*b^3*d^2*e^2 - 12*a*b^2*c*d*e*f - 12*I*b^3*c
*d*e*f + 6*a*b^2*c^2*f^2 + 6*I*b^3*c^2*f^2)*cosh(d*x + c) + (6*a*b^2*d^2*e^
2 + 6*I*b^3*d^2*e^2 - 12*a*b^2*c*d*e*f - 12*I*b^3*c*d*e*f + 6*a*b^2*c^2*f^2
 + 6*I*b^3*c^2*f^2)*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + I) +
 ((6*a*b^2*d^2*e^2 - 6*I*b^3*d^2*e^2 - 12*a*b^2*c*d*e*f + 12*I*b^3*c*d*e*f
+ 6*a*b^2*c^2*f^2 - 6*I*b^3*c^2*f^2)*cosh(d*x + c) + (6*a*b^2*d^2*e^2 - 6*I
*b^3*d^2*e^2 - 12*a*b^2*c*d*e*f + 12*I*b^3*c*d*e*f + 6*a*b^2*c^2*f^2 - 6*I*
b^3*c^2*f^2)*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - I) + ((6*a*
b^2*d^2*f^2*x^2 - 6*I*b^3*d^2*f^2*x^2 + 12*a*b^2*d^2*e*f*x - 12*I*b^3*d^2*e
*f*x + 12*a*b^2*c*d*e*f - 12*I*b^3*c*d*e*f - 6*a*b^2*c^2*f^2 + 6*I*b^3*c^2*
f^2)*cosh(d*x + c) + (6*a*b^2*d^2*f^2*x^2 - 6*I*b^3*d^2*f^2*x^2 + 12*a*b^2*
d^2*e*f*x - 12*I*b^3*d^2*e*f*x + 12*a*b^2*c*d*e*f - 12*I*b^3*c*d*e*f - 6*a*
b^2*c^2*f^2 + 6*I*b^3*c^2*f^2)*sinh(d*x + c))*log(I*cosh(d*x + c) + I*sinh(
d*x + c) + 1) + ((6*a*b^2*d^2*f^2*x^2 + 6*I*b^3*d^2*f^2*x^2 + 12*a*b^2*d^2*
e*f*x + 12*I*b^3*d^2*e*f*x + 12*a*b^2*c*d*e*f + 12*I*b^3*c*d*e*f - 6*a*b^2*
c^2*f^2 - 6*I*b^3*c^2*f^2)*cosh(d*x + c) + (6*a*b^2*d^2*f^2*x^2 + 6*I*b^3*d
^2*f^2*x^2 + 12*a*b^2*d^2*e*f*x + 12*I*b^3*d^2*e*f*x + 12*a*b^2*c*d*e*f + 1
2*I*b^3*c*d*e*f - 6*a*b^2*c^2*f^2 - 6*I*b^3*c^2*f^2)*sinh(d*x + c))*log(-I*
cosh(d*x + c) - I*sinh(d*x + c) + 1) - 12*(a^3*f^2*cosh(d*x + c) + a^3*f^2*
sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(a^3*f^2*cosh(d*x +
c) + a^3*f^2*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) -
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - ((12*a*b^2
*f^2 + 12*I*b^3*f^2)*cosh(d*x + c) + (12*a*b^2*f^2 + 12*I*b^3*f^2)*sinh(d*x
 + c))*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) - ((12*a*b^2*f^2 - 12*
I*b^3*f^2)*cosh(d*x + c) + (12*a*b^2*f^2 - 12*I*b^3*f^2)*sinh(d*x + c))*pol
ylog(3, -I*cosh(d*x + c) - I*sinh(d*x + c)) - 2*((a^3 + a*b^2)*d^3*f^2*x^3
+ 3*(a^3 + a*b^2)*d^3*e*f*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*x + 6*(a^3 + a*b^2)
*c*d^2*e^2 - 6*(a^3 + a*b^2)*c^2*d*e*f + 2*(a^3 + a*b^2)*c^3*f^2 + 3*((a^2*
b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 - 2*(a^2*b + b^3)*d*e*f + 2*(a
^2*b + b^3)*f^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^2*b + b^3)*d*f^2)*x)*cosh(d
*x + c))*sinh(d*x + c))/((a^2*b^2 + b^4)*d^3*cosh(d*x + c) + (a^2*b^2 + b^4
)*d^3*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")

[Out] Timed out
```

maple [F] time = 1.55, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\left(\sinh^{2}\left(dx+c\right)\right)\tanh\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{2\,a^{3}\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^{2}b^{2}+b^{4}\right)d}-\frac{4\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^{2}+b^{2}\right)d}+\frac{2\,a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d}+\frac{2\,(dx+c)a}{b^{2}d}-\frac{e^{(}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/2*(2*a^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^2*b^2 + b^4
)*d) - 4*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + 2*a*log(e^(-2*d*x - 2*c)
+ 1)/((a^2 + b^2)*d) + 2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) + e^(-d*x
- c)/(b*d))*e^2 - 1/6*(2*a*d^3*f^2*x^3*e^c + 6*a*d^3*e*f*x^2*e^c - 3*(b*d^2
*f^2*x^2*e^(2*c) + 2*(d^2*e*f - d*f^2)*b*x*e^(2*c) - 2*(d*e*f - f^2)*b*e^(2
*c))*e^(d*x) + 3*(b*d^2*f^2*x^2 + 2*(d^2*e*f + d*f^2)*b*x + 2*(d*e*f + f^2)
*b)*e^(-d*x))*e^(-c)/(b^2*d^3) + integrate(2*(a^3*b*f^2*x^2 + 2*a^3*b*e*f*x
 - (a^4*f^2*x^2*e^c + 2*a^4*e*f*x*e^c)*e^(d*x))/(a^2*b^3 + b^5 - (a^2*b^3*e
^(2*c) + b^5*e^(2*c))*e^(2*d*x) - 2*(a^3*b^2*e^c + a*b^4*e^c)*e^(d*x)), x)
- integrate(-2*(a*f^2*x^2 + 2*a*e*f*x - (b*f^2*x^2*e^c + 2*b*e*f*x*e^c)*e^(
d*x))/(a^2 + b^2 + (a^2*e^(2*c) + b^2*e^(2*c))*e^(2*d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\sinh\left(c+d\,x\right)}^2\,\tanh\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*tanh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((sinh(c + d*x)^2*tanh(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^2 \sinh^2(c+dx) \tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sinh(d*x+c)**2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*sinh(c + d*x)**2*tanh(c + d*x)/(a + b*sinh(c + d*x)),
 x)
```

3.408 $\int \frac{(e+fx)\sinh^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=631

$$-\frac{ia^2f\mathrm{Li}_2\left(-ie^{c+dx}\right)}{b^3d^2}+\frac{ia^2f\mathrm{Li}_2\left(ie^{c+dx}\right)}{b^3d^2}+\frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d}+\frac{ia^4f\mathrm{Li}_2\left(-ie^{c+dx}\right)}{b^3d^2\left(a^2+b^2\right)}-\frac{ia^4f\mathrm{Li}_2\left(ie^{c+dx}\right)}{b^3d^2\left(a^2+b^2\right)}-\frac{2a^4(e+f}{b^3d}$$

```
[Out] 1/2*a*(f*x+e)^2/b^2/f+2*a^2*(f*x+e)*arctan(exp(d*x+c))/b^3/d-2*(f*x+e)*arct
an(exp(d*x+c))/b/d-2*a^4*(f*x+e)*arctan(exp(d*x+c))/b^3/(a^2+b^2)/d-f*cosh(
d*x+c)/b/d^2-a*(f*x+e)*ln(1+exp(2*d*x+2*c))/b^2/d+a^3*(f*x+e)*ln(1+exp(2*d*
x+2*c))/b^2/(a^2+b^2)/d-a^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/
b^2/(a^2+b^2)/d-a^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/(a^2
+b^2)/d-I*a^4*f*polylog(2,I*exp(d*x+c))/b^3/(a^2+b^2)/d^2+I*a^4*f*polylog(2
,-I*exp(d*x+c))/b^3/(a^2+b^2)/d^2+I*a^2*f*polylog(2,I*exp(d*x+c))/b^3/d^2-I
*f*polylog(2,I*exp(d*x+c))/b/d^2-I*a^2*f*polylog(2,-I*exp(d*x+c))/b^3/d^2+I
*f*polylog(2,-I*exp(d*x+c))/b/d^2-1/2*a*f*polylog(2,-exp(2*d*x+2*c))/b^2/d^
2+1/2*a^3*f*polylog(2,-exp(2*d*x+2*c))/b^2/(a^2+b^2)/d^2-a^3*f*polylog(2,-b
*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d^2-a^3*f*polylog(2,-b*exp(d
*x+c)/(a+(a^2+b^2)^(1/2)))/b^2/(a^2+b^2)/d^2+(f*x+e)*sinh(d*x+c)/b/d
```

Rubi [A] time = 0.96, antiderivative size = 631, normalized size of antiderivative = 1.00, number of steps used = 39, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {5581, 5449, 3296, 2638, 4180, 2279, 2391, 3718, 2190, 5567, 5573, 5561, 6742}

$$\frac{ia^4f\mathrm{PolyLog}\left(2,-ie^{c+dx}\right)}{b^3d^2\left(a^2+b^2\right)}-\frac{ia^4f\mathrm{PolyLog}\left(2,ie^{c+dx}\right)}{b^3d^2\left(a^2+b^2\right)}-\frac{a^3f\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b^2d^2\left(a^2+b^2\right)}-\frac{a^3f\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{b^2d^2\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sinh[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(e + f*x)^2)/(2*b^2*f) + (2*a^2*(e + f*x)*ArcTan[E^(c + d*x)])/(b^3*d) -
 (2*(e + f*x)*ArcTan[E^(c + d*x)])/(b*d) - (2*a^4*(e + f*x)*ArcTan[E^(c + d
*x)])/(b^3*(a^2 + b^2)*d) - (f*Cosh[c + d*x])/(b*d^2) - (a^3*(e + f*x)*Log[
1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b^2*(a^2 + b^2)*d) - (a^3*(e +
 f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b^2*(a^2 + b^2)*d) -
 (a*(e + f*x)*Log[1 + E^(2*(c + d*x))])/(b^2*d) + (a^3*(e + f*x)*Log[1 + E^
(2*(c + d*x))])/(b^2*(a^2 + b^2)*d) - (I*a^2*f*PolyLog[2, (-I)*E^(c + d*x)]
)/(b^3*d^2) + (I*f*PolyLog[2, (-I)*E^(c + d*x)])/(b*d^2) + (I*a^4*f*PolyLog
[2, (-I)*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^2) + (I*a^2*f*PolyLog[2, I*E^(c +
 d*x)])/(b^3*d^2) - (I*f*PolyLog[2, I*E^(c + d*x)])/(b*d^2) - (I*a^4*f*Poly
```

```
Log[2, I*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^2) - (a^3*f*PolyLog[2, -((b*E^(c
+ d*x))/(a - Sqrt[a^2 + b^2]))])/(b^2*(a^2 + b^2)*d^2) - (a^3*f*PolyLog[2,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b^2*(a^2 + b^2)*d^2) - (a*f*Pol
yLog[2, -E^(2*(c + d*x))])/(2*b^2*d^2) + (a^3*f*PolyLog[2, -E^(2*(c + d*x))
])/(2*b^2*(a^2 + b^2)*d^2) + ((e + f*x)*Sinh[c + d*x])/(b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5449

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> Int[(c + d*x)^m*Sinh[a + b*x]^n*Tanh[a + b*
x]^(p - 2), x] - Int[(c + d*x)^m*Sinh[a + b*x]^(n - 2)*Tanh[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5581

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n, x], x] - Di
st[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n)/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
```

```
0] && IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\sinh^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\sinh(c+dx)\tanh(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\sinh(c+dx)\tanh(c+d}{a+b\sinh(c+dx)}}{b}$$

$$= -\frac{a\int (e+fx)\tanh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b^2} + \frac{\int (e+fx)}{}$$

$$= \frac{a(e+fx)^2}{2b^2f} - \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} + \frac{(e+fx)\sinh(c+dx)}{bd} + \frac{a^2\int}{}$$

$$= \frac{a(e+fx)^2}{2b^2f} + \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} -$$

$$= \frac{a(e+fx)^2}{2b^2f} + \frac{a^3(e+fx)^2}{2b^2\left(a^2+b^2\right)f} + \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx}{}$$

$$= \frac{a(e+fx)^2}{2b^2f} + \frac{a^3(e+fx)^2}{2b^2\left(a^2+b^2\right)f} + \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx}{}$$

$$= \frac{a(e+fx)^2}{2b^2f} + \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} -$$

$$= \frac{a(e+fx)^2}{2b^2f} + \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} -$$

$$= \frac{a(e+fx)^2}{2b^2f} + \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} -$$

$$= \frac{a(e+fx)^2}{2b^2f} + \frac{2a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} - \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} -$$

Mathematica [A] time = 4.30, size = 429, normalized size = 0.68

$$-\frac{ac^2f+2ade\log(\sinh(2(c+dx))+\cosh(2(c+dx))+1)-2acde+af\text{Li}_2(-\cosh(2(c+dx))-\sinh(2(c+dx)))+2adfx\log(\sinh(2(c+dx))+\cosh(2(c+dx))+1)-2a}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Sinh[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] -(((f*Cosh[c + d*x])/b + (a^3*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (
b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))
/(a + Sqrt[a^2 + b^2])] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh
[c + d*x]] + f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyL
og[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(b^2*(a^2 + b^2)) + (-2*a
*c*d*e + a*c^2*f - 2*a*d^2*e*x - a*d^2*f*x^2 + 4*b*d*e*ArcTan[Cosh[c + d*x]
 + Sinh[c + d*x]] + 4*b*d*f*x*ArcTan[Cosh[c + d*x] + Sinh[c + d*x]] + 2*a*d
*e*Log[1 + Cosh[2*(c + d*x)] + Sinh[2*(c + d*x)]] + 2*a*d*f*x*Log[1 + Cosh[
2*(c + d*x)] + Sinh[2*(c + d*x)]] - (2*I)*b*f*PolyLog[2, (-I)*(Cosh[c + d*x
] + Sinh[c + d*x])] + (2*I)*b*f*PolyLog[2, I*(Cosh[c + d*x] + Sinh[c + d*x]
)] + a*f*PolyLog[2, -Cosh[2*(c + d*x)] - Sinh[2*(c + d*x)]])/(2*(a^2 + b^2)
) - (d*(e + f*x)*Sinh[c + d*x])/b)/d^2)
```

fricas [B] time = 0.53, size = 1420, normalized size = 2.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -1/2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e - ((a^2*b + b^3)*d*f*x + (a^2
*b + b^3)*d*e - (a^2*b + b^3)*f)*cosh(d*x + c)^2 - ((a^2*b + b^3)*d*f*x + (
a^2*b + b^3)*d*e - (a^2*b + b^3)*f)*sinh(d*x + c)^2 + (a^2*b + b^3)*f - ((a
^3 + a*b^2)*d^2*f*x^2 + 2*(a^3 + a*b^2)*d^2*e*x + 4*(a^3 + a*b^2)*c*d*e - 2
*(a^3 + a*b^2)*c^2*f)*cosh(d*x + c) + 2*(a^3*f*cosh(d*x + c) + a^3*f*sinh(d
*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*si
nh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(a^3*f*cosh(d*x + c) + a
^3*f*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + ((2*a*b^2*f + 2
*I*b^3*f)*cosh(d*x + c) + (2*a*b^2*f + 2*I*b^3*f)*sinh(d*x + c))*dilog(I*co
sh(d*x + c) + I*sinh(d*x + c)) + ((2*a*b^2*f - 2*I*b^3*f)*cosh(d*x + c) + (
2*a*b^2*f - 2*I*b^3*f)*sinh(d*x + c))*dilog(-I*cosh(d*x + c) - I*sinh(d*x +
 c)) + 2*((a^3*d*e - a^3*c*f)*cosh(d*x + c) + (a^3*d*e - a^3*c*f)*sinh(d*x
```

```
+ c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2)
 + 2*a) + 2*((a^3*d*e - a^3*c*f)*cosh(d*x + c) + (a^3*d*e - a^3*c*f)*sinh(d
*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b
^2) + 2*a) + 2*((a^3*d*f*x + a^3*c*f)*cosh(d*x + c) + (a^3*d*f*x + a^3*c*f)
*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*((a^3*d*f*x + a^3*c*f)
*cosh(d*x + c) + (a^3*d*f*x + a^3*c*f)*sinh(d*x + c))*log(-(a*cosh(d*x + c)
 + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2) - b)/b) + ((2*a*b^2*d*e + 2*I*b^3*d*e - 2*a*b^2*c*f - 2*I*b^3*c*f)*cosh
(d*x + c) + (2*a*b^2*d*e + 2*I*b^3*d*e - 2*a*b^2*c*f - 2*I*b^3*c*f)*sinh(d*
x + c))*log(cosh(d*x + c) + sinh(d*x + c) + I) + ((2*a*b^2*d*e - 2*I*b^3*d*
e - 2*a*b^2*c*f + 2*I*b^3*c*f)*cosh(d*x + c) + (2*a*b^2*d*e - 2*I*b^3*d*e -
 2*a*b^2*c*f + 2*I*b^3*c*f)*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c
) - I) + ((2*a*b^2*d*f*x - 2*I*b^3*d*f*x + 2*a*b^2*c*f - 2*I*b^3*c*f)*cosh(
d*x + c) + (2*a*b^2*d*f*x - 2*I*b^3*d*f*x + 2*a*b^2*c*f - 2*I*b^3*c*f)*sinh
(d*x + c))*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) + ((2*a*b^2*d*f*x + 2
*I*b^3*d*f*x + 2*a*b^2*c*f + 2*I*b^3*c*f)*cosh(d*x + c) + (2*a*b^2*d*f*x +
2*I*b^3*d*f*x + 2*a*b^2*c*f + 2*I*b^3*c*f)*sinh(d*x + c))*log(-I*cosh(d*x +
 c) - I*sinh(d*x + c) + 1) - ((a^3 + a*b^2)*d^2*f*x^2 + 2*(a^3 + a*b^2)*d^2
*e*x + 4*(a^3 + a*b^2)*c*d*e - 2*(a^3 + a*b^2)*c^2*f + 2*((a^2*b + b^3)*d*f
*x + (a^2*b + b^3)*d*e - (a^2*b + b^3)*f)*cosh(d*x + c))*sinh(d*x + c))/((a
^2*b^2 + b^4)*d^2*cosh(d*x + c) + (a^2*b^2 + b^4)*d^2*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [B] time = 0.43, size = 4066, normalized size = 6.44

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 2/(a^2+b^2)^(1/2)/d*b^2*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a
^2+b^2)^(1/2))-a*e*x/b^2+1/2*(d*f*x+d*e-f)/d^2/b*exp(d*x+c)-1/2*(d*f*x+d*e+
f)/d^2/b*exp(-d*x-c)+1/2*a*f*x^2/b^2+2/d*a/b^2*f*c*x-2/d^2*a/b^2*f*c*ln(exp
(d*x+c))+4/d^2*f*c/(2*a^2+2*b^2)*b*arctan(exp(d*x+c))-1/d^2*f*c/(2*a^2+2*b^
```

2)*a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d^2*f*c/(2*a^2+2*b^2)*(a^2+b^2
)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/d^2*f*c/(2*a^2+
2*b^2)*a*ln(1+exp(2*d*x+2*c))+1/d^2*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b
^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a*c-2/d*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c)
)*a*x-2/d^2*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*a*c+1/d*f/(2*a^2+2*b^2)*ln((
-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a*x+1/d^2*f/(2*a^2+2
*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a*c+1/d*f/
(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a*x-
2/d*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*a*x-2/d^2*f/(2*a^2+2*b^2)*ln(1+I*exp
(d*x+c))*a*c-1/2/d^2*a*f/(a^2+b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(
a^2+b^2)^(1/2)))*c-1/d*a^2*f/(a^2+b^2)^(3/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1
/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a^2*f/(a^2+b^2)^(3/2)*ln((-b*exp(d*x+c
)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d*a^2*f/(a^2+b^2)^(3/2)*ln((
b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2*a^2*f/(a^2+b^2
)^(3/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/d^2*a^
2*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(
-a+(a^2+b^2)^(1/2)))-2/d^2*a^2*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*dilog((b*exp
(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+2/d/b^2*a^4*e/(a^2+b^2)^(3/
2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d/b^2*a^3*e/(a^2+b^2
)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+1/d^2/b^2*a^4*f/(a^2+b^2)^(3/2)*dil
og((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/d^2/b^2*a^3*f/(a
^2+b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2
/b^2*a^3*f/(a^2+b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1
/2)))-2/d/b^2*a^2*e/(2*a^2+2*b^2)*(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+
c)+2*a)/(a^2+b^2)^(1/2))-2/d/b^2*a^4*e/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*arctan
h(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d^2*a^2*f/(2*a^2+2*b^2)/(a^2+
b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/d*a
^2*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a
+(a^2+b^2)^(1/2)))*x+1/d^2*a/b^2*f*c^2+2/d*a/b^2*e*ln(exp(d*x+c))-2/d*e/(2*
a^2+2*b^2)*(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2)
)+1/d*e/(2*a^2+2*b^2)*a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/d*e/(2*a^2+
2*b^2)*a*ln(1+exp(2*d*x+2*c))-4/d*e/(2*a^2+2*b^2)*b*arctan(exp(d*x+c))+2/d/
b^2*a^4*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a
)/(-a+(a^2+b^2)^(1/2)))*x+2/d^2/b^2*a^4*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln(
(-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+2/d^2/b^2*a^2*f*c
/(2*a^2+2*b^2)*(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(
1/2))+2/d^2/b^2*a^4*f*c/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(
d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d/b^2*a^4*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln
((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-2/d^2/b^2*a^4*f/(2
*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2
)^(1/2)))*c-2/(a^2+b^2)^(1/2)/d^2*b^2*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*ex
p(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d^2*f/(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(
a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*a+1/d^2*f/(2*a^2+2*b^2)*dilog((b*ex
p(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*a-2/d^2*f/(2*a^2+2*b^2)*di
log(1+I*exp(d*x+c))*a-2/d^2*f/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+c))*a-1/d^2/b

```
^2*a^4*f/(a^2+b^2)^(3/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b
^2)^(1/2)))+1/2/d^2*a*f*c/(a^2+b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2
/d^2*a^2*f*c/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/
2))-1/2/d*a*f/(a^2+b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^
(1/2)))*x-1/2/d^2*a*f/(a^2+b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a
^2+b^2)^(1/2)))*c-1/2/d*a*f/(a^2+b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(
a+(a^2+b^2)^(1/2)))*x+2*I/d^2*b*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))-2*I/d
^2*b*f/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+c))+2/d^2*a^2*f/(2*a^2+2*b^2)/(a^2+b
^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-2/d*
a^2*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+
(a^2+b^2)^(1/2)))*x+1/d/b^2*a^4*f/(a^2+b^2)^(3/2)*ln((b*exp(d*x+c)+(a^2+b^2
)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2/b^2*a^4*f/(a^2+b^2)^(3/2)*ln((b*exp
(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d/b^2*a^4*f/(a^2+b^2)^(
3/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2/b^2
*a^4*f/(a^2+b^2)^(3/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(
1/2)))*c-1/d/b^2*a^3*f/(a^2+b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(
a^2+b^2)^(1/2)))*x-1/d^2/b^2*a^3*f/(a^2+b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1
/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d/b^2*a^3*f/(a^2+b^2)*ln((b*exp(d*x+c)+(a^
2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2/b^2*a^3*f/(a^2+b^2)*ln((b*exp(
d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/d^2/b^2*a^4*f/(2*a^2+2*b
^2)/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(
1/2)))-2/d^2/b^2*a^4*f/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a
^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-2/d^2/b^2*a^4*f*c/(a^2+b^2)^(3/2)*arc
tanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d^2/b^2*a^3*f*c/(a^2+b^2)*
ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2*I/d*b*f/(2*a^2+2*b^2)*ln(1+I*exp(d*
x+c))*x+2*I/d^2*b*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c-2*I/d*b*f/(2*a^2+2*b
^2)*ln(1-I*exp(d*x+c))*x-2*I/d^2*b*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*c+1/d
^2*a^2*f/(a^2+b^2)^(3/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2
)^(1/2)))-1/2/d^2*a*f/(a^2+b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a
+(a^2+b^2)^(1/2)))-1/2/d^2*a*f/(a^2+b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2
)+a)/(a+(a^2+b^2)^(1/2)))-1/d^2*a^2*f/(a^2+b^2)^(3/2)*dilog((-b*exp(d*x+c)+
(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+2/d*a^2*e/(a^2+b^2)^(3/2)*arctanh(
1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/2/d*a*e/(a^2+b^2)*ln(b*exp(2*d*
x+2*c)+2*a*exp(d*x+c)-b)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{2\,a^3\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^2b^2+b^4\right)d}-\frac{4\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}+\frac{2\,a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}+\frac{2\,(dx+c)a}{b^2d}-\frac{e^{(dx}}{ba}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/2*(2*a^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^2*b^2 + b^4
)*d) - 4*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + 2*a*log(e^(-2*d*x - 2*c)
+ 1)/((a^2 + b^2)*d) + 2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) + e^(-d*x
- c)/(b*d))*e - 1/4*f*(2*(a*d^2*x^2*e^c - (b*d*x*e^(2*c) - b*e^(2*c))*e^(d*
x) + (b*d*x + b)*e^(-d*x))*e^(-c)/(b^2*d^2) - integrate(-8*(a^4*x*e^(d*x +
c) - a^3*b*x)/(a^2*b^3 + b^5 - (a^2*b^3*e^(2*c) + b^5*e^(2*c))*e^(2*d*x) -
2*(a^3*b^2*e^c + a*b^4*e^c)*e^(d*x)), x) + integrate(8*(b*x*e^(d*x + c) - a
*x)/(a^2 + b^2 + (a^2*e^(2*c) + b^2*e^(2*c))*e^(2*d*x)), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh\left(c+d\,x\right)^2\,\tanh\left(c+d\,x\right)\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*tanh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
[Out] int((sinh(c + d*x)^2*tanh(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\sinh^2\left(c+dx\right)\tanh\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)**2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)*sinh(c + d*x)**2*tanh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.409 $\int \frac{\sinh^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=89

$$-\frac{b\tan^{-1}(\sinh(c+dx))}{d(a^2+b^2)}-\frac{a\log(\cosh(c+dx))}{d(a^2+b^2)}-\frac{a^3\log(a+b\sinh(c+dx))}{b^2d(a^2+b^2)}+\frac{\sinh(c+dx)}{bd}$$

```
[Out] -b*arctan(sinh(d*x+c))/(a^2+b^2)/d-a*ln(cosh(d*x+c))/(a^2+b^2)/d-a^3*ln(a+b
*sinh(d*x+c))/b^2/(a^2+b^2)/d+sinh(d*x+c)/b/d
```

Rubi [A] time = 0.20, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2837, 12, 1629, 635, 203, 260}

$$-\frac{a^3\log(a+b\sinh(c+dx))}{b^2d(a^2+b^2)}-\frac{b\tan^{-1}(\sinh(c+dx))}{d(a^2+b^2)}-\frac{a\log(\cosh(c+dx))}{d(a^2+b^2)}+\frac{\sinh(c+dx)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Sinh[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((b*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)*d)) - (a*Log[Cosh[c + d*x]])/((a^2
 + b^2)*d) - (a^3*Log[a + b*Sinh[c + d*x]])/(b^2*(a^2 + b^2)*d) + Sinh[c +
d*x]/(b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
```

```
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 1629

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol]
:> Int[ExpandIntegrand[(d + e*x)^m*Pq*(a + c*x^2)^p, x], x] /; FreeQ[{a, c,
 d, e, m}, x] && PolyQ[Pq, x] && IGtQ[p, -2]
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\sinh^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{b\,\text{Subst}\left(\int \frac{x^3}{b^3(a+x)\left(-b^2-x^2\right)}\,dx,x,b\sinh(c+dx)\right)}{d}$$

$$= -\frac{\text{Subst}\left(\int \frac{x^3}{(a+x)\left(-b^2-x^2\right)}\,dx,x,b\sinh(c+dx)\right)}{b^2d}$$

$$= -\frac{\text{Subst}\left(\int \left(-1+\frac{a^3}{\left(a^2+b^2\right)(a+x)}+\frac{b^4+ab^2x}{\left(a^2+b^2\right)\left(b^2+x^2\right)}\right)dx,x,b\sinh(c+dx)\right)}{b^2d}$$

$$= -\frac{a^3\log(a+b\sinh(c+dx))}{b^2\left(a^2+b^2\right)d}+\frac{\sinh(c+dx)}{bd}-\frac{\text{Subst}\left(\int \frac{b^4+ab^2x}{b^2+x^2}\,dx,x,b\sinh\right.}{b^2\left(a^2+b^2\right)d}$$

$$= -\frac{a^3\log(a+b\sinh(c+dx))}{b^2\left(a^2+b^2\right)d}+\frac{\sinh(c+dx)}{bd}-\frac{a\,\text{Subst}\left(\int \frac{x}{b^2+x^2}\,dx,x,b\sinh\right.}{\left(a^2+b^2\right)d}$$

$$= -\frac{b\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d}-\frac{a\log(\cosh(c+dx))}{\left(a^2+b^2\right)d}-\frac{a^3\log(a+b\sinh(c+dx))}{b^2\left(a^2+b^2\right)d}$$

Mathematica [C] time = 0.17, size = 91, normalized size = 1.02

$$-\frac{\frac{2a^3\log(a+b\sinh(c+dx))}{b^2\left(a^2+b^2\right)}+\frac{\log(-\sinh(c+dx)+i)}{a+ib}+\frac{\log(\sinh(c+dx)+i)}{a-ib}-\frac{2\sinh(c+dx)}{b}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sinh[c + d*x]^2*Tanh[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(Log[I - Sinh[c + d*x]]/(a + I*b) + Log[I + Sinh[c + d*x]]/(a - I*b) +
 (2*a^3*Log[a + b*Sinh[c + d*x]])/(b^2*(a^2 + b^2)) - (2*Sinh[c + d*x])/b)/
d
```

fricas [B] time = 0.50, size = 288, normalized size = 3.24

$$\frac{2\left(a^{3}+ab^{2}\right)dx\cosh\left(dx+c\right)-a^{2}b-b^{3}+\left(a^{2}b+b^{3}\right)\cosh\left(dx+c\right)^{2}+\left(a^{2}b+b^{3}\right)\sinh\left(dx+c\right)^{2}-4\left(b^{3}\cosh\left(dx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/2*(2*(a^3 + a*b^2)*d*x*cosh(d*x + c) - a^2*b - b^3 + (a^2*b + b^3)*cosh(d
*x + c)^2 + (a^2*b + b^3)*sinh(d*x + c)^2 - 4*(b^3*cosh(d*x + c) + b^3*sinh
(d*x + c))*arctan(cosh(d*x + c) + sinh(d*x + c)) - 2*(a^3*cosh(d*x + c) + a
^3*sinh(d*x + c))*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x + c
))) - 2*(a*b^2*cosh(d*x + c) + a*b^2*sinh(d*x + c))*log(2*cosh(d*x + c)/(co
sh(d*x + c) - sinh(d*x + c))) + 2*((a^3 + a*b^2)*d*x + (a^2*b + b^3)*cosh(d
*x + c))*sinh(d*x + c))/((a^2*b^2 + b^4)*d*cosh(d*x + c) + (a^2*b^2 + b^4)*
d*sinh(d*x + c))
```

giac [A] time = 0.73, size = 125, normalized size = 1.40

$$-\frac{\frac{2\,a^{3}\log\left(\left|be^{(2\,dx+2\,c)}+2\,ae^{(dx+c)}-b\right|\right)}{a^{2}b^{2}+b^{4}}-\frac{2\,adx}{b^{2}}+\frac{4\,b\arctan\left(e^{(dx+c)}\right)}{a^{2}+b^{2}}+\frac{2\,a\log\left(e^{(2\,dx+2\,c)}+1\right)}{a^{2}+b^{2}}-\frac{e^{(dx+c)}}{b}+\frac{e^{(-dx-c)}}{b}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(2*a^3*log(abs(b*e^(2*d*x + 2*c) + 2*a*e^(d*x + c) - b))/(a^2*b^2 + b^
4) - 2*a*d*x/b^2 + 4*b*arctan(e^(d*x + c))/(a^2 + b^2) + 2*a*log(e^(2*d*x +
 2*c) + 1)/(a^2 + b^2) - e^(d*x + c)/b + e^(-d*x - c)/b)/d
```

maple [B] time = 0.11, size = 196, normalized size = 2.20

$$-\frac{1}{db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}+\frac{a\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{d\,b^{2}}-\frac{1}{db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{a\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{d\,b^{2}}-\frac{a^{3}\ln\left(\left(\mathrm{ta}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/d/b/(tanh(1/2*d*x+1/2*c)-1)+1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)-1)-1/d/b/(t
anh(1/2*d*x+1/2*c)+1)+1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)+1)-1/d*a^3/b^2/(a^2+
b^2)*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)-8/d/(8*a^2+8*b^2
)*a*ln(tanh(1/2*d*x+1/2*c)^2+1)-16/d/(8*a^2+8*b^2)*b*arctan(tanh(1/2*d*x+1/
2*c))
```

maxima [A] time = 0.41, size = 147, normalized size = 1.65

$$-\frac{a^3\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^2b^2+b^4\right)d}+\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}-\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}-\frac{(dx+c)a}{b^2d}+\frac{e^{(dx+c)}}{2\,bd}-\frac{e^{(-dx-c)}}{2\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -a^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^2*b^2 + b^4)*d) +
2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) - a*log(e^(-2*d*x - 2*c) + 1)/((a^
2 + b^2)*d) - (d*x + c)*a/(b^2*d) + 1/2*e^(d*x + c)/(b*d) - 1/2*e^(-d*x - c
)/(b*d)
```

mupad [B] time = 1.64, size = 249, normalized size = 2.80

$$\frac{e^{c+d\,x}}{2\,b\,d}-\frac{\ln\left(e^{c+d\,x}+1i\right)}{a\,d-b\,d\,1i}-\frac{a^3\,\ln\left(2\,a^4\,b^3-b^7-a^2\,b^5-a^6\,b+2\,a^7\,e^{d\,x}\,e^{c}+b^7\,e^{2\,c}\,e^{2\,d\,x}+a^6\,b\,e^{2\,c}\,e^{2\,d\,x}+2\,a^3\,b^4\,e^{d\,x}\ldots\right)}{d\,a^2\,b^2+d\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*tanh(c + d*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] exp(c + d*x)/(2*b*d) - (log(exp(c + d*x)*1i + 1)*1i)/(a*d*1i - b*d) - log(e
xp(c + d*x) + 1i)/(a*d - b*d*1i) - (a^3*log(2*a^4*b^3 - b^7 - a^2*b^5 - a^6
*b + 2*a^7*exp(d*x)*exp(c) + b^7*exp(2*c)*exp(2*d*x) + a^6*b*exp(2*c)*exp(2
*d*x) + 2*a^3*b^4*exp(d*x)*exp(c) - 4*a^5*b^2*exp(d*x)*exp(c) + a^2*b^5*exp
(2*c)*exp(2*d*x) - 2*a^4*b^3*exp(2*c)*exp(2*d*x) + 2*a*b^6*exp(d*x)*exp(c))
)/(b^4*d + a^2*b^2*d) - exp(- c - d*x)/(2*b*d) + (a*x)/b^2
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**2*tanh(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral(sinh(c + d*x)**2*tanh(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.410 $\int \frac{\sinh^2(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\operatorname{Int}\left(\frac{\sinh^2(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh^2(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Sinh[c + d*x]^2*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][(Sinh[c + d*x]^2*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\sinh^2(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\sinh^2(c+dx)\tanh(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Sinh[c + d*x]^2*Tanh[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
[Out] $Aborted
```

fricas [A] time = 0.63, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\sinh\left(dx+c\right)^2\tanh\left(dx+c\right)}{afx+ae+\left(bfx+be\right)\sinh\left(dx+c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(sinh(d*x + c)^2*tanh(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 1.23, size = 0, normalized size = 0.00

$$\int \frac{\left(\sinh^2 \left(dx+c\right)\right) \tanh \left(dx+c\right)}{\left(fx+e\right) \left(a+b \sinh \left(dx+c\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{e^{\left(-c+\frac{de}{f}\right)} E_1\left(\frac{\left(fx+e\right)d}{f}\right)}{2\,bf}-\frac{e^{\left(c-\frac{de}{f}\right)} E_1\left(-\frac{\left(fx+e\right)d}{f}\right)}{2\,bf}-\frac{a\log\left(fx+e\right)}{b^2 f}+\frac{1}{4}\int -\frac{}{a^2b^3e+b^5e+\left(a^2b^3f+b^5f\right)x-\left(a^2b^3ee^{(2\,c)}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)^2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/2*e^(-c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b*f) - 1/2*e^(c - d*e
/f)*exp_integral_e(1, -(f*x + e)*d/f)/(b*f) - a*log(f*x + e)/(b^2*f) + 1/4*
integrate(-8*(a^4*e^(d*x + c) - a^3*b)/(a^2*b^3*e + b^5*e + (a^2*b^3*f + b^
5*f)*x - (a^2*b^3*e*e^(2*c) + b^5*e*e^(2*c) + (a^2*b^3*f*e^(2*c) + b^5*f*e^
(2*c))*x)*e^(2*d*x) - 2*(a^3*b^2*e*e^c + a*b^4*e*e^c + (a^3*b^2*f*e^c + a*b
```

```
^4*f*e^c)*x)*e^(d*x)), x) - 1/4*integrate(8*(b*e^(d*x + c) - a)/(a^2*e + b^
2*e + (a^2*f + b^2*f)*x + (a^2*e*e^(2*c) + b^2*e*e^(2*c) + (a^2*f*e^(2*c) +
 b^2*f*e^(2*c))*x)*e^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sinh\left(c+d\,x\right)^2\,\tanh\left(c+d\,x\right)}{\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)^2*tanh(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((sinh(c + d*x)^2*tanh(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh^{2}\left(c+dx\right)\tanh\left(c+dx\right)}{\left(a+b\sinh\left(c+dx\right)\right)\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)**2*tanh(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(sinh(c + d*x)**2*tanh(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)),
x)
```

3.411 $\int \frac{(e+fx)^3 \sinh(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1294

$$-\frac{(e+fx)^3a^4}{b^3\left(a^2+b^2\right)d}+\frac{3f(e+fx)^2\log\left(1+e^{2(c+dx)}\right)a^4}{b^3\left(a^2+b^2\right)d^2}+\frac{3f^2(e+fx)\text{Li}_2\left(-e^{2(c+dx)}\right)a^4}{b^3\left(a^2+b^2\right)d^3}-\frac{3f^3\text{Li}_3\left(-e^{2(c+dx)}\right)a^4}{2b^3\left(a^2+b^2\right)d^4}-\frac{(e+fx)^3}{b^3(}$$

```
[Out] -3*a^2*f*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/b^3/d^2-a^3*(f*x+e)^3*ln(1+b*exp(d*
x+c)/(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d+a^3*(f*x+e)^3*ln(1+b*exp(d*x+
c)/(a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d-6*a^3*f^3*polylog(4,-b*exp(d*x+
c)/(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^4+6*a^3*f^3*polylog(4,-b*exp(d*
x+c)/(a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^4+6*I*a*f^3*polylog(3,I*exp(d
*x+c))/b^2/d^4-6*I*a*f^2*(f*x+e)*polylog(2,I*exp(d*x+c))/b^2/d^3-6*I*a^3*f^
3*polylog(3,I*exp(d*x+c))/b^2/(a^2+b^2)/d^4-a^4*(f*x+e)^3/b^3/(a^2+b^2)/d+3
/2*a^2*f^3*polylog(3,-exp(2*d*x+2*c))/b^3/d^4+a*(f*x+e)^3*sech(d*x+c)/b^2/d
+a^2*(f*x+e)^3*tanh(d*x+c)/b^3/d-6*a*f*(f*x+e)^2*arctan(exp(d*x+c))/b^2/d^2
-3*a^2*f^2*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/b^3/d^3-3/2*a^4*f^3*polylog(3
,-exp(2*d*x+2*c))/b^3/(a^2+b^2)/d^4-a^3*(f*x+e)^3*sech(d*x+c)/b^2/(a^2+b^2)
/d-a^4*(f*x+e)^3*tanh(d*x+c)/b^3/(a^2+b^2)/d-6*I*a*f^3*polylog(3,-I*exp(d*x
+c))/b^2/d^4-6*I*a^3*f^2*(f*x+e)*polylog(2,-I*exp(d*x+c))/b^2/(a^2+b^2)/d^3
+6*I*a*f^2*(f*x+e)*polylog(2,-I*exp(d*x+c))/b^2/d^3+6*I*a^3*f^3*polylog(3,-
I*exp(d*x+c))/b^2/(a^2+b^2)/d^4+6*a^3*f*(f*x+e)^2*arctan(exp(d*x+c))/b^2/(a
^2+b^2)/d^2+3*a^4*f^2*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/b^3/(a^2+b^2)/d^3+
a^2*(f*x+e)^3/b^3/d-3/2*f^3*polylog(3,-exp(2*d*x+2*c))/b/d^4-(f*x+e)^3*tanh
(d*x+c)/b/d+3*f^2*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/b/d^3-(f*x+e)^3/b/d+1/
4*(f*x+e)^4/b/f+6*I*a^3*f^2*(f*x+e)*polylog(2,I*exp(d*x+c))/b^2/(a^2+b^2)/d
^3+3*a^3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/(a^2+b^
2)^(3/2)/d^2+6*a^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))
/b/(a^2+b^2)^(3/2)/d^3-6*a^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^
2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^3+3*a^4*f*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/b^3
/(a^2+b^2)/d^2-3*a^3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)
))/b/(a^2+b^2)^(3/2)/d^2+3*f*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/b/d^2
```

Rubi [A] time = 2.45, antiderivative size = 1294, normalized size of antiderivative = 1.00, number of steps used = 53, number of rules used = 18, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.529, Rules used = {5581, 3720, 3718, 2190, 2531, 2282, 6589, 32, 5567, 5451, 4180, 5583, 4184, 5573, 3322, 2264, 6609, 6742}

$$-\frac{(e+fx)^3a^4}{b^3\left(a^2+b^2\right)d}+\frac{3f(e+fx)^2\log\left(1+e^{2(c+dx)}\right)a^4}{b^3\left(a^2+b^2\right)d^2}+\frac{3f^2(e+fx)\text{PolyLog}\left(2,-e^{2(c+dx)}\right)a^4}{b^3\left(a^2+b^2\right)d^3}-\frac{3f^3\text{PolyLog}\left(3,-e^{2(c+d}\right.}{2b^3\left(a^2+b^2\right)d^4}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sinh[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*(e + f*x)^3)/(b^3*d) - (e + f*x)^3/(b*d) - (a^4*(e + f*x)^3)/(b^3*(a^2
 + b^2)*d) + (e + f*x)^4/(4*b*f) - (6*a*f*(e + f*x)^2*ArcTan[E^(c + d*x)])/
(b^2*d^2) + (6*a^3*f*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b^2*(a^2 + b^2)*d^2)
 - (a^3*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*(a^2
 + b^2)^(3/2)*d) + (a^3*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2])])/(b*(a^2 + b^2)^(3/2)*d) - (3*a^2*f*(e + f*x)^2*Log[1 + E^(2*(c + d
*x))])/(b^3*d^2) + (3*f*(e + f*x)^2*Log[1 + E^(2*(c + d*x))])/(b*d^2) + (3*
a^4*f*(e + f*x)^2*Log[1 + E^(2*(c + d*x))])/(b^3*(a^2 + b^2)*d^2) + ((6*I)*
a*f^2*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(b^2*d^3) - ((6*I)*a^3*f^2*(e
 + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^3) - ((6*I)*a*f^2*
(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b^2*d^3) + ((6*I)*a^3*f^2*(e + f*x)*P
olyLog[2, I*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^3) - (3*a^3*f*(e + f*x)^2*Poly
Log[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^2)
 + (3*a^3*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
])/(b*(a^2 + b^2)^(3/2)*d^2) - (3*a^2*f^2*(e + f*x)*PolyLog[2, -E^(2*(c + d
*x))])/(b^3*d^3) + (3*f^2*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/(b*d^3) +
 (3*a^4*f^2*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/(b^3*(a^2 + b^2)*d^3) -
 ((6*I)*a*f^3*PolyLog[3, (-I)*E^(c + d*x)])/(b^2*d^4) + ((6*I)*a^3*f^3*Poly
Log[3, (-I)*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^4) + ((6*I)*a*f^3*PolyLog[3, I
*E^(c + d*x)])/(b^2*d^4) - ((6*I)*a^3*f^3*PolyLog[3, I*E^(c + d*x)])/(b^2*(
a^2 + b^2)*d^4) + (6*a^3*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sq
rt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^3) - (6*a^3*f^2*(e + f*x)*PolyLog[
3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^3) + (
3*a^2*f^3*PolyLog[3, -E^(2*(c + d*x))])/(2*b^3*d^4) - (3*f^3*PolyLog[3, -E^
(2*(c + d*x))])/(2*b*d^4) - (3*a^4*f^3*PolyLog[3, -E^(2*(c + d*x))])/(2*b^3
*(a^2 + b^2)*d^4) - (6*a^3*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2]))])/(b*(a^2 + b^2)^(3/2)*d^4) + (6*a^3*f^3*PolyLog[4, -((b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^4) + (a*(e + f*x)^3*Sech
[c + d*x])/(b^2*d) - (a^3*(e + f*x)^3*Sech[c + d*x])/(b^2*(a^2 + b^2)*d) +
(a^2*(e + f*x)^3*Tanh[c + d*x])/(b^3*d) - ((e + f*x)^3*Tanh[c + d*x])/(b*d)
 - (a^4*(e + f*x)^3*Tanh[c + d*x])/(b^3*(a^2 + b^2)*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
```

```
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5581

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
```

```
ist[1/b, Int[(e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n, x], x] - Di
st[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n)/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\sinh(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\tanh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^3\tanh(c+dx)}{bd} - \frac{a\int (e+fx)^3\text{sech}(c+dx)\tanh(c+dx)}{b^2}$$

$$= -\frac{(e+fx)^3}{bd} + \frac{(e+fx)^4}{4bf} + \frac{a(e+fx)^3\text{sech}(c+dx)}{b^2d} - \frac{(e+fx)^3\tan}{bd}$$

$$= -\frac{(e+fx)^3}{bd} + \frac{(e+fx)^4}{4bf} - \frac{6af(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d^2} + \frac{3f(e+fx}{}$$

$$= \frac{a^2(e+fx)^3}{b^3d} - \frac{(e+fx)^3}{bd} + \frac{(e+fx)^4}{4bf} - \frac{6af(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d^2}$$

$$= \frac{a^2(e+fx)^3}{b^3d} - \frac{(e+fx)^3}{bd} + \frac{(e+fx)^4}{4bf} - \frac{6af(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d^2}$$

$$= \frac{a^2(e+fx)^3}{b^3d} - \frac{(e+fx)^3}{bd} + \frac{(e+fx)^4}{4bf} - \frac{6af(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{b^2d^2}$$

$$= \frac{a^2(e+fx)^3}{b^3d} - \frac{(e+fx)^3}{bd} - \frac{a^4(e+fx)^3}{b^3\left(a^2+b^2\right)d} + \frac{(e+fx)^4}{4bf} - \frac{6af(e+f}{}$$

$$= \frac{a^2(e+fx)^3}{b^3d} - \frac{(e+fx)^3}{bd} - \frac{a^4(e+fx)^3}{b^3\left(a^2+b^2\right)d} + \frac{(e+fx)^4}{4bf} - \frac{6af(e+f}{}$$

$$= \frac{a^2(e+fx)^3}{b^3d} - \frac{(e+fx)^3}{bd} - \frac{a^4(e+fx)^3}{b^3\left(a^2+b^2\right)d} + \frac{(e+fx)^4}{4bf} - \frac{6af(e+f}{}$$

$$= \frac{a^2(e+fx)^3}{b^3d} - \frac{(e+fx)^3}{bd} - \frac{a^4(e+fx)^3}{b^3\left(a^2+b^2\right)d} + \frac{(e+fx)^4}{4bf} - \frac{6af(e+f}{}$$

$$= \frac{a^2(e+fx)^3}{b^3d} - \frac{(e+fx)^3}{bd} - \frac{a^4(e+fx)^3}{b^3\left(a^2+b^2\right)d} + \frac{(e+fx)^4}{4bf} - \frac{6af(e+f}{}$$

Mathematica [A] time = 11.82, size = 1111, normalized size = 0.86

$$\frac{\left(2e^3\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^3-f^3x^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3-3ef^2x^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3-3e^2fx\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sinh[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3))/(4*b) - (f*(12*b*d^3*e^2*E^
(2*c)*x - 12*b*d^3*e^2*(1 + E^(2*c))*x - 12*b*d^3*e*f*x^2 - 4*b*d^3*f^2*x^3
 + 12*a*d^2*e^2*(1 + E^(2*c))*ArcTan[E^(c + d*x)] + 6*b*d^2*e^2*(1 + E^(2*c
))*(2*d*x - Log[1 + E^(2*(c + d*x))]) + (12*I)*a*d*e*(1 + E^(2*c))*f*(d*x*(
Log[1 - I*E^(c + d*x)] - Log[1 + I*E^(c + d*x)]) - PolyLog[2, (-I)*E^(c + d
*x)] + PolyLog[2, I*E^(c + d*x)]) + 6*b*d*e*(1 + E^(2*c))*f*(2*d*x*(d*x - L
og[1 + E^(2*(c + d*x))]) - PolyLog[2, -E^(2*(c + d*x))]) + (6*I)*a*(1 + E^(
2*c))*f^2*(d^2*x^2*Log[1 - I*E^(c + d*x)] - d^2*x^2*Log[1 + I*E^(c + d*x)]
- 2*d*x*PolyLog[2, (-I)*E^(c + d*x)] + 2*d*x*PolyLog[2, I*E^(c + d*x)] + 2*
PolyLog[3, (-I)*E^(c + d*x)] - 2*PolyLog[3, I*E^(c + d*x)]) + b*(1 + E^(2*c
))*f^2*(2*d^2*x^2*(2*d*x - 3*Log[1 + E^(2*(c + d*x))]) - 6*d*x*PolyLog[2, -
E^(2*(c + d*x))] + 3*PolyLog[3, -E^(2*(c + d*x))])))/(2*(a^2 + b^2)*d^4*(1
+ E^(2*c))) + (a^3*(2*d^3*e^3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]]
- 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 3*d^3*e*f^
2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d^3*f^3*x^3*Log[1 +
(b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2])] + 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + S
qrt[a^2 + b^2])] + d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
)] - 3*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
 + 3*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]
 + 6*d*e*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*d*f^3*x
*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 6*d*e*f^2*PolyLog[3,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 6*d*f^3*x*PolyLog[3, -((b*E^(c
+ d*x))/(a + Sqrt[a^2 + b^2]))] - 6*f^3*PolyLog[4, (b*E^(c + d*x))/(-a + Sq
rt[a^2 + b^2])] + 6*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
]))/(b*(a^2 + b^2)^(3/2)*d^4) + ((e + f*x)^3*Sech[c + d*x]*(a - b*Sech[c]*S
inh[d*x]))/((a^2 + b^2)*d)
```

fricas [C] time = 0.70, size = 7331, normalized size = 5.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^3*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")

[Out] 1/4*((a^4 + 2*a^2*b^2 + b^4)*d^4*f^3*x^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*d^4*e*
f^2*x^3 + 6*(a^4 + 2*a^2*b^2 + b^4)*d^4*e^2*f*x^2 + 4*(a^4 + 2*a^2*b^2 + b^
4)*d^4*e^3*x + 8*(a^2*b^2 + b^4)*d^3*e^3 - 24*(a^2*b^2 + b^4)*c*d^2*e^2*f +
 24*(a^2*b^2 + b^4)*c^2*d*e*f^2 - 8*(a^2*b^2 + b^4)*c^3*f^3 + ((a^4 + 2*a^2
*b^2 + b^4)*d^4*f^3*x^4 - 24*(a^2*b^2 + b^4)*c*d^2*e^2*f + 24*(a^2*b^2 + b^
4)*c^2*d*e*f^2 - 8*(a^2*b^2 + b^4)*c^3*f^3 + 4*((a^4 + 2*a^2*b^2 + b^4)*d^4
*e*f^2 - 2*(a^2*b^2 + b^4)*d^3*f^3)*x^3 + 6*((a^4 + 2*a^2*b^2 + b^4)*d^4*e^
2*f - 4*(a^2*b^2 + b^4)*d^3*e*f^2)*x^2 + 4*((a^4 + 2*a^2*b^2 + b^4)*d^4*e^3
 - 6*(a^2*b^2 + b^4)*d^3*e^2*f)*x)*cosh(d*x + c)^2 + ((a^4 + 2*a^2*b^2 + b^
4)*d^4*f^3*x^4 - 24*(a^2*b^2 + b^4)*c*d^2*e^2*f + 24*(a^2*b^2 + b^4)*c^2*d*
e*f^2 - 8*(a^2*b^2 + b^4)*c^3*f^3 + 4*((a^4 + 2*a^2*b^2 + b^4)*d^4*e*f^2 -
2*(a^2*b^2 + b^4)*d^3*f^3)*x^3 + 6*((a^4 + 2*a^2*b^2 + b^4)*d^4*e^2*f - 4*(
a^2*b^2 + b^4)*d^3*e*f^2)*x^2 + 4*((a^4 + 2*a^2*b^2 + b^4)*d^4*e^3 - 6*(a^2
*b^2 + b^4)*d^3*e^2*f)*x)*sinh(d*x + c)^2 - 12*(a^3*b*d^2*f^3*x^2 + 2*a^3*b
*d^2*e*f^2*x + a^3*b*d^2*e^2*f + (a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x +
 a^3*b*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^
2*x + a^3*b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d^2*f^3*x^2 + 2
*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2
)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 12*(a^3*b*d^2*f^3*x^2 + 2*a^3*b*d
^2*e*f^2*x + a^3*b*d^2*e^2*f + (a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*x + a
^3*b*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(a^3*b*d^2*f^3*x^2 + 2*a^3*b*d^2*e*f^2*
x + a^3*b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d^2*f^3*x^2 + 2*a
^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*
dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 4*(a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^
2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3 + (a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*
e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*cosh(d*x + c)^2 + 2*(a^3*b*d^3
*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*cosh(d*x
+ c)*sinh(d*x + c) + (a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e
*f^2 - a^3*b*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d
*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 4*(a^3*b*d
^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3 + (a^3*b
*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*cosh(
d*x + c)^2 + 2*(a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 -
 a^3*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d^3*e^3 - 3*a^3*b*c*d^
2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 +
 b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)
/b^2) + 2*a) - 4*(a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e
^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3 + (a^3*b
*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*
e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)^2 + 2*(a^3*b*d^3

*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*
f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (a^3
*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^
2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 +
b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*s
inh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 4*(a^3*b*d^3*f^3*x^3 + 3*a^3*
b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*d
*e*f^2 + a^3*b*c^3*f^3 + (a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3
*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)
*cosh(d*x + c)^2 + 2*(a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d
^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*cos
h(d*x + c)*sinh(d*x + c) + (a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a
^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^
3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*
x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b)
- 24*(a^3*b*f^3*cosh(d*x + c)^2 + 2*a^3*b*f^3*cosh(d*x + c)*sinh(d*x + c) +
a^3*b*f^3*sinh(d*x + c)^2 + a^3*b*f^3)*sqrt((a^2 + b^2)/b^2)*polylog(4, (a
*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2))/b) + 24*(a^3*b*f^3*cosh(d*x + c)^2 + 2*a^3*b*f^3*cosh(d*
x + c)*sinh(d*x + c) + a^3*b*f^3*sinh(d*x + c)^2 + a^3*b*f^3)*sqrt((a^2 + b
^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) +
b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*(a^3*b*d*f^3*x + a^3*b*d*e
*f^2 + (a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cosh(d*x + c)^2 + 2*(a^3*b*d*f^3*x +
a^3*b*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d*f^3*x + a^3*b*d*e*f^
2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*s
inh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b
) - 24*(a^3*b*d*f^3*x + a^3*b*d*e*f^2 + (a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cos
h(d*x + c)^2 + 2*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c
) + (a^3*b*d*f^3*x + a^3*b*d*e*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*
polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 8*((a^3*b + a*b^3)*d^3*f^3*x^3 + 3*(a^
3*b + a*b^3)*d^3*e*f^2*x^2 + 3*(a^3*b + a*b^3)*d^3*e^2*f*x + (a^3*b + a*b^3
)*d^3*e^3)*cosh(d*x + c) + (-24*I*(a^3*b + a*b^3)*d*f^3*x + 24*(a^2*b^2 + b
^4)*d*f^3*x - 24*I*(a^3*b + a*b^3)*d*e*f^2 + 24*(a^2*b^2 + b^4)*d*e*f^2 + (
-24*I*(a^3*b + a*b^3)*d*f^3*x + 24*(a^2*b^2 + b^4)*d*f^3*x - 24*I*(a^3*b +
a*b^3)*d*e*f^2 + 24*(a^2*b^2 + b^4)*d*e*f^2)*cosh(d*x + c)^2 + (-48*I*(a^3*
b + a*b^3)*d*f^3*x + 48*(a^2*b^2 + b^4)*d*f^3*x - 48*I*(a^3*b + a*b^3)*d*e*
f^2 + 48*(a^2*b^2 + b^4)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (-24*I*(a^3
*b + a*b^3)*d*f^3*x + 24*(a^2*b^2 + b^4)*d*f^3*x - 24*I*(a^3*b + a*b^3)*d*e
f^2 + 24(a^2*b^2 + b^4)*d*e*f^2)*sinh(d*x + c)^2)*dilog(I*cosh(d*x + c) +
I*sinh(d*x + c)) + (24*I*(a^3*b + a*b^3)*d*f^3*x + 24*(a^2*b^2 + b^4)*d*f^
3*x + 24*I*(a^3*b + a*b^3)*d*e*f^2 + 24*(a^2*b^2 + b^4)*d*e*f^2 + (24*I*(a^
3*b + a*b^3)*d*f^3*x + 24*(a^2*b^2 + b^4)*d*f^3*x + 24*I*(a^3*b + a*b^3)*d*
e*f^2 + 24*(a^2*b^2 + b^4)*d*e*f^2)*cosh(d*x + c)^2 + (48*I*(a^3*b + a*b^3)
*d*f^3*x + 48*(a^2*b^2 + b^4)*d*f^3*x + 48*I*(a^3*b + a*b^3)*d*e*f^2 + 48*(

a^2*b^2 + b^4)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (24*I*(a^3*b + a*b^3)
*d*f^3*x + 24*(a^2*b^2 + b^4)*d*f^3*x + 24*I*(a^3*b + a*b^3)*d*e*f^2 + 24*(
a^2*b^2 + b^4)*d*e*f^2)*sinh(d*x + c)^2)*dilog(-I*cosh(d*x + c) - I*sinh(d*
x + c)) + (-12*I*(a^3*b + a*b^3)*d^2*e^2*f + 12*(a^2*b^2 + b^4)*d^2*e^2*f +
24*I*(a^3*b + a*b^3)*c*d*e*f^2 - 24*(a^2*b^2 + b^4)*c*d*e*f^2 - 12*I*(a^3*
b + a*b^3)*c^2*f^3 + 12*(a^2*b^2 + b^4)*c^2*f^3 + (-12*I*(a^3*b + a*b^3)*d^
2*e^2*f + 12*(a^2*b^2 + b^4)*d^2*e^2*f + 24*I*(a^3*b + a*b^3)*c*d*e*f^2 - 2
4*(a^2*b^2 + b^4)*c*d*e*f^2 - 12*I*(a^3*b + a*b^3)*c^2*f^3 + 12*(a^2*b^2 +
b^4)*c^2*f^3)*cosh(d*x + c)^2 + (-24*I*(a^3*b + a*b^3)*d^2*e^2*f + 24*(a^2*
b^2 + b^4)*d^2*e^2*f + 48*I*(a^3*b + a*b^3)*c*d*e*f^2 - 48*(a^2*b^2 + b^4)*
c*d*e*f^2 - 24*I*(a^3*b + a*b^3)*c^2*f^3 + 24*(a^2*b^2 + b^4)*c^2*f^3)*cosh
(d*x + c)*sinh(d*x + c) + (-12*I*(a^3*b + a*b^3)*d^2*e^2*f + 12*(a^2*b^2 +
b^4)*d^2*e^2*f + 24*I*(a^3*b + a*b^3)*c*d*e*f^2 - 24*(a^2*b^2 + b^4)*c*d*e*
f^2 - 12*I*(a^3*b + a*b^3)*c^2*f^3 + 12*(a^2*b^2 + b^4)*c^2*f^3)*sinh(d*x +
c)^2)*log(cosh(d*x + c) + sinh(d*x + c) + I) + (12*I*(a^3*b + a*b^3)*d^2*e
^2*f + 12*(a^2*b^2 + b^4)*d^2*e^2*f - 24*I*(a^3*b + a*b^3)*c*d*e*f^2 - 24*(
a^2*b^2 + b^4)*c*d*e*f^2 + 12*I*(a^3*b + a*b^3)*c^2*f^3 + 12*(a^2*b^2 + b^4
)*c^2*f^3 + (12*I*(a^3*b + a*b^3)*d^2*e^2*f + 12*(a^2*b^2 + b^4)*d^2*e^2*f
- 24*I*(a^3*b + a*b^3)*c*d*e*f^2 - 24*(a^2*b^2 + b^4)*c*d*e*f^2 + 12*I*(a^3
*b + a*b^3)*c^2*f^3 + 12*(a^2*b^2 + b^4)*c^2*f^3)*cosh(d*x + c)^2 + (24*I*(
a^3*b + a*b^3)*d^2*e^2*f + 24*(a^2*b^2 + b^4)*d^2*e^2*f - 48*I*(a^3*b + a*b
^3)*c*d*e*f^2 - 48*(a^2*b^2 + b^4)*c*d*e*f^2 + 24*I*(a^3*b + a*b^3)*c^2*f^3
+ 24*(a^2*b^2 + b^4)*c^2*f^3)*cosh(d*x + c)*sinh(d*x + c) + (12*I*(a^3*b +
a*b^3)*d^2*e^2*f + 12*(a^2*b^2 + b^4)*d^2*e^2*f - 24*I*(a^3*b + a*b^3)*c*d
*e*f^2 - 24*(a^2*b^2 + b^4)*c*d*e*f^2 + 12*I*(a^3*b + a*b^3)*c^2*f^3 + 12*(
a^2*b^2 + b^4)*c^2*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c)
- I) + (12*I*(a^3*b + a*b^3)*d^2*f^3*x^2 + 12*(a^2*b^2 + b^4)*d^2*f^3*x^2 +
24*I*(a^3*b + a*b^3)*d^2*e*f^2*x + 24*(a^2*b^2 + b^4)*d^2*e*f^2*x + 24*I*(
a^3*b + a*b^3)*c*d*e*f^2 + 24*(a^2*b^2 + b^4)*c*d*e*f^2 - 12*I*(a^3*b + a*b
^3)*c^2*f^3 - 12*(a^2*b^2 + b^4)*c^2*f^3 + (12*I*(a^3*b + a*b^3)*d^2*f^3*x^
2 + 12*(a^2*b^2 + b^4)*d^2*f^3*x^2 + 24*I*(a^3*b + a*b^3)*d^2*e*f^2*x + 24*
(a^2*b^2 + b^4)*d^2*e*f^2*x + 24*I*(a^3*b + a*b^3)*c*d*e*f^2 + 24*(a^2*b^2
+ b^4)*c*d*e*f^2 - 12*I*(a^3*b + a*b^3)*c^2*f^3 - 12*(a^2*b^2 + b^4)*c^2*f^
3)*cosh(d*x + c)^2 + (24*I*(a^3*b + a*b^3)*d^2*f^3*x^2 + 24*(a^2*b^2 + b^4)
*d^2*f^3*x^2 + 48*I*(a^3*b + a*b^3)*d^2*e*f^2*x + 48*(a^2*b^2 + b^4)*d^2*e*
f^2*x + 48*I*(a^3*b + a*b^3)*c*d*e*f^2 + 48*(a^2*b^2 + b^4)*c*d*e*f^2 - 24*
I*(a^3*b + a*b^3)*c^2*f^3 - 24*(a^2*b^2 + b^4)*c^2*f^3)*cosh(d*x + c)*sinh(
d*x + c) + (12*I*(a^3*b + a*b^3)*d^2*f^3*x^2 + 12*(a^2*b^2 + b^4)*d^2*f^3*x
^2 + 24*I*(a^3*b + a*b^3)*d^2*e*f^2*x + 24*(a^2*b^2 + b^4)*d^2*e*f^2*x + 24
I(a^3*b + a*b^3)*c*d*e*f^2 + 24*(a^2*b^2 + b^4)*c*d*e*f^2 - 12*I*(a^3*b +
a*b^3)*c^2*f^3 - 12*(a^2*b^2 + b^4)*c^2*f^3)*sinh(d*x + c)^2)*log(I*cosh(d
*x + c) + I*sinh(d*x + c) + 1) + (-12*I*(a^3*b + a*b^3)*d^2*f^3*x^2 + 12*(a
^2*b^2 + b^4)*d^2*f^3*x^2 - 24*I*(a^3*b + a*b^3)*d^2*e*f^2*x + 24*(a^2*b^2
+ b^4)*d^2*e*f^2*x - 24*I*(a^3*b + a*b^3)*c*d*e*f^2 + 24*(a^2*b^2 + b^4)*c*
d*e*f^2 + 12*I*(a^3*b + a*b^3)*c^2*f^3 - 12*(a^2*b^2 + b^4)*c^2*f^3 + (-12*

```
I*(a^3*b + a*b^3)*d^2*f^3*x^2 + 12*(a^2*b^2 + b^4)*d^2*f^3*x^2 - 24*I*(a^3*
b + a*b^3)*d^2*e*f^2*x + 24*(a^2*b^2 + b^4)*d^2*e*f^2*x - 24*I*(a^3*b + a*b
^3)*c*d*e*f^2 + 24*(a^2*b^2 + b^4)*c*d*e*f^2 + 12*I*(a^3*b + a*b^3)*c^2*f^3
 - 12*(a^2*b^2 + b^4)*c^2*f^3)*cosh(d*x + c)^2 + (-24*I*(a^3*b + a*b^3)*d^2
*f^3*x^2 + 24*(a^2*b^2 + b^4)*d^2*f^3*x^2 - 48*I*(a^3*b + a*b^3)*d^2*e*f^2*
x + 48*(a^2*b^2 + b^4)*d^2*e*f^2*x - 48*I*(a^3*b + a*b^3)*c*d*e*f^2 + 48*(a
^2*b^2 + b^4)*c*d*e*f^2 + 24*I*(a^3*b + a*b^3)*c^2*f^3 - 24*(a^2*b^2 + b^4)
*c^2*f^3)*cosh(d*x + c)*sinh(d*x + c) + (-12*I*(a^3*b + a*b^3)*d^2*f^3*x^2
+ 12*(a^2*b^2 + b^4)*d^2*f^3*x^2 - 24*I*(a^3*b + a*b^3)*d^2*e*f^2*x + 24*(a
^2*b^2 + b^4)*d^2*e*f^2*x - 24*I*(a^3*b + a*b^3)*c*d*e*f^2 + 24*(a^2*b^2 +
b^4)*c*d*e*f^2 + 12*I*(a^3*b + a*b^3)*c^2*f^3 - 12*(a^2*b^2 + b^4)*c^2*f^3)
*sinh(d*x + c)^2)*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) + (24*I*(a^3*
b + a*b^3)*f^3 - 24*(a^2*b^2 + b^4)*f^3 + (24*I*(a^3*b + a*b^3)*f^3 - 24*(a
^2*b^2 + b^4)*f^3)*cosh(d*x + c)^2 + (48*I*(a^3*b + a*b^3)*f^3 - 48*(a^2*b^
2 + b^4)*f^3)*cosh(d*x + c)*sinh(d*x + c) + (24*I*(a^3*b + a*b^3)*f^3 - 24*
(a^2*b^2 + b^4)*f^3)*sinh(d*x + c)^2)*polylog(3, I*cosh(d*x + c) + I*sinh(d
*x + c)) + (-24*I*(a^3*b + a*b^3)*f^3 - 24*(a^2*b^2 + b^4)*f^3 + (-24*I*(a^
3*b + a*b^3)*f^3 - 24*(a^2*b^2 + b^4)*f^3)*cosh(d*x + c)^2 + (-48*I*(a^3*b
+ a*b^3)*f^3 - 48*(a^2*b^2 + b^4)*f^3)*cosh(d*x + c)*sinh(d*x + c) + (-24*I
*(a^3*b + a*b^3)*f^3 - 24*(a^2*b^2 + b^4)*f^3)*sinh(d*x + c)^2)*polylog(3,
-I*cosh(d*x + c) - I*sinh(d*x + c)) + 2*(4*(a^3*b + a*b^3)*d^3*f^3*x^3 + 12
*(a^3*b + a*b^3)*d^3*e*f^2*x^2 + 12*(a^3*b + a*b^3)*d^3*e^2*f*x + 4*(a^3*b
+ a*b^3)*d^3*e^3 + ((a^4 + 2*a^2*b^2 + b^4)*d^4*f^3*x^4 - 24*(a^2*b^2 + b^4
)*c*d^2*e^2*f + 24*(a^2*b^2 + b^4)*c^2*d*e*f^2 - 8*(a^2*b^2 + b^4)*c^3*f^3
+ 4*((a^4 + 2*a^2*b^2 + b^4)*d^4*e*f^2 - 2*(a^2*b^2 + b^4)*d^3*f^3)*x^3 + 6
*((a^4 + 2*a^2*b^2 + b^4)*d^4*e^2*f - 4*(a^2*b^2 + b^4)*d^3*e*f^2)*x^2 + 4*
((a^4 + 2*a^2*b^2 + b^4)*d^4*e^3 - 6*(a^2*b^2 + b^4)*d^3*e^2*f)*x)*cosh(d*x
 + c))*sinh(d*x + c))/((a^4*b + 2*a^2*b^3 + b^5)*d^4*cosh(d*x + c)^2 + 2*(a
^4*b + 2*a^2*b^3 + b^5)*d^4*cosh(d*x + c)*sinh(d*x + c) + (a^4*b + 2*a^2*b^
3 + b^5)*d^4*sinh(d*x + c)^2 + (a^4*b + 2*a^2*b^3 + b^5)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.38, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \sinh\left(dx+c\right) \left(\tanh^{2}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f*x+e)^3*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)

[Out] int((f*x+e)^3*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-3\,be^{2}f\left(\frac{2\,(dx+c)}{\left(a^{2}+b^{2}\right)d^{2}}-\frac{\log\left(e^{(2\,dx+2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d^{2}}\right)-6\,af^{3}\int\frac{x^{2}e^{(dx+c)}}{a^{2}de^{(2\,dx+2\,c)}+b^{2}de^{(2\,dx+2\,c)}+a^{2}d+b^{2}d}\,dx-6\,bf^{3}\int\frac{}{a^{2}de^{(2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^3*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")

[Out] -3*b*e^2*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2 + b^2)*d^2)) - 6*a*f^3*integrate(x^2*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 6*b*f^3*integrate(x^2/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 12*a*e*f^2*integrate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 12*b*e*f^2*integrate(x/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - (a^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^2*b + b^3)*sqrt(a^2 + b^2)*d) - 2*(a*e^(-d*x - c) - b)/((a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d) - (d*x + c)/(b*d))*e^3 - 6*a*e^2*f*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) + 1/4*(24*b^2*e^2*f*x + (a^2*d*f^3 + b^2*d*f^3)*x^4 + 4*(a^2*d*e*f^2 + (d*e*f^2 + 2*f^3)*b^2)*x^3 + 6*(a^2*d*e^2*f + (d*e^2*f + 4*e*f^2)*b^2)*x^2 + ((a^2*d*f^3*e^(2*c) + b^2*d*f^3*e^(2*c))*x^4 + 4*(a^2*d*e*f^2*e^(2*c) + b^2*d*e*f^2*e^(2*c))*x^3 + 6*(a^2*d*e^2*f*e^(2*c) + b^2*d*e^2*f*e^(2*c))*x^2)*e^(2*d*x) + 8*(a*b*f^3*x^3*e^c + 3*a*b*e*f^2*x^2*e^c + 3*a*b*e^2*f*x*e^c)*e^(d*x))/(a^2*b*d + b^3*d + (a^2*b*d*e^(2*c) + b^3*d*e^(2*c))*e^(2*d*x)) - integrate(-2*(a^3*f^3*x^3*e^c + 3*a^3*e*f^2*x^2*e^c + 3*a^3*e^2*f*x*e^c)*e^(d*x)/(a^2*b^2 + b^4 - (a^2*b^2*e^(2*c) + b^4*e^(2*c))*e^(2*d*x) - 2*(a^3*b*e^c + a*b^3*e^c)*e^(d*x)), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\sinh\left(c+d\,x\right)\,{\mathrm{tanh}\left(c+d\,x\right)}^2\,{\left(e+f\,x\right)}^3}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((sinh(c + d*x)*tanh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)

```
[Out] int((sinh(c + d*x)*tanh(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{3}\sinh\left(c+dx\right)\tanh^{2}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sinh(d*x+c)*tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*sinh(c + d*x)*tanh(c + d*x)**2/(a + b*sinh(c + d*x)),
 x)
```

3.412 $\int \frac{(e+fx)^2 \sinh(c+dx) \tanh^2(c+dx)}{a+b \sinh(c+dx)} \, dx$

Optimal. Leaf size=904

$$-\frac{(e+fx)^2a^4}{b^3\left(a^2+b^2\right)d}+\frac{2f(e+fx)\log\left(1+e^{2(c+dx)}\right)a^4}{b^3\left(a^2+b^2\right)d^2}+\frac{f^2\text{Li}_2\left(-e^{2(c+dx)}\right)a^4}{b^3\left(a^2+b^2\right)d^3}-\frac{(e+fx)^2\tanh(c+dx)a^4}{b^3\left(a^2+b^2\right)d}+\frac{4f(e+fx)\,\text{ta}}{b^2\left(a^2+\right.}$$

```
[Out] -2*a^2*f*(f*x+e)*ln(1+exp(2*d*x+2*c))/b^3/d^2-a^3*(f*x+e)^2*ln(1+b*exp(d*x+
c)/(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d+a^3*(f*x+e)^2*ln(1+b*exp(d*x+c)
/(a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d+2*a^3*f^2*polylog(3,-b*exp(d*x+c)
/(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^3-2*a^3*f^2*polylog(3,-b*exp(d*x+
c)/(a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^3+4*a^3*f*(f*x+e)*arctan(exp(d*
x+c))/b^2/(a^2+b^2)/d^2+2*I*a*f^2*polylog(2,-I*exp(d*x+c))/b^2/d^3-2*I*a^3*
f^2*polylog(2,-I*exp(d*x+c))/b^2/(a^2+b^2)/d^3-a^4*(f*x+e)^2/b^3/(a^2+b^2)/
d-a^2*f^2*polylog(2,-exp(2*d*x+2*c))/b^3/d^3+a*(f*x+e)^2*sech(d*x+c)/b^2/d+
a^2*(f*x+e)^2*tanh(d*x+c)/b^3/d-4*a*f*(f*x+e)*arctan(exp(d*x+c))/b^2/d^2+a^
4*f^2*polylog(2,-exp(2*d*x+2*c))/b^3/(a^2+b^2)/d^3-a^3*(f*x+e)^2*sech(d*x+c
)/b^2/(a^2+b^2)/d-a^4*(f*x+e)^2*tanh(d*x+c)/b^3/(a^2+b^2)/d-2*I*a*f^2*polyl
og(2,I*exp(d*x+c))/b^2/d^3+2*I*a^3*f^2*polylog(2,I*exp(d*x+c))/b^2/(a^2+b^2
)/d^3+a^2*(f*x+e)^2/b^3/d+f^2*polylog(2,-exp(2*d*x+2*c))/b/d^3-(f*x+e)^2*ta
nh(d*x+c)/b/d-(f*x+e)^2/b/d+1/3*(f*x+e)^3/b/f+2*a^4*f*(f*x+e)*ln(1+exp(2*d*
x+2*c))/b^3/(a^2+b^2)/d^2-2*a^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b
^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^2+2*a^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(
a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^2+2*f*(f*x+e)*ln(1+exp(2*d*x+2*c))/
b/d^2
```

Rubi [A] time = 1.82, antiderivative size = 904, normalized size of antiderivative = 1.00, number of steps used = 44, number of rules used = 19, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.559, Rules used = {5581, 3720, 3718, 2190, 2279, 2391, 32, 5567, 5451, 4180, 5583, 4184, 5573, 3322, 2264, 2531, 2282, 6589, 6742}

$$-\frac{(e+fx)^2a^4}{b^3\left(a^2+b^2\right)d}+\frac{2f(e+fx)\log\left(1+e^{2(c+dx)}\right)a^4}{b^3\left(a^2+b^2\right)d^2}+\frac{f^2\text{PolyLog}\left(2,-e^{2(c+dx)}\right)a^4}{b^3\left(a^2+b^2\right)d^3}-\frac{(e+fx)^2\tanh(c+dx)a^4}{b^3\left(a^2+b^2\right)d}+\frac{4f(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sinh[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*(e + f*x)^2)/(b^3*d) - (e + f*x)^2/(b*d) - (a^4*(e + f*x)^2)/(b^3*(a^2
 + b^2)*d) + (e + f*x)^3/(3*b*f) - (4*a*f*(e + f*x)*ArcTan[E^(c + d*x)])/(b
^2*d^2) + (4*a^3*f*(e + f*x)*ArcTan[E^(c + d*x)])/(b^2*(a^2 + b^2)*d^2) - (
```

```
a^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*(a^2 + b
^2)^(3/2)*d) + (a^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
])])/(b*(a^2 + b^2)^(3/2)*d) - (2*a^2*f*(e + f*x)*Log[1 + E^(2*(c + d*x))])
/(b^3*d^2) + (2*f*(e + f*x)*Log[1 + E^(2*(c + d*x))])/(b*d^2) + (2*a^4*f*(e
 + f*x)*Log[1 + E^(2*(c + d*x))])/(b^3*(a^2 + b^2)*d^2) + ((2*I)*a*f^2*Poly
Log[2, (-I)*E^(c + d*x)])/(b^2*d^3) - ((2*I)*a^3*f^2*PolyLog[2, (-I)*E^(c +
 d*x)])/(b^2*(a^2 + b^2)*d^3) - ((2*I)*a*f^2*PolyLog[2, I*E^(c + d*x)])/(b^
2*d^3) + ((2*I)*a^3*f^2*PolyLog[2, I*E^(c + d*x)])/(b^2*(a^2 + b^2)*d^3) -
(2*a^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b
*(a^2 + b^2)^(3/2)*d^2) + (2*a^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^2) - (a^2*f^2*PolyLog[2, -E^
(2*(c + d*x))])/(b^3*d^3) + (f^2*PolyLog[2, -E^(2*(c + d*x))])/(b*d^3) + (a
^4*f^2*PolyLog[2, -E^(2*(c + d*x))])/(b^3*(a^2 + b^2)*d^3) + (2*a^3*f^2*Pol
yLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^3
) - (2*a^3*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^
2 + b^2)^(3/2)*d^3) + (a*(e + f*x)^2*Sech[c + d*x])/(b^2*d) - (a^3*(e + f*x
)^2*Sech[c + d*x])/(b^2*(a^2 + b^2)*d) + (a^2*(e + f*x)^2*Tanh[c + d*x])/(b
^3*d) - ((e + f*x)^2*Tanh[c + d*x])/(b*d) - (a^4*(e + f*x)^2*Tanh[c + d*x])
/(b^3*(a^2 + b^2)*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5581

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n, x], x] - Di
st[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n)/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
```

```
 0] && IGtQ[p, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\sinh(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\tanh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^2\tanh(c+dx)}{bd} - \frac{a\int (e+fx)^2\mathrm{sech}(c+dx)\tanh(c+dx)\,d}{b^2}$$

$$= -\frac{(e+fx)^2}{bd} + \frac{(e+fx)^3}{3bf} + \frac{a(e+fx)^2\mathrm{sech}(c+dx)}{b^2d} - \frac{(e+fx)^2\tanh}{bd}$$

$$= -\frac{(e+fx)^2}{bd} + \frac{(e+fx)^3}{3bf} - \frac{4af(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d^2} + \frac{2f(e+fx)\,\mathrm{l}}{}$$

$$= \frac{a^2(e+fx)^2}{b^3d} - \frac{(e+fx)^2}{bd} + \frac{(e+fx)^3}{3bf} - \frac{4af(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d^2} +$$

$$= \frac{a^2(e+fx)^2}{b^3d} - \frac{(e+fx)^2}{bd} + \frac{(e+fx)^3}{3bf} - \frac{4af(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d^2} -$$

$$= \frac{a^2(e+fx)^2}{b^3d} - \frac{(e+fx)^2}{bd} + \frac{(e+fx)^3}{3bf} - \frac{4af(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^2d^2} -$$

$$= \frac{a^2(e+fx)^2}{b^3d} - \frac{(e+fx)^2}{bd} - \frac{a^4(e+fx)^2}{b^3\left(a^2+b^2\right)d} + \frac{(e+fx)^3}{3bf} - \frac{4af(e+fx}{b}$$

$$= \frac{a^2(e+fx)^2}{b^3d} - \frac{(e+fx)^2}{bd} - \frac{a^4(e+fx)^2}{b^3\left(a^2+b^2\right)d} + \frac{(e+fx)^3}{3bf} - \frac{4af(e+fx}{b}$$

$$= \frac{a^2(e+fx)^2}{b^3d} - \frac{(e+fx)^2}{bd} - \frac{a^4(e+fx)^2}{b^3\left(a^2+b^2\right)d} + \frac{(e+fx)^3}{3bf} - \frac{4af(e+fx}{b}$$

$$= \frac{a^2(e+fx)^2}{b^3d} - \frac{(e+fx)^2}{bd} - \frac{a^4(e+fx)^2}{b^3\left(a^2+b^2\right)d} + \frac{(e+fx)^3}{3bf} - \frac{4af(e+fx}{b}$$

Mathematica [A] time = 8.40, size = 935, normalized size = 1.03

$$\frac{\left(2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^2-f^2x^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^2-2efx\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^2+f^2x^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)d}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sinh[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (x*(3*e^2 + 3*e*f*x + f^2*x^2))/(3*b) + (a^3*(2*d^2*e^2*ArcTanh[(a + b*E^(c
 + d*x))/Sqrt[a^2 + b^2]] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a
^2 + b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] +
2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Lo
g[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 2*d*f*(e + f*x)*PolyLog[2, (
b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*d*f*(e + f*x)*PolyLog[2, -((b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 2*f^2*PolyLog[3, (b*E^(c + d*x))/(-a +
 Sqrt[a^2 + b^2])] - 2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
]))]))/(b*(a^2 + b^2)^(3/2)*d^3) + (2*b*e*f*Sech[c]*(Cosh[c]*Log[Cosh[c]*Co
sh[d*x] + Sinh[c]*Sinh[d*x]] - d*x*Sinh[c]))/((a^2 + b^2)*d^2*(Cosh[c]^2 -
Sinh[c]^2)) - (4*a*e*f*ArcTan[(Sinh[c] + Cosh[c]*Tanh[(d*x)/2])/Sqrt[Cosh[c
]^2 - Sinh[c]^2]])/((a^2 + b^2)*d^2*Sqrt[Cosh[c]^2 - Sinh[c]^2]) + (b*f^2*C
sch[c]*((d^2*x^2)/E^ArcTanh[Coth[c]] - (I*Coth[c]*(-(d*x*(-Pi + (2*I)*ArcTa
nh[Coth[c]])) - Pi*Log[1 + E^(2*d*x)] - 2*(I*d*x + I*ArcTanh[Coth[c]])*Log[
1 - E^((2*I)*(I*d*x + I*ArcTanh[Coth[c]]))] + Pi*Log[Cosh[d*x]] + (2*I)*Arc
Tanh[Coth[c]]*Log[I*Sinh[d*x + ArcTanh[Coth[c]]]] + I*PolyLog[2, E^((2*I)*(
I*d*x + I*ArcTanh[Coth[c]]))]))/Sqrt[1 - Coth[c]^2])*Sech[c])/((a^2 + b^2)*
d^3*Sqrt[Csch[c]^2*(-Cosh[c]^2 + Sinh[c]^2)]) - (2*a*f^2*(((-I)*Csch[c]*(I*
(d*x + ArcTanh[Coth[c]])*(Log[1 - E^(-(d*x) - ArcTanh[Coth[c]])] - Log[1 +
E^(-(d*x) - ArcTanh[Coth[c]])]) + I*(PolyLog[2, -E^(-(d*x) - ArcTanh[Coth[c
]])] - PolyLog[2, E^(-(d*x) - ArcTanh[Coth[c]])])))/Sqrt[1 - Coth[c]^2] - (
2*ArcTan[(Sinh[c] + Cosh[c]*Tanh[(d*x)/2])/Sqrt[Cosh[c]^2 - Sinh[c]^2]]*Arc
Tanh[Coth[c]])/Sqrt[Cosh[c]^2 - Sinh[c]^2]))/((a^2 + b^2)*d^3) + (Sech[c]*S
ech[c + d*x]*(a*e^2*Cosh[c] + 2*a*e*f*x*Cosh[c] + a*f^2*x^2*Cosh[c] - b*e^2
*Sinh[d*x] - 2*b*e*f*x*Sinh[d*x] - b*f^2*x^2*Sinh[d*x]))/((a^2 + b^2)*d)
```

fricas [C] time = 0.66, size = 4195, normalized size = 4.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/6*(2*(a^4 + 2*a^2*b^2 + b^4)*d^3*f^2*x^3 + 6*(a^4 + 2*a^2*b^2 + b^4)*d^3*
e*f*x^2 + 6*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*x + 12*(a^2*b^2 + b^4)*d^2*e^2
- 24*(a^2*b^2 + b^4)*c*d*e*f + 12*(a^2*b^2 + b^4)*c^2*f^2 + 2*((a^4 + 2*a^2
*b^2 + b^4)*d^3*f^2*x^3 - 12*(a^2*b^2 + b^4)*c*d*e*f + 6*(a^2*b^2 + b^4)*c^
2*f^2 + 3*((a^4 + 2*a^2*b^2 + b^4)*d^3*e*f - 2*(a^2*b^2 + b^4)*d^2*f^2)*x^2
 + 3*((a^4 + 2*a^2*b^2 + b^4)*d^3*e^2 - 4*(a^2*b^2 + b^4)*d^2*e*f)*x)*cosh(
d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^3*f^2*x^3 - 12*(a^2*b^2 + b^4)*c*
d*e*f + 6*(a^2*b^2 + b^4)*c^2*f^2 + 3*((a^4 + 2*a^2*b^2 + b^4)*d^3*e*f - 2*
(a^2*b^2 + b^4)*d^2*f^2)*x^2 + 3*((a^4 + 2*a^2*b^2 + b^4)*d^3*e^2 - 4*(a^2*
b^2 + b^4)*d^2*e*f)*x)*sinh(d*x + c)^2 - 12*(a^3*b*d*f^2*x + a^3*b*d*e*f +
(a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)^2 + 2*(a^3*b*d*f^2*x + a^3*b*d*
e*f)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d*f^2*x + a^3*b*d*e*f)*sinh(d*x +
 c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 12*(a^
3*b*d*f^2*x + a^3*b*d*e*f + (a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)^2 +
 2*(a^3*b*d*f^2*x + a^3*b*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d*f^2
*x + a^3*b*d*e*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x
+ c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^
2)/b^2) - b)/b + 1) + 6*(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2 +
(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^3*
b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) +
(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^
2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b
^2)/b^2) + 2*a) - 6*(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2 + (a^3
*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^3*b*d^
2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^3
*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 +
b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/
b^2) + 2*a) - 6*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f -
a^3*b*c^2*f^2 + (a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f -
a^3*b*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x +
 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d^2*
f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*sinh(d*x + c
)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cos
h(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 6*(a^3*b*d^2*
f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2 + (a^3*b*d^2*
f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*cosh(d*x + c
)^2 + 2*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b*c^
2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x
 + 2*a^3*b*c*d*e*f - a^3*b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*
log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2) - b)/b) + 12*(a^3*b*f^2*cosh(d*x + c)^2 + 2*a^3*b*
```

```
f^2*cosh(d*x + c)*sinh(d*x + c) + a^3*b*f^2*sinh(d*x + c)^2 + a^3*b*f^2)*sq
rt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(a^3*b*f^2*cosh
(d*x + c)^2 + 2*a^3*b*f^2*cosh(d*x + c)*sinh(d*x + c) + a^3*b*f^2*sinh(d*x
+ c)^2 + a^3*b*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*s
inh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b
) + 12*((a^3*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + (a^3*b
+ a*b^3)*d^2*e^2)*cosh(d*x + c) + (-12*I*(a^3*b + a*b^3)*f^2 + 12*(a^2*b^2
+ b^4)*f^2 + (-12*I*(a^3*b + a*b^3)*f^2 + 12*(a^2*b^2 + b^4)*f^2)*cosh(d*x
+ c)^2 + (-24*I*(a^3*b + a*b^3)*f^2 + 24*(a^2*b^2 + b^4)*f^2)*cosh(d*x + c)
*sinh(d*x + c) + (-12*I*(a^3*b + a*b^3)*f^2 + 12*(a^2*b^2 + b^4)*f^2)*sinh(
d*x + c)^2)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + (12*I*(a^3*b + a*b^3
)*f^2 + 12*(a^2*b^2 + b^4)*f^2 + (12*I*(a^3*b + a*b^3)*f^2 + 12*(a^2*b^2 +
b^4)*f^2)*cosh(d*x + c)^2 + (24*I*(a^3*b + a*b^3)*f^2 + 24*(a^2*b^2 + b^4)*
f^2)*cosh(d*x + c)*sinh(d*x + c) + (12*I*(a^3*b + a*b^3)*f^2 + 12*(a^2*b^2
+ b^4)*f^2)*sinh(d*x + c)^2)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + (-
12*I*(a^3*b + a*b^3)*d*e*f + 12*(a^2*b^2 + b^4)*d*e*f + 12*I*(a^3*b + a*b^3
)*c*f^2 - 12*(a^2*b^2 + b^4)*c*f^2 + (-12*I*(a^3*b + a*b^3)*d*e*f + 12*(a^2
*b^2 + b^4)*d*e*f + 12*I*(a^3*b + a*b^3)*c*f^2 - 12*(a^2*b^2 + b^4)*c*f^2)*
cosh(d*x + c)^2 + (-24*I*(a^3*b + a*b^3)*d*e*f + 24*(a^2*b^2 + b^4)*d*e*f +
 24*I*(a^3*b + a*b^3)*c*f^2 - 24*(a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)*sinh(
d*x + c) + (-12*I*(a^3*b + a*b^3)*d*e*f + 12*(a^2*b^2 + b^4)*d*e*f + 12*I*(
a^3*b + a*b^3)*c*f^2 - 12*(a^2*b^2 + b^4)*c*f^2)*sinh(d*x + c)^2)*log(cosh(
d*x + c) + sinh(d*x + c) + I) + (12*I*(a^3*b + a*b^3)*d*e*f + 12*(a^2*b^2 +
 b^4)*d*e*f - 12*I*(a^3*b + a*b^3)*c*f^2 - 12*(a^2*b^2 + b^4)*c*f^2 + (12*I
*(a^3*b + a*b^3)*d*e*f + 12*(a^2*b^2 + b^4)*d*e*f - 12*I*(a^3*b + a*b^3)*c*
f^2 - 12*(a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)^2 + (24*I*(a^3*b + a*b^3)*d*e
*f + 24*(a^2*b^2 + b^4)*d*e*f - 24*I*(a^3*b + a*b^3)*c*f^2 - 24*(a^2*b^2 +
b^4)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (12*I*(a^3*b + a*b^3)*d*e*f + 12*
(a^2*b^2 + b^4)*d*e*f - 12*I*(a^3*b + a*b^3)*c*f^2 - 12*(a^2*b^2 + b^4)*c*f
^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - I) + (12*I*(a^3*b
+ a*b^3)*d*f^2*x + 12*(a^2*b^2 + b^4)*d*f^2*x + 12*I*(a^3*b + a*b^3)*c*f^2
+ 12*(a^2*b^2 + b^4)*c*f^2 + (12*I*(a^3*b + a*b^3)*d*f^2*x + 12*(a^2*b^2 +
b^4)*d*f^2*x + 12*I*(a^3*b + a*b^3)*c*f^2 + 12*(a^2*b^2 + b^4)*c*f^2)*cosh(
d*x + c)^2 + (24*I*(a^3*b + a*b^3)*d*f^2*x + 24*(a^2*b^2 + b^4)*d*f^2*x + 2
4*I*(a^3*b + a*b^3)*c*f^2 + 24*(a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)*sinh(d*
x + c) + (12*I*(a^3*b + a*b^3)*d*f^2*x + 12*(a^2*b^2 + b^4)*d*f^2*x + 12*I*
(a^3*b + a*b^3)*c*f^2 + 12*(a^2*b^2 + b^4)*c*f^2)*sinh(d*x + c)^2)*log(I*co
sh(d*x + c) + I*sinh(d*x + c) + 1) + (-12*I*(a^3*b + a*b^3)*d*f^2*x + 12*(a
^2*b^2 + b^4)*d*f^2*x - 12*I*(a^3*b + a*b^3)*c*f^2 + 12*(a^2*b^2 + b^4)*c*f
^2 + (-12*I*(a^3*b + a*b^3)*d*f^2*x + 12*(a^2*b^2 + b^4)*d*f^2*x - 12*I*(a^
3*b + a*b^3)*c*f^2 + 12*(a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)^2 + (-24*I*(a^
3*b + a*b^3)*d*f^2*x + 24*(a^2*b^2 + b^4)*d*f^2*x - 24*I*(a^3*b + a*b^3)*c*
f^2 + 24*(a^2*b^2 + b^4)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (-12*I*(a^3*b
 + a*b^3)*d*f^2*x + 12*(a^2*b^2 + b^4)*d*f^2*x - 12*I*(a^3*b + a*b^3)*c*f^2
```

```
 + 12*(a^2*b^2 + b^4)*c*f^2)*sinh(d*x + c)^2)*log(-I*cosh(d*x + c) - I*sinh
(d*x + c) + 1) + 4*(3*(a^3*b + a*b^3)*d^2*f^2*x^2 + 6*(a^3*b + a*b^3)*d^2*e
*f*x + 3*(a^3*b + a*b^3)*d^2*e^2 + ((a^4 + 2*a^2*b^2 + b^4)*d^3*f^2*x^3 - 1
2*(a^2*b^2 + b^4)*c*d*e*f + 6*(a^2*b^2 + b^4)*c^2*f^2 + 3*((a^4 + 2*a^2*b^2
 + b^4)*d^3*e*f - 2*(a^2*b^2 + b^4)*d^2*f^2)*x^2 + 3*((a^4 + 2*a^2*b^2 + b^
4)*d^3*e^2 - 4*(a^2*b^2 + b^4)*d^2*e*f)*x)*cosh(d*x + c))*sinh(d*x + c))/((
a^4*b + 2*a^2*b^3 + b^5)*d^3*cosh(d*x + c)^2 + 2*(a^4*b + 2*a^2*b^3 + b^5)*
d^3*cosh(d*x + c)*sinh(d*x + c) + (a^4*b + 2*a^2*b^3 + b^5)*d^3*sinh(d*x +
c)^2 + (a^4*b + 2*a^2*b^3 + b^5)*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.29, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \sinh \left(dx+c\right) \left(\tanh^{2}\left(dx+c\right)\right)}{a+b\sinh \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-2\,bef\left(\frac{2\,(dx+c)}{\left(a^{2}+b^{2}\right)d^{2}}-\frac{\log\left(e^{(2\,dx+2\,c)}+1\right)}{\left(a^{2}+b^{2}\right)d^{2}}\right)-4\,af^{2}\int \frac{xe^{(dx+c)}}{a^{2}de^{(2\,dx+2\,c)}+b^{2}de^{(2\,dx+2\,c)}+a^{2}d+b^{2}d}\,dx-4\,bf^{2}\int \frac{}{a^{2}de^{(2\,dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -2*b*e*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2 +
b^2)*d^2)) - 4*a*f^2*integrate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d
```

```
*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 4*b*f^2*integrate(x/(a^2*d*e^(2*d*x
 + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - (a^3*log((b*e^(-d*x
- c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^2*b
 + b^3)*sqrt(a^2 + b^2)*d) - 2*(a*e^(-d*x - c) - b)/((a^2 + b^2 + (a^2 + b^
2)*e^(-2*d*x - 2*c))*d) - (d*x + c)/(b*d))*e^2 - 4*a*e*f*arctan(e^(d*x + c)
)/((a^2 + b^2)*d^2) + 1/3*(12*b^2*e*f*x + (a^2*d*f^2 + b^2*d*f^2)*x^3 + 3*(
a^2*d*e*f + (d*e*f + 2*f^2)*b^2)*x^2 + ((a^2*d*f^2*e^(2*c) + b^2*d*f^2*e^(2
*c))*x^3 + 3*(a^2*d*e*f*e^(2*c) + b^2*d*e*f*e^(2*c))*x^2)*e^(2*d*x) + 6*(a*
b*f^2*x^2*e^c + 2*a*b*e*f*x*e^c)*e^(d*x))/(a^2*b*d + b^3*d + (a^2*b*d*e^(2*
c) + b^3*d*e^(2*c))*e^(2*d*x)) - integrate(-2*(a^3*f^2*x^2*e^c + 2*a^3*e*f*
x*e^c)*e^(d*x)/(a^2*b^2 + b^4 - (a^2*b^2*e^(2*c) + b^4*e^(2*c))*e^(2*d*x) -
 2*(a^3*b*e^c + a*b^3*e^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh(c+d\,x)\,\tanh(c+d\,x)^2\,\left(e+f\,x\right)^2}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*tanh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((sinh(c + d*x)*tanh(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2\sinh(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sinh(d*x+c)*tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*sinh(c + d*x)*tanh(c + d*x)**2/(a + b*sinh(c + d*x)),
 x)
```

3.413 $\int \frac{(e+fx)\sinh(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=454

$$-\frac{a^2 f\log(\cosh(c+dx))}{b^3d^2}+\frac{a^2(e+fx)\tanh(c+dx)}{b^3d}+\frac{a^4 f\log(\cosh(c+dx))}{b^3d^2\left(a^2+b^2\right)}-\frac{a^4(e+fx)\tanh(c+dx)}{b^3d\left(a^2+b^2\right)}-\frac{a^3 f\mathrm{Li}_2\left(-\frac{\ }{a-}\right.}{bd^2\left(a^2+\right.}$$

[Out] e*x/b+1/2*f*x^2/b-a*f*arctan(sinh(d*x+c))/b^2/d^2+a^3*f*arctan(sinh(d*x+c))/b^2/(a^2+b^2)/d^2-a^2*f*ln(cosh(d*x+c))/b^3/d^2+f*ln(cosh(d*x+c))/b/d^2+a^4*f*ln(cosh(d*x+c))/b^3/(a^2+b^2)/d^2-a^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d+a^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d-a^3*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^2+a^3*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/b/(a^2+b^2)^(3/2)/d^2+a*(f*x+e)*sech(d*x+c)/b^2/d-a^3*(f*x+e)*sech(d*x+c)/b^2/(a^2+b^2)/d+a^2*(f*x+e)*tanh(d*x+c)/b^3/d-(f*x+e)*tanh(d*x+c)/b/d-a^4*(f*x+e)*tanh(d*x+c)/b^3/(a^2+b^2)/d

Rubi [A] time = 0.89, antiderivative size = 454, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {5581, 3720, 3475, 5567, 5451, 3770, 5583, 4184, 5573, 3322, 2264, 2190, 2279, 2391, 6742}

$$-\frac{a^3 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{bd^2\left(a^2+b^2\right)^{3/2}}+\frac{a^3 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{bd^2\left(a^2+b^2\right)^{3/2}}+\frac{a^3 f\tan^{-1}(\sinh(c+dx))}{b^2d^2\left(a^2+b^2\right)}+\frac{a^4 f\log(\cosh(c+dx))}{b^3d^2\left(a^2+b^2\right)}-\cdots$$

Antiderivative was successfully verified.

[In] Int[((e + f*x)*Sinh[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]

[Out] (e*x)/b + (f*x^2)/(2*b) - (a*f*ArcTan[Sinh[c + d*x]])/(b^2*d^2) + (a^3*f*ArcTan[Sinh[c + d*x]])/(b^2*(a^2 + b^2)*d^2) - (a^3*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(b*(a^2 + b^2)^(3/2)*d) + (a^3*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(b*(a^2 + b^2)^(3/2)*d) - (a^2*f*Log[Cosh[c + d*x]])/(b^3*d^2) + (f*Log[Cosh[c + d*x]])/(b*d^2) + (a^4*f*Log[Cosh[c + d*x]])/(b^3*(a^2 + b^2)*d^2) - (a^3*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^2) + (a^3*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(b*(a^2 + b^2)^(3/2)*d^2) + (a*(e + f*x)*Sech[c + d*x])/(b^2*d) - (a^3*(e + f*x)*Sech[c + d*x])/(b^2*(a^2 + b^2)*d) + (a^2*(e + f*x)*Tanh[c + d*x])/(b^3*d) - ((e + f*x)*Tanh[c + d*x])/(b*d) - (a^4*(e + f*x)*Tanh[c + d*x])/(b^3*(a^2 + b^2)*d)

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5581

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sinh[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n, x], x] - Di
st[a/b, Int[((e + f*x)^m*Sinh[c + d*x]^(p - 1)*Tanh[c + d*x]^n)/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\sinh(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\tanh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)\tanh(c+dx)}{bd} - \frac{a\int (e+fx)\text{sech}(c+dx)\tanh(c+dx)\,dx}{b^2}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} + \frac{f\log(\cosh(c+dx))}{bd^2} + \frac{a(e+fx)\text{sech}(c+dx)}{b^2d} - \frac{(e+fx}{}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{af\tan^{-1}(\sinh(c+dx))}{b^2d^2} + \frac{f\log(\cosh(c+dx))}{bd^2} + \frac{a(e+}{}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{af\tan^{-1}(\sinh(c+dx))}{b^2d^2} - \frac{a^2f\log(\cosh(c+dx))}{b^3d^2} + \frac{f\log}{}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{af\tan^{-1}(\sinh(c+dx))}{b^2d^2} - \frac{a^2f\log(\cosh(c+dx))}{b^3d^2} + \frac{f\log}{}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{af\tan^{-1}(\sinh(c+dx))}{b^2d^2} - \frac{a^3(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{af\tan^{-1}(\sinh(c+dx))}{b^2d^2} + \frac{a^3f\tan^{-1}(\sinh(c+dx))}{b^2\left(a^2+b^2\right)d^2} - \frac{a^3}{}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{af\tan^{-1}(\sinh(c+dx))}{b^2d^2} + \frac{a^3f\tan^{-1}(\sinh(c+dx))}{b^2\left(a^2+b^2\right)d^2} - \frac{a^3}{}$$

Mathematica [A] time = 3.90, size = 317, normalized size = 0.70

$$\frac{\frac{2d(e+fx)\text{sech}(c+dx)(a-b\sinh(c+dx))}{a^2+b^2} - \frac{4af\tan^{-1}\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)}{a^2+b^2} + \frac{2bf\log(\cosh(c+dx))}{a^2+b^2} + \frac{2a^3\left(2de\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) - f\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right) + f\text{Li}_2(}{}}{2d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sinh[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (-(((c + d*x)*(c*f - d*(2*e + f*x)))/b) - (4*a*f*ArcTan[Tanh[(c + d*x)/2]])
/(a^2 + b^2) + (2*b*f*Log[Cosh[c + d*x]])/(a^2 + b^2) + (2*a^3*(2*d*e*ArcTa
nh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 2*c*f*ArcTanh[(a + b*E^(c + d*x))
/Sqrt[a^2 + b^2]] - f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - f*PolyLo
g[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2]))]))/(b*(a^2 + b^2)^(3/2)) + (2*d*(e + f*x)*Sech[c
+ d*x]*(a - b*Sinh[c + d*x]))/(a^2 + b^2))/(2*d^2)
```

fricas [B] time = 0.49, size = 1571, normalized size = 3.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] 1/2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*x
+ 4*(a^2*b^2 + b^4)*d*e + ((a^4 + 2*a^2*b^2 + b^4)*d^2*f*x^2 + 2*((a^4 + 2*
a^2*b^2 + b^4)*d^2*e - 2*(a^2*b^2 + b^4)*d*f)*x)*cosh(d*x + c)^2 + ((a^4 +
2*a^2*b^2 + b^4)*d^2*f*x^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*e - 2*(a^2*b^2
+ b^4)*d*f)*x)*sinh(d*x + c)^2 - 2*(a^3*b*f*cosh(d*x + c)^2 + 2*a^3*b*f*cos
h(d*x + c)*sinh(d*x + c) + a^3*b*f*sinh(d*x + c)^2 + a^3*b*f)*sqrt((a^2 + b
^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*si
nh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(a^3*b*f*cosh(d*x + c)^2
 + 2*a^3*b*f*cosh(d*x + c)*sinh(d*x + c) + a^3*b*f*sinh(d*x + c)^2 + a^3*b*
f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(a^3*b*d
*e - a^3*b*c*f + (a^3*b*d*e - a^3*b*c*f)*cosh(d*x + c)^2 + 2*(a^3*b*d*e - a
^3*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d*e - a^3*b*c*f)*sinh(d*x +
c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b
*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(a^3*b*d*e - a^3*b*c*f + (a^3*b*d*e - a^3
*b*c*f)*cosh(d*x + c)^2 + 2*(a^3*b*d*e - a^3*b*c*f)*cosh(d*x + c)*sinh(d*x
+ c) + (a^3*b*d*e - a^3*b*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2
*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2
*(a^3*b*d*f*x + a^3*b*c*f + (a^3*b*d*f*x + a^3*b*c*f)*cosh(d*x + c)^2 + 2*(
a^3*b*d*f*x + a^3*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d*f*x + a^3*b
*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh
(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/
b) + 2*(a^3*b*d*f*x + a^3*b*c*f + (a^3*b*d*f*x + a^3*b*c*f)*cosh(d*x + c)^2
 + 2*(a^3*b*d*f*x + a^3*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (a^3*b*d*f*x +
 a^3*b*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) +
a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
 - b)/b) - 4*((a^3*b + a*b^3)*f*cosh(d*x + c)^2 + 2*(a^3*b + a*b^3)*f*cosh(
d*x + c)*sinh(d*x + c) + (a^3*b + a*b^3)*f*sinh(d*x + c)^2 + (a^3*b + a*b^3
```

```
)*f)*arctan(cosh(d*x + c) + sinh(d*x + c)) + 4*((a^3*b + a*b^3)*d*f*x + (a^
3*b + a*b^3)*d*e)*cosh(d*x + c) + 2*((a^2*b^2 + b^4)*f*cosh(d*x + c)^2 + 2*
(a^2*b^2 + b^4)*f*cosh(d*x + c)*sinh(d*x + c) + (a^2*b^2 + b^4)*f*sinh(d*x
+ c)^2 + (a^2*b^2 + b^4)*f)*log(2*cosh(d*x + c)/(cosh(d*x + c) - sinh(d*x +
 c))) + 2*(2*(a^3*b + a*b^3)*d*f*x + 2*(a^3*b + a*b^3)*d*e + ((a^4 + 2*a^2*
b^2 + b^4)*d^2*f*x^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*e - 2*(a^2*b^2 + b^4)
*d*f)*x)*cosh(d*x + c))*sinh(d*x + c))/((a^4*b + 2*a^2*b^3 + b^5)*d^2*cosh(
d*x + c)^2 + 2*(a^4*b + 2*a^2*b^3 + b^5)*d^2*cosh(d*x + c)*sinh(d*x + c) +
(a^4*b + 2*a^2*b^3 + b^5)*d^2*sinh(d*x + c)^2 + (a^4*b + 2*a^2*b^3 + b^5)*d
^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [B] time = 0.32, size = 1897, normalized size = 4.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2*f*x^2/b+e*x/b+2/d/(a^2+b^2)^(3/2)/b*a^5*e/(2*a^2+2*b^2)*arctanh(1/2*(2*
b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d^2/(a^2+b^2)^(3/2)/b*a^5*f/(2*a^2+2*b
^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+2/d^2/(a^
2+b^2)^(3/2)/b*a^5*f/(2*a^2+2*b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(
a+(a^2+b^2)^(1/2)))-2/(a^2+b^2)^(3/2)/d^2*a^3*b*f/(2*a^2+2*b^2)*ln((-b*exp(
d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+2/(a^2+b^2)^(3/2)/d^2*a^3
*b*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))
*c-2/(a^2+b^2)^(3/2)/d*a^3*b*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1
/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+2/(a^2+b^2)^(3/2)/d*a^3*b*f/(2*a^2+2*b^2)*ln
((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/(a^2+b^2)/d^2*f*
b^3/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/(a^2+b^2)/d^2*f*b
^3/(2*a^2+2*b^2)*ln(1+exp(2*d*x+2*c))-4/(a^2+b^2)/d^2*a^3*f/(2*a^2+2*b^2)*a
rctan(exp(d*x+c))+1/(a^2+b^2)^2/d^2*f*b*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-
b)*a^2+2/(a^2+b^2)^(1/2)/d^2*a*b*f/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c
)+2*a)/(a^2+b^2)^(1/2))+2/(a^2+b^2)^(3/2)/d^2*a^3*b*f/(2*a^2+2*b^2)*arctanh
(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/(a^2+b^2)^(3/2)/d^2*a^3*b*f/(2
```

```
*a^2+2*b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-2/(
a^2+b^2)^(3/2)/d^2*a^3*b*f/(2*a^2+2*b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/
2)-a)/(-a+(a^2+b^2)^(1/2)))+2/(a^2+b^2)^(3/2)/d^2*a*b^3*f/(2*a^2+2*b^2)*arc
tanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/(a^2+b^2)/d^2*a^2*b*f/(2*a
^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/(a^2+b^2)/d^2*a^2*b*f/(2*
a^2+2*b^2)*ln(1+exp(2*d*x+2*c))-2/(a^2+b^2)^(5/2)/d^2*f*b*arctanh(1/2*(2*b*
exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^3-2/(a^2+b^2)^(5/2)/d^2*f*b^3*arctanh(1/
2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a-4/(a^2+b^2)/d^2*f*b^2/(2*a^2+2*b^
2)*a*arctan(exp(d*x+c))-2/d^2/(a^2+b^2)^(3/2)/b*a^5*f*c/(2*a^2+2*b^2)*arcta
nh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2*(f*x+e)*(a*exp(d*x+c)+b)/d/(
a^2+b^2)/(1+exp(2*d*x+2*c))-2/(a^2+b^2)/d^2*b*f*ln(exp(d*x+c))+1/2/(a^2+b^2
)^2/d^2*f*b^3*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/b/d^2*a^3*f*c/(2*a^2+
2*b^2)/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/
d/(a^2+b^2)^(3/2)*a^3*b*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a
^2+b^2)^(1/2))-2/d^2/(a^2+b^2)^(3/2)*a^3*b*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2
*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d/(a^2+b^2)^(3/2)/b*a^5*f/(2*a^2+2*b^
2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+2/d/(a^2+b^
2)^(3/2)/b*a^5*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+
b^2)^(1/2)))*x-2/d^2/(a^2+b^2)^(3/2)/b*a^5*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c
)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+2/d^2/(a^2+b^2)^(3/2)/b*a^5*f/
(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/
b/d*a^3*e/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a
^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(\frac{a^3\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\left(a^2b+b^3\right)\sqrt{a^2+b^2}\,d}-\frac{2\left(ae^{(-dx-c)}-b\right)}{\left(a^2+b^2+\left(a^2+b^2\right)e^{(-2\,dx-2\,c)}\right)d}-\frac{dx+c}{bd}\right)e-\frac{1}{2}\left(4\,a^3\int-\frac{}{a^2b^2+b^4-\left(a^2b^2e^{(2\,c)}+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -(a^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt
(a^2 + b^2)))/((a^2*b + b^3)*sqrt(a^2 + b^2)*d) - 2*(a*e^(-d*x - c) - b)/((
a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d) - (d*x + c)/(b*d))*e - 1/2*(4*
a^3*integrate(-x*e^(d*x + c)/(a^2*b^2 + b^4 - (a^2*b^2*e^(2*c) + b^4*e^(2*c
))*e^(2*d*x) - 2*(a^3*b*e^c + a*b^3*e^c)*e^(d*x)), x) - ((a^2*d*e^(2*c) + b
^2*d*e^(2*c))*x^2*e^(2*d*x) + 4*a*b*x*e^(d*x + c) + 4*b^2*x + (a^2*d + b^2*
d)*x^2)/(a^2*b*d + b^3*d + (a^2*b*d*e^(2*c) + b^3*d*e^(2*c))*e^(2*d*x)) + 4
*b*x/((a^2 + b^2)*d) + 4*a*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) - 2*b*log(
e^(2*d*x + 2*c) + 1)/((a^2 + b^2)*d^2))*f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sinh(c+d\,x)\,\tanh(c+d\,x)^2\,\left(e+f\,x\right)}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*tanh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)),x)
[Out] int((sinh(c + d*x)*tanh(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\sinh(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sinh(d*x+c)*tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)*sinh(c + d*x)*tanh(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.414 $\int \frac{\sinh(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=121

$$-\frac{b\tanh(c+dx)}{d\left(a^2+b^2\right)}+\frac{a\operatorname{sech}(c+dx)}{d\left(a^2+b^2\right)}+\frac{a^2x}{b\left(a^2+b^2\right)}+\frac{bx}{a^2+b^2}+\frac{2a^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd\left(a^2+b^2\right)^{3/2}}$$

```
[Out] a^2*x/b/(a^2+b^2)+b*x/(a^2+b^2)+2*a^3*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^
2+b^2)^(1/2))/b/(a^2+b^2)^(3/2)/d+a*sech(d*x+c)/(a^2+b^2)/d-b*tanh(d*x+c)/(
a^2+b^2)/d
```

Rubi [A] time = 0.21, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {2902, 2606, 8, 3473, 2735, 2660, 618, 204}

$$\frac{2a^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{bd\left(a^2+b^2\right)^{3/2}}-\frac{b\tanh(c+dx)}{d\left(a^2+b^2\right)}+\frac{a\operatorname{sech}(c+dx)}{d\left(a^2+b^2\right)}+\frac{a^2x}{b\left(a^2+b^2\right)}+\frac{bx}{a^2+b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Sinh[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*x)/(b*(a^2 + b^2)) + (b*x)/(a^2 + b^2) + (2*a^3*ArcTanh[(b - a*Tanh[(c
 + d*x)/2])/Sqrt[a^2 + b^2]])/(b*(a^2 + b^2)^(3/2)*d) + (a*Sech[c + d*x])/(
(a^2 + b^2)*d) - (b*Tanh[c + d*x])/((a^2 + b^2)*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
```

```
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 &&  !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2902

```
Int[((cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((d_.)*sin[(e_.) + (f_.)*(x_)])^(
n_))/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(a*d^2)/(a^2
 - b^2), Int[(g*Cos[e + f*x])^p*(d*Sin[e + f*x])^(n - 2), x], x] + (-Dist[(
b*d)/(a^2 - b^2), Int[(g*Cos[e + f*x])^p*(d*Sin[e + f*x])^(n - 1), x], x] -
 Dist[(a^2*d^2)/(g^2*(a^2 - b^2)), Int[((g*Cos[e + f*x])^(p + 2)*(d*Sin[e +
 f*x])^(n - 2))/(a + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, d, e, f, g},
x] && NeQ[a^2 - b^2, 0] && IntegersQ[2*n, 2*p] && LtQ[p, -1] && GtQ[n, 1]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rubi steps

$$\int \frac{\sinh(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{a\int \operatorname{sech}(c+dx)\tanh(c+dx)\,dx}{a^2+b^2} + \frac{a^2\int \frac{\sinh(c+dx)}{a+b\sinh(c+dx)}\,dx}{a^2+b^2} + \frac{b\int \tanh^2(c+}{a^2+b^2}$$

$$= \frac{a^2x}{b\left(a^2+b^2\right)} - \frac{b\tanh(c+dx)}{\left(a^2+b^2\right)d} - \frac{a^3\int \frac{1}{a+b\sinh(c+dx)}\,dx}{b\left(a^2+b^2\right)} + \frac{b\int 1\,dx}{a^2+b^2} + \frac{a\,\mathrm{Subst}(}{}$$

$$= \frac{a^2x}{b\left(a^2+b^2\right)} + \frac{bx}{a^2+b^2} + \frac{a\operatorname{sech}(c+dx)}{\left(a^2+b^2\right)d} - \frac{b\tanh(c+dx)}{\left(a^2+b^2\right)d} + \frac{\left(2ia^3\right)\mathrm{Subst}\left(\int\right.}{}$$

$$= \frac{a^2x}{b\left(a^2+b^2\right)} + \frac{bx}{a^2+b^2} + \frac{a\operatorname{sech}(c+dx)}{\left(a^2+b^2\right)d} - \frac{b\tanh(c+dx)}{\left(a^2+b^2\right)d} - \frac{\left(4ia^3\right)\mathrm{Subst}\left(\int\right.}{}$$

$$= \frac{a^2x}{b\left(a^2+b^2\right)} + \frac{bx}{a^2+b^2} + \frac{2a^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{b\left(a^2+b^2\right)^{3/2}d} + \frac{a\operatorname{sech}(c+dx)}{\left(a^2+b^2\right)d} - \frac{b}{}$$

Mathematica [A] time = 0.46, size = 96, normalized size = 0.79

$$\frac{\frac{\operatorname{sech}(c+dx)(a-b\sinh(c+dx))}{a^2+b^2} + \frac{2a^3\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{b\left(-a^2-b^2\right)^{3/2}} + \frac{c+dx}{b}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sinh[c + d*x]*Tanh[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((c + d*x)/b + (2*a^3*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/(
b*(-a^2 - b^2)^(3/2)) + (Sech[c + d*x]*(a - b*Sinh[c + d*x]))/(a^2 + b^2))/
d
```

fricas [B] time = 0.44, size = 459, normalized size = 3.79

$$\frac{\left(a^4+2a^2b^2+b^4\right)dx\cosh(dx+c)^2 + \left(a^4+2a^2b^2+b^4\right)dx\sinh(dx+c)^2 + 2a^2b^2 + 2b^4 + \left(a^4+2a^2b^2+b^4\right)dx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] ((a^4 + 2*a^2*b^2 + b^4)*d*x*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d*x*
sinh(d*x + c)^2 + 2*a^2*b^2 + 2*b^4 + (a^4 + 2*a^2*b^2 + b^4)*d*x + (a^3*co
sh(d*x + c)^2 + 2*a^3*cosh(d*x + c)*sinh(d*x + c) + a^3*sinh(d*x + c)^2 + a
^3)*sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*
cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x + c) + 2
*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^
2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*
x + c) - b)) + 2*(a^3*b + a*b^3)*cosh(d*x + c) + 2*(a^3*b + a*b^3 + (a^4 +
2*a^2*b^2 + b^4)*d*x*cosh(d*x + c))*sinh(d*x + c))/((a^4*b + 2*a^2*b^3 + b^
5)*d*cosh(d*x + c)^2 + 2*(a^4*b + 2*a^2*b^3 + b^5)*d*cosh(d*x + c)*sinh(d*x
 + c) + (a^4*b + 2*a^2*b^3 + b^5)*d*sinh(d*x + c)^2 + (a^4*b + 2*a^2*b^3 +
b^5)*d)
```

giac [A] time = 2.25, size = 135, normalized size = 1.12

$$\frac{\frac{a^3\log\left(\frac{\left|-2\,be^{(dx+2\,c)}-2\,ae^{c}-2\,\sqrt{a^2+b^2}\,e^{c}\right|}{\left|-2\,be^{(dx+2\,c)}-2\,ae^{c}+2\,\sqrt{a^2+b^2}\,e^{c}\right|}\right)}{\left(a^2b+b^3\right)\sqrt{a^2+b^2}}+\frac{dx}{b}+\frac{2\left(ae^{(dx+c)}+b\right)}{\left(a^2+b^2\right)\left(e^{(2\,dx+2\,c)}+1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (a^3*log(abs(-2*b*e^(d*x + 2*c) - 2*a*e^c - 2*sqrt(a^2 + b^2)*e^c)/abs(-2*b
*e^(d*x + 2*c) - 2*a*e^c + 2*sqrt(a^2 + b^2)*e^c))/((a^2*b + b^3)*sqrt(a^2
+ b^2)) + d*x/b + 2*(a*e^(d*x + c) + b)/((a^2 + b^2)*(e^(2*d*x + 2*c) + 1))
)/d
```

maple [A] time = 0.00, size = 158, normalized size = 1.31

$$-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{db}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{db}-\frac{2a^3\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{db\left(a^2+b^2\right)^{\frac{3}{2}}}-\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b}{d\left(a^2+b^2\right)\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/d/b*ln(tanh(1/2*d*x+1/2*c)-1)+1/d/b*ln(tanh(1/2*d*x+1/2*c)+1)-2/d/b*a^3/
(a^2+b^2)^(3/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))-
```

```
2/d/(a^2+b^2)/(tanh(1/2*d*x+1/2*c)^2+1)*tanh(1/2*d*x+1/2*c)*b+2/d/(a^2+b^2)
/(tanh(1/2*d*x+1/2*c)^2+1)*a
```

maxima [A] time = 0.42, size = 141, normalized size = 1.17

$$-\frac{a^3 \log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\left(a^2b+b^3\right)\sqrt{a^2+b^2}\,d}+\frac{2\left(ae^{(-dx-c)}-b\right)}{\left(a^2+b^2+\left(a^2+b^2\right)e^{(-2\,dx-2\,c)}\right)d}+\frac{dx+c}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -a^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(
a^2 + b^2)))/((a^2*b + b^3)*sqrt(a^2 + b^2)*d) + 2*(a*e^(-d*x - c) - b)/((a
^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d) + (d*x + c)/(b*d)
```

mupad [B] time = 2.00, size = 468, normalized size = 3.87

$$\frac{\frac{2\,b}{d\,\left(a^2+b^2\right)}+\frac{2\,a\,\mathrm{e}^{c+d\,x}}{d\,\left(a^2+b^2\right)}}{\mathrm{e}^{2\,c+2\,d\,x}+1}+\frac{x}{b}+\frac{2\,\mathrm{atan}\left(\left(\left(\mathrm{e}^{d\,x}\,\mathrm{e}^{c}\,\left(\frac{2\,a^3}{b^3\,d\,\left(a^2\,b+b^3\right)\,\sqrt{a^6}\,\left(a^2+b^2\right)}+\frac{2\,\left(a\,b^3\,d\,\sqrt{a^6}+a^3\,b\,d\,\sqrt{a^6}\right)}{a^2\,b^2\,\left(a^2\,b+b^3\right)\,\sqrt{-b^2\,d^2\,{\left(a^2+b^2\right)}^3}\,\sqrt{-a^6\,b^2\,d^2-3\,a^4\,b^4\,d^2-3\,a^2}}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*tanh(c + d*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] ((2*b)/(d*(a^2 + b^2)) + (2*a*exp(c + d*x))/(d*(a^2 + b^2)))/(exp(2*c + 2*d
*x) + 1) + x/b + (2*atan((exp(d*x)*exp(c)*((2*a^3)/(b^3*d*(a^2*b + b^3)*(a^
6)^(1/2)*(a^2 + b^2)) + (2*(a*b^3*d*(a^6)^(1/2) + a^3*b*d*(a^6)^(1/2)))/(a^
2*b^2*(a^2*b + b^3)*(-b^2*d^2*(a^2 + b^2)^3)^(1/2)*(- b^8*d^2 - 3*a^2*b^6*d
^2 - 3*a^4*b^4*d^2 - a^6*b^2*d^2)^(1/2))) - (2*(b^4*d*(a^6)^(1/2) + a^2*b^2
*d*(a^6)^(1/2)))/(a^2*b^2*(a^2*b + b^3)*(-b^2*d^2*(a^2 + b^2)^3)^(1/2)*(- b
^8*d^2 - 3*a^2*b^6*d^2 - 3*a^4*b^4*d^2 - a^6*b^2*d^2)^(1/2)))*((b^4*(- b^8*
d^2 - 3*a^2*b^6*d^2 - 3*a^4*b^4*d^2 - a^6*b^2*d^2)^(1/2))/2 + (a^2*b^2*(- b
^8*d^2 - 3*a^2*b^6*d^2 - 3*a^4*b^4*d^2 - a^6*b^2*d^2)^(1/2))/2))*(a^6)^(1/2
))/(- b^8*d^2 - 3*a^2*b^6*d^2 - 3*a^4*b^4*d^2 - a^6*b^2*d^2)^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(sinh(c + d*x)*tanh(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.415 $\int \frac{\sinh(c+dx)\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{\sinh(c+dx)\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(sinh(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sinh(c+dx)\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Sinh[c + d*x]*Tanh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Sinh[c + d*x]*Tanh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\sinh(c+dx)\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\sinh(c+dx)\tanh^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Sinh[c + d*x]*Tanh[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sinh(dx+c)\tanh(dx+c)^2}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(sinh(d*x + c)*tanh(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 0.86, size = 0, normalized size = 0.00

$$\int \frac{\sinh(dx+c)\left(\tanh^2(dx+c)\right)}{\left(fx+e\right)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sinh(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(sinh(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2\,a^3\int -\frac{e^{(dx+c)}}{a^2b^2e+b^4e+\left(a^2b^2f+b^4f\right)x-\left(a^2b^2ee^{(2\,c)}+b^4ee^{(2\,c)}+\left(a^2b^2fe^{(2\,c)}+b^4fe^{(2\,c)}\right)x\right)e^{(2\,dx)}-2\left(a^3bee^{c}+ab\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -2*a^3*integrate(-e^(d*x + c)/(a^2*b^2*e + b^4*e + (a^2*b^2*f + b^4*f)*x -
(a^2*b^2*e*e^(2*c) + b^4*e*e^(2*c) + (a^2*b^2*f*e^(2*c) + b^4*f*e^(2*c))*x)
*e^(2*d*x) - 2*(a^3*b*e*e^c + a*b^3*e*e^c + (a^3*b*f*e^c + a*b^3*f*e^c)*x)*
e^(d*x)), x) + 2*(a*e^(d*x + c) + b)/(a^2*d*e + b^2*d*e + (a^2*d*f + b^2*d*
f)*x + (a^2*d*e*e^(2*c) + b^2*d*e*e^(2*c) + (a^2*d*f*e^(2*c) + b^2*d*f*e^(2
*c))*x)*e^(2*d*x)) + log(f*x + e)/(b*f) + 1/2*integrate(4*(a*f*e^(d*x + c)
```

```
+ b*f)/(a^2*d*e^2 + b^2*d*e^2 + (a^2*d*f^2 + b^2*d*f^2)*x^2 + 2*(a^2*d*e*f
+ b^2*d*e*f)*x + (a^2*d*e^2*e^(2*c) + b^2*d*e^2*e^(2*c) + (a^2*d*f^2*e^(2*c
) + b^2*d*f^2*e^(2*c))*x^2 + 2*(a^2*d*e*f*e^(2*c) + b^2*d*e*f*e^(2*c))*x)*e
^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sinh(c+d\,x)\,\tanh(c+d\,x)^2}{\left(e+f\,x\right)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sinh(c + d*x)*tanh(c + d*x)^2)/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((sinh(c + d*x)*tanh(c + d*x)^2)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sinh(c+dx)\tanh^2(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sinh(d*x+c)*tanh(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(sinh(c + d*x)*tanh(c + d*x)**2/((a + b*sinh(c + d*x))*(e + f*x)),
x)
```

3.416 $\int \frac{(e+fx)^2 \tanh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1479

$$-\frac{(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d}-\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)a^4}{b\left(a^2+b^2\right)^2 d}+\frac{f^2\tan^{-1}(\sinh(c+dx))a^4}{b^3\left(a^2+b^2\right)d^3}+\frac{if(e+fx)\mathrm{Li}_2\left(-ie^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d^2}+\cdots$$

```
[Out] -a^3*f^2*ln(cosh(d*x+c))/b^2/(a^2+b^2)/d^3-2*a^3*f*(f*x+e)*polylog(2,-b*exp
(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^2-2*a^3*f*(f*x+e)*polylog(2,-b*e
xp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^2+a^3*f*(f*x+e)*tanh(d*x+c)/b^
2/(a^2+b^2)/d^2-1/2*a^4*(f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/b^3/(a^2+b^2)/d-I
*a^2*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b^3/d^2-2*I*a^4*f^2*polylog(3,-I*ex
p(d*x+c))/b/(a^2+b^2)^2/d^3-I*a^4*f^2*polylog(3,-I*exp(d*x+c))/b^3/(a^2+b^2
)/d^3+I*a^2*f*(f*x+e)*polylog(2,I*exp(d*x+c))/b^3/d^2+I*a^4*f^2*polylog(3,I
*exp(d*x+c))/b^3/(a^2+b^2)/d^3-a^4*f*(f*x+e)*sech(d*x+c)/b^3/(a^2+b^2)/d^2-
a^2*f^2*arctan(sinh(d*x+c))/b^3/d^3-1/2*a^3*f^2*polylog(3,-exp(2*d*x+2*c))/
(a^2+b^2)^2/d^3+1/2*a*(f*x+e)^2*sech(d*x+c)^2/b^2/d+a^2*(f*x+e)^2*arctan(ex
p(d*x+c))/b^3/d+I*a^2*f^2*polylog(3,-I*exp(d*x+c))/b^3/d^3+a^2*f*(f*x+e)*se
ch(d*x+c)/b^3/d^2-1/2*a^3*(f*x+e)^2*sech(d*x+c)^2/b^2/(a^2+b^2)/d-a*f*(f*x+
e)*tanh(d*x+c)/b^2/d^2+1/2*a^2*(f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/b^3/d-I*a^
2*f^2*polylog(3,I*exp(d*x+c))/b^3/d^3-2*a^4*(f*x+e)^2*arctan(exp(d*x+c))/b/
(a^2+b^2)^2/d+a^4*f^2*arctan(sinh(d*x+c))/b^3/(a^2+b^2)/d^3+a^3*f*(f*x+e)*p
olylog(2,-exp(2*d*x+2*c))/(a^2+b^2)^2/d^2-a^4*(f*x+e)^2*arctan(exp(d*x+c))/
b^3/(a^2+b^2)/d+I*f*(f*x+e)*polylog(2,I*exp(d*x+c))/b/d^2-I*f*(f*x+e)*polyl
og(2,-I*exp(d*x+c))/b/d^2+I*a^4*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b^3/(a^2
+b^2)/d^2+2*I*a^4*f^2*polylog(3,I*exp(d*x+c))/b/(a^2+b^2)^2/d^3-2*I*a^4*f*(
f*x+e)*polylog(2,I*exp(d*x+c))/b/(a^2+b^2)^2/d^2-I*a^4*f*(f*x+e)*polylog(2,
I*exp(d*x+c))/b^3/(a^2+b^2)/d^2+f^2*arctan(sinh(d*x+c))/b/d^3+(f*x+e)^2*arc
tan(exp(d*x+c))/b/d+I*f^2*polylog(3,-I*exp(d*x+c))/b/d^3-f*(f*x+e)*sech(d*x
+c)/b/d^2-1/2*(f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/b/d-I*f^2*polylog(3,I*exp(d
*x+c))/b/d^3+2*I*a^4*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/b/(a^2+b^2)^2/d^2+a
^3*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/(a^2+b^2)^2/d+a*f^2*ln(cosh(d*x+c))/b^2/d
^3-a^3*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d-a^3*(
f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d+2*a^3*f^2*pol
ylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^3+2*a^3*f^2*polylog
(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d^3
```

Rubi [A] time = 2.45, antiderivative size = 1479, normalized size of antiderivative = 1.00, number of steps used = 71, number of rules used = 17, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.607, Rules used = {5567, 5455, 4180, 2531, 2282, 6589, 4186, 3770, 5583, 5451, 4184, 3475, 5573, 5561, 2190, 6742, 3718}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Tanh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b^3*d) + ((e + f*x)^2*ArcTan[E^(c +
d*x)])/(b*d) - (2*a^4*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b*(a^2 + b^2)^2*d)
- (a^4*(e + f*x)^2*ArcTan[E^(c + d*x)])/(b^3*(a^2 + b^2)*d) - (a^2*f^2*ArcT
an[Sinh[c + d*x]])/(b^3*d^3) + (f^2*ArcTan[Sinh[c + d*x]])/(b*d^3) + (a^4*f
^2*ArcTan[Sinh[c + d*x]])/(b^3*(a^2 + b^2)*d^3) - (a^3*(e + f*x)^2*Log[1 +
(b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)^2*d) - (a^3*(e + f*x)^
2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^2*d) + (a^3*
(e + f*x)^2*Log[1 + E^(2*(c + d*x))])/((a^2 + b^2)^2*d) + (a*f^2*Log[Cosh[c
 + d*x]])/(b^2*d^3) - (a^3*f^2*Log[Cosh[c + d*x]])/(b^2*(a^2 + b^2)*d^3) -
(I*a^2*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(b^3*d^2) - (I*f*(e + f*x)
*PolyLog[2, (-I)*E^(c + d*x)])/(b*d^2) + ((2*I)*a^4*f*(e + f*x)*PolyLog[2,
(-I)*E^(c + d*x)])/(b*(a^2 + b^2)^2*d^2) + (I*a^4*f*(e + f*x)*PolyLog[2, (-
I)*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^2) + (I*a^2*f*(e + f*x)*PolyLog[2, I*E^
(c + d*x)])/(b^3*d^2) + (I*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b*d^2) -
 ((2*I)*a^4*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b*(a^2 + b^2)^2*d^2) -
(I*a^4*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^2) - (2*a^
3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 +
 b^2)^2*d^2) - (2*a^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2]))])/((a^2 + b^2)^2*d^2) + (a^3*f*(e + f*x)*PolyLog[2, -E^(2*(c + d
*x))])/((a^2 + b^2)^2*d^2) + (I*a^2*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(b^3*
d^3) + (I*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(b*d^3) - ((2*I)*a^4*f^2*PolyLo
g[3, (-I)*E^(c + d*x)])/(b*(a^2 + b^2)^2*d^3) - (I*a^4*f^2*PolyLog[3, (-I)*
E^(c + d*x)])/(b^3*(a^2 + b^2)*d^3) - (I*a^2*f^2*PolyLog[3, I*E^(c + d*x)])
/(b^3*d^3) - (I*f^2*PolyLog[3, I*E^(c + d*x)])/(b*d^3) + ((2*I)*a^4*f^2*Pol
yLog[3, I*E^(c + d*x)])/(b*(a^2 + b^2)^2*d^3) + (I*a^4*f^2*PolyLog[3, I*E^(
c + d*x)])/(b^3*(a^2 + b^2)*d^3) + (2*a^3*f^2*PolyLog[3, -((b*E^(c + d*x))/
(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^3) + (2*a^3*f^2*PolyLog[3, -((b*E
^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^3) - (a^3*f^2*PolyLog
[3, -E^(2*(c + d*x))])/(2*(a^2 + b^2)^2*d^3) + (a^2*f*(e + f*x)*Sech[c + d*
x])/(b^3*d^2) - (f*(e + f*x)*Sech[c + d*x])/(b*d^2) - (a^4*f*(e + f*x)*Sech
[c + d*x])/(b^3*(a^2 + b^2)*d^2) + (a*(e + f*x)^2*Sech[c + d*x]^2)/(2*b^2*d
) - (a^3*(e + f*x)^2*Sech[c + d*x]^2)/(2*b^2*(a^2 + b^2)*d) - (a*f*(e + f*x
)*Tanh[c + d*x])/(b^2*d^2) + (a^3*f*(e + f*x)*Tanh[c + d*x])/(b^2*(a^2 + b^
2)*d^2) + (a^2*(e + f*x)^2*Sech[c + d*x]*Tanh[c + d*x])/(2*b^3*d) - ((e + f
*x)^2*Sech[c + d*x]*Tanh[c + d*x])/(2*b*d) - (a^4*(e + f*x)^2*Sech[c + d*x]
*Tanh[c + d*x])/(2*b^3*(a^2 + b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5455

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]*Tanh[(a_.) + (b_.)*
(x_)]^(p_), x_Symbol] :> Int[(c + d*x)^m*Sech[a + b*x]*Tanh[a + b*x]^(p - 2
), x] - Int[(c + d*x)^m*Sech[a + b*x]^3*Tanh[a + b*x]^(p - 2), x] /; FreeQ[
{a, b, c, d, m}, x] && IGtQ[p/2, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
```

```
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2 \tanh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2 \operatorname{sech}(c+dx)\tanh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2 \operatorname{sech}(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{a\int (e+fx)^2 \operatorname{sech}^2(c+dx)\tanh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^2 \operatorname{sech}^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,d}{b^2}$$

$$= \frac{2(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{f(e+fx)\operatorname{sech}(c+dx)}{bd^2} + \frac{a(e+fx)^2 \operatorname{sech}^2(c+dx)}{2b^2d} -$$

$$= \frac{(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{bd} + \frac{f^2 \tan^{-1}(\sinh(c+dx))}{bd^3} - \frac{2if(e+fx)\operatorname{Li}_2\left(-ie^{c+dx}\right)}{bd^2} +$$

$$= \frac{a^2(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a^2f^2 \tan^{-1}(\sinh(c+dx))}{b^3d^3}$$

$$= \frac{a^3(e+fx)^3}{3\left(a^2+b^2\right)^2 f} + \frac{a^2(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a^2f^2 \tan}{}$$

$$= \frac{a^3(e+fx)^3}{3\left(a^2+b^2\right)^2 f} + \frac{a^2(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a^2f^2 \tan}{}$$

$$= \frac{a^2(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^4(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right.}{b\left(a^2+b^2\right)^2 d}$$

$$= \frac{a^2(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^4(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right.}{b\left(a^2+b^2\right)^2 d}$$

$$= \frac{a^2(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^4(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right.}{b\left(a^2+b^2\right)^2 d}$$

$$= \frac{a^2(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^4(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right.}{b\left(a^2+b^2\right)^2 d}$$

$$= \frac{a^2(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^4(e+fx)^2 \tan^{-1}\left(e^{c+dx}\right.}{b\left(a^2+b^2\right)^2 d}$$

Mathematica [B] time = 26.92, size = 3102, normalized size = 2.10

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Tanh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-12*a^3*d^3*e^2*E^(2*c)*x - 12*a^3*d*E^(2*c)*f^2*x - 12*a*b^2*d*E^(2*c)*f^
2*x - 12*a^3*d^3*e*E^(2*c)*f*x^2 - 4*a^3*d^3*E^(2*c)*f^2*x^3 + 18*a^2*b*d^2
*e^2*ArcTan[E^(c + d*x)] + 6*b^3*d^2*e^2*ArcTan[E^(c + d*x)] + 18*a^2*b*d^2
*e^2*E^(2*c)*ArcTan[E^(c + d*x)] + 6*b^3*d^2*e^2*E^(2*c)*ArcTan[E^(c + d*x)
] + 12*a^2*b*f^2*ArcTan[E^(c + d*x)] + 12*b^3*f^2*ArcTan[E^(c + d*x)] + 12*
a^2*b*E^(2*c)*f^2*ArcTan[E^(c + d*x)] + 12*b^3*E^(2*c)*f^2*ArcTan[E^(c + d*
x)] + (18*I)*a^2*b*d^2*e*f*x*Log[1 - I*E^(c + d*x)] + (6*I)*b^3*d^2*e*f*x*L
og[1 - I*E^(c + d*x)] + (18*I)*a^2*b*d^2*e*E^(2*c)*f*x*Log[1 - I*E^(c + d*x
)] + (6*I)*b^3*d^2*e*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] + (9*I)*a^2*b*d^2*f
^2*x^2*Log[1 - I*E^(c + d*x)] + (3*I)*b^3*d^2*f^2*x^2*Log[1 - I*E^(c + d*x)
] + (9*I)*a^2*b*d^2*E^(2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] + (3*I)*b^3*d^2*
E^(2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] - (18*I)*a^2*b*d^2*e*f*x*Log[1 + I*E
^(c + d*x)] - (6*I)*b^3*d^2*e*f*x*Log[1 + I*E^(c + d*x)] - (18*I)*a^2*b*d^2
*e*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] - (6*I)*b^3*d^2*e*E^(2*c)*f*x*Log[1 +
 I*E^(c + d*x)] - (9*I)*a^2*b*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] - (3*I)*b^
3*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] - (9*I)*a^2*b*d^2*E^(2*c)*f^2*x^2*Log[
1 + I*E^(c + d*x)] - (3*I)*b^3*d^2*E^(2*c)*f^2*x^2*Log[1 + I*E^(c + d*x)] +
 6*a^3*d^2*e^2*Log[1 + E^(2*(c + d*x))] + 6*a^3*d^2*e^2*E^(2*c)*Log[1 + E^(
2*(c + d*x))] + 6*a^3*f^2*Log[1 + E^(2*(c + d*x))] + 6*a*b^2*f^2*Log[1 + E^
(2*(c + d*x))] + 6*a^3*E^(2*c)*f^2*Log[1 + E^(2*(c + d*x))] + 6*a*b^2*E^(2*
c)*f^2*Log[1 + E^(2*(c + d*x))] + 12*a^3*d^2*e*f*x*Log[1 + E^(2*(c + d*x))]
 + 12*a^3*d^2*e*E^(2*c)*f*x*Log[1 + E^(2*(c + d*x))] + 6*a^3*d^2*f^2*x^2*Lo
g[1 + E^(2*(c + d*x))] + 6*a^3*d^2*E^(2*c)*f^2*x^2*Log[1 + E^(2*(c + d*x))]
 - (6*I)*b*(3*a^2 + b^2)*d*(1 + E^(2*c))*f*(e + f*x)*PolyLog[2, (-I)*E^(c +
 d*x)] + (6*I)*b*(3*a^2 + b^2)*d*(1 + E^(2*c))*f*(e + f*x)*PolyLog[2, I*E^(
c + d*x)] + 6*a^3*d*e*f*PolyLog[2, -E^(2*(c + d*x))] + 6*a^3*d*e*E^(2*c)*f*
PolyLog[2, -E^(2*(c + d*x))] + 6*a^3*d*f^2*x*PolyLog[2, -E^(2*(c + d*x))] +
 6*a^3*d*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(c + d*x))] + (18*I)*a^2*b*f^2*Poly
Log[3, (-I)*E^(c + d*x)] + (6*I)*b^3*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (18
*I)*a^2*b*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (6*I)*b^3*E^(2*c)*f^2*
PolyLog[3, (-I)*E^(c + d*x)] - (18*I)*a^2*b*f^2*PolyLog[3, I*E^(c + d*x)] -
 (6*I)*b^3*f^2*PolyLog[3, I*E^(c + d*x)] - (18*I)*a^2*b*E^(2*c)*f^2*PolyLog
[3, I*E^(c + d*x)] - (6*I)*b^3*E^(2*c)*f^2*PolyLog[3, I*E^(c + d*x)] - 3*a^
3*f^2*PolyLog[3, -E^(2*(c + d*x))] - 3*a^3*E^(2*c)*f^2*PolyLog[3, -E^(2*(c
+ d*x))])/(6*(a^2 + b^2)^2*d^3*(1 + E^(2*c))) + (a^3*(6*d^3*e^2*E^(2*c)*x +
 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*d^2*e^2*Log[b - 2*a*E^(c
 + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^(2*c)*Log[b - 2*a*E^(c + d*x) -
```

```
b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a
^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c
 - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a
*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*
c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2*e*f*x*Log[1 + (b*E^(
2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[
1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*
Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2
*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])]
- 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sq
rt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b
*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -(
(b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*Pol
yLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*P
olyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(
2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])
)]))/(3*(a^2 + b^2)^2*d^3*(-1 + E^(2*c))) + (Csch[c]*Sech[c]*Sech[c + d*x]^
2*(-6*a^3*e*f - 6*a*b^2*e*f - 12*a^3*d^2*e^2*x - 6*a^3*f^2*x - 6*a*b^2*f^2*
x - 12*a^3*d^2*e*f*x^2 - 4*a^3*d^2*f^2*x^3 + 6*a^3*e*f*Cosh[2*c] + 6*a*b^2*
e*f*Cosh[2*c] + 6*a^3*f^2*x*Cosh[2*c] + 6*a*b^2*f^2*x*Cosh[2*c] + 6*a^3*e*f
*Cosh[2*d*x] + 6*a*b^2*e*f*Cosh[2*d*x] + 6*a^3*f^2*x*Cosh[2*d*x] + 6*a*b^2*
f^2*x*Cosh[2*d*x] + 3*a^2*b*d*e^2*Cosh[c - d*x] + 3*b^3*d*e^2*Cosh[c - d*x]
 + 6*a^2*b*d*e*f*x*Cosh[c - d*x] + 6*b^3*d*e*f*x*Cosh[c - d*x] + 3*a^2*b*d*
f^2*x^2*Cosh[c - d*x] + 3*b^3*d*f^2*x^2*Cosh[c - d*x] - 3*a^2*b*d*e^2*Cosh[
3*c + d*x] - 3*b^3*d*e^2*Cosh[3*c + d*x] - 6*a^2*b*d*e*f*x*Cosh[3*c + d*x]
- 6*b^3*d*e*f*x*Cosh[3*c + d*x] - 3*a^2*b*d*f^2*x^2*Cosh[3*c + d*x] - 3*b^3
*d*f^2*x^2*Cosh[3*c + d*x] - 6*a^3*e*f*Cosh[2*c + 2*d*x] - 6*a*b^2*e*f*Cosh
[2*c + 2*d*x] - 12*a^3*d^2*e^2*x*Cosh[2*c + 2*d*x] - 6*a^3*f^2*x*Cosh[2*c +
 2*d*x] - 6*a*b^2*f^2*x*Cosh[2*c + 2*d*x] - 12*a^3*d^2*e*f*x^2*Cosh[2*c + 2
*d*x] - 4*a^3*d^2*f^2*x^3*Cosh[2*c + 2*d*x] + 6*a^3*d*e^2*Sinh[2*c] + 6*a*b
^2*d*e^2*Sinh[2*c] + 12*a^3*d*e*f*x*Sinh[2*c] + 12*a*b^2*d*e*f*x*Sinh[2*c]
+ 6*a^3*d*f^2*x^2*Sinh[2*c] + 6*a*b^2*d*f^2*x^2*Sinh[2*c] - 6*a^2*b*e*f*Sin
h[c - d*x] - 6*b^3*e*f*Sinh[c - d*x] - 6*a^2*b*f^2*x*Sinh[c - d*x] - 6*b^3*
f^2*x*Sinh[c - d*x] - 6*a^2*b*e*f*Sinh[3*c + d*x] - 6*b^3*e*f*Sinh[3*c + d*
x] - 6*a^2*b*f^2*x*Sinh[3*c + d*x] - 6*b^3*f^2*x*Sinh[3*c + d*x]))/(24*(a^2
 + b^2)^2*d^2)
```

fricas [C] time = 0.90, size = 10546, normalized size = 7.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(4*((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*c*f^2)*cosh(d*x + c)^4 + 4*(
```

```
(a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*c*f^2)*sinh(d*x + c)^4 - 4*(a^3 + a*b
^2)*d*e*f + 4*(a^3 + a*b^2)*c*f^2 + 2*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b +
 b^3)*d^2*e^2 + 2*(a^2*b + b^3)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f + (a^2*b +
 b^3)*d*f^2)*x)*cosh(d*x + c)^3 + 2*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b
^3)*d^2*e^2 + 2*(a^2*b + b^3)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f + (a^2*b + b
^3)*d*f^2)*x + 8*((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*c*f^2)*cosh(d*x + c
))*sinh(d*x + c)^3 - 4*((a^3 + a*b^2)*d^2*f^2*x^2 + (a^3 + a*b^2)*d^2*e^2 +
 (a^3 + a*b^2)*d*e*f - 2*(a^3 + a*b^2)*c*f^2 + (2*(a^3 + a*b^2)*d^2*e*f - (
a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c)^2 - 2*(2*(a^3 + a*b^2)*d^2*f^2*x^2 + 2
*(a^3 + a*b^2)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f - 4*(a^3 + a*b^2)*c*f^2 - 12
*((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*c*f^2)*cosh(d*x + c)^2 + 2*(2*(a^3
+ a*b^2)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x - 3*((a^2*b + b^3)*d^2*f^2*x^2 +
(a^2*b + b^3)*d^2*e^2 + 2*(a^2*b + b^3)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f +
(a^2*b + b^3)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^2 - 2*((a^2*b + b^3)*d
^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 - 2*(a^2*b + b^3)*d*e*f + 2*((a^2*b + b^
3)*d^2*e*f - (a^2*b + b^3)*d*f^2)*x)*cosh(d*x + c) + 4*(a^3*d*f^2*x + a^3*d
*e*f + (a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^4 + 4*(a^3*d*f^2*x + a^3*d*e
*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*d*f^2*x + a^3*d*e*f)*sinh(d*x + c)
^4 + 2*(a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^2 + 2*(a^3*d*f^2*x + a^3*d*e
*f + 3*(a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^3
*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^3 + (a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x
+ c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x
 + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 4*(a^3*d*f^2*x
 + a^3*d*e*f + (a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^4 + 4*(a^3*d*f^2*x +
 a^3*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*d*f^2*x + a^3*d*e*f)*sinh(
d*x + c)^4 + 2*(a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^2 + 2*(a^3*d*f^2*x +
 a^3*d*e*f + 3*(a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 +
 4*((a^3*d*f^2*x + a^3*d*e*f)*cosh(d*x + c)^3 + (a^3*d*f^2*x + a^3*d*e*f)*c
osh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (4*a^3
*d*f^2*x + 4*a^3*d*e*f + 2*I*(3*a^2*b + b^3)*d*f^2*x + (4*a^3*d*f^2*x + 4*a
^3*d*e*f + 2*I*(3*a^2*b + b^3)*d*f^2*x + 2*I*(3*a^2*b + b^3)*d*e*f)*cosh(d*
x + c)^4 + (16*a^3*d*f^2*x + 16*a^3*d*e*f + 8*I*(3*a^2*b + b^3)*d*f^2*x + 8
*I*(3*a^2*b + b^3)*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*a^3*d*f^2*x +
4*a^3*d*e*f + 2*I*(3*a^2*b + b^3)*d*f^2*x + 2*I*(3*a^2*b + b^3)*d*e*f)*sinh
(d*x + c)^4 + 2*I*(3*a^2*b + b^3)*d*e*f + (8*a^3*d*f^2*x + 8*a^3*d*e*f + 4*
I*(3*a^2*b + b^3)*d*f^2*x + 4*I*(3*a^2*b + b^3)*d*e*f)*cosh(d*x + c)^2 + (8
*a^3*d*f^2*x + 8*a^3*d*e*f + 4*I*(3*a^2*b + b^3)*d*f^2*x + 4*I*(3*a^2*b + b
^3)*d*e*f + (24*a^3*d*f^2*x + 24*a^3*d*e*f + 12*I*(3*a^2*b + b^3)*d*f^2*x +
 12*I*(3*a^2*b + b^3)*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((16*a^3*d*
f^2*x + 16*a^3*d*e*f + 8*I*(3*a^2*b + b^3)*d*f^2*x + 8*I*(3*a^2*b + b^3)*d*
e*f)*cosh(d*x + c)^3 + (16*a^3*d*f^2*x + 16*a^3*d*e*f + 8*I*(3*a^2*b + b^3)
*d*f^2*x + 8*I*(3*a^2*b + b^3)*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(I
*cosh(d*x + c) + I*sinh(d*x + c)) - (4*a^3*d*f^2*x + 4*a^3*d*e*f - 2*I*(3*a
^2*b + b^3)*d*f^2*x + (4*a^3*d*f^2*x + 4*a^3*d*e*f - 2*I*(3*a^2*b + b^3)*d*
```

f^2*x - 2*I*(3*a^2*b + b^3)*d*e*f)*cosh(d*x + c)^4 + (16*a^3*d*f^2*x + 16*a ^3*d*e*f - 8*I*(3*a^2*b + b^3)*d*f^2*x - 8*I*(3*a^2*b + b^3)*d*e*f)*cosh(d* x + c)*sinh(d*x + c)^3 + (4*a^3*d*f^2*x + 4*a^3*d*e*f - 2*I*(3*a^2*b + b^3) *d*f^2*x - 2*I*(3*a^2*b + b^3)*d*e*f)*sinh(d*x + c)^4 - 2*I*(3*a^2*b + b^3) *d*e*f + (8*a^3*d*f^2*x + 8*a^3*d*e*f - 4*I*(3*a^2*b + b^3)*d*f^2*x - 4*I*(3*a^2*b + b^3)*d*e*f)*cosh(d*x + c)^2 + (8*a^3*d*f^2*x + 8*a^3*d*e*f - 4*I* (3*a^2*b + b^3)*d*f^2*x - 4*I*(3*a^2*b + b^3)*d*e*f + (24*a^3*d*f^2*x + 24* a^3*d*e*f - 12*I*(3*a^2*b + b^3)*d*f^2*x - 12*I*(3*a^2*b + b^3)*d*e*f)*cosh (d*x + c)^2)*sinh(d*x + c)^2 + ((16*a^3*d*f^2*x + 16*a^3*d*e*f - 8*I*(3*a^2 *b + b^3)*d*f^2*x - 8*I*(3*a^2*b + b^3)*d*e*f)*cosh(d*x + c)^3 + (16*a^3*d* f^2*x + 16*a^3*d*e*f - 8*I*(3*a^2*b + b^3)*d*f^2*x - 8*I*(3*a^2*b + b^3)*d* e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + 2*(a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2 + (a^3*d^2*e^2 - 2*a^3*c*d *e*f + a^3*c^2*f^2)*cosh(d*x + c)^4 + 4*(a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3* c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3 *c^2*f^2)*sinh(d*x + c)^4 + 2*(a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*c osh(d*x + c)^2 + 2*(a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2 + 3*(a^3*d^2* e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a ^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*cosh(d*x + c)^3 + (a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(a^3*d^2*e ^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2 + (a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f ^2)*cosh(d*x + c)^4 + 4*(a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*cosh(d* x + c)*sinh(d*x + c)^3 + (a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*sinh(d *x + c)^4 + 2*(a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2 + 3*(a^3*d^2*e^2 - 2*a^3*c*d* e*f + a^3*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^3*d^2*e^2 - 2*a ^3*c*d*e*f + a^3*c^2*f^2)*cosh(d*x + c)^3 + (a^3*d^2*e^2 - 2*a^3*c*d*e*f + a^3*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh (d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(a^3*d^2*f^2*x^2 + 2*a^3*d ^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2 + (a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c)^4 + 4*(a^3*d^2*f^2*x^2 + 2*a^ 3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*sinh(d*x + c)^4 + 2*(a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c)^2 + 2*(a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2 + 3*(a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^ 2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^3*d^2*f^2*x^2 + 2*a^3*d^2*e *f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c)^3 + (a^3*d^2*f^2*x^2 + 2* a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))* log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2 *a^3*c*d*e*f - a^3*c^2*f^2 + (a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d *e*f - a^3*c^2*f^2)*cosh(d*x + c)^4 + 4*(a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*d^2*f^2

*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*sinh(d*x + c)^4 + 2*(
a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x +
 c)^2 + 2*(a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2
+ 3*(a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(
d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*x + 2*a^3
*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c)^3 + (a^3*d^2*f^2*x^2 + 2*a^3*d^2*e*f*
x + 2*a^3*c*d*e*f - a^3*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh
(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2) - b)/b) - (2*a^3*d^2*e^2 - 4*a^3*c*d*e*f + I*(3*a^2*b + b^3)*d
^2*e^2 - 2*I*(3*a^2*b + b^3)*c*d*e*f + (2*a^3*d^2*e^2 - 4*a^3*c*d*e*f + I*(
3*a^2*b + b^3)*d^2*e^2 - 2*I*(3*a^2*b + b^3)*c*d*e*f + 2*(a^3*c^2 + a^3 + a
*b^2)*f^2 + I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2)*f^2)*cosh(d*x + c)^4
+ (8*a^3*d^2*e^2 - 16*a^3*c*d*e*f + 4*I*(3*a^2*b + b^3)*d^2*e^2 - 8*I*(3*a^
2*b + b^3)*c*d*e*f + 8*(a^3*c^2 + a^3 + a*b^2)*f^2 + 4*I*(2*a^2*b + 2*b^3 +
 (3*a^2*b + b^3)*c^2)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^3*d^2*e^2 -
 4*a^3*c*d*e*f + I*(3*a^2*b + b^3)*d^2*e^2 - 2*I*(3*a^2*b + b^3)*c*d*e*f +
2*(a^3*c^2 + a^3 + a*b^2)*f^2 + I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2)*f
^2)*sinh(d*x + c)^4 + 2*(a^3*c^2 + a^3 + a*b^2)*f^2 + I*(2*a^2*b + 2*b^3 +
(3*a^2*b + b^3)*c^2)*f^2 + (4*a^3*d^2*e^2 - 8*a^3*c*d*e*f + 2*I*(3*a^2*b +
b^3)*d^2*e^2 - 4*I*(3*a^2*b + b^3)*c*d*e*f + 4*(a^3*c^2 + a^3 + a*b^2)*f^2
+ 2*I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2)*f^2)*cosh(d*x + c)^2 + (4*a^3
*d^2*e^2 - 8*a^3*c*d*e*f + 2*I*(3*a^2*b + b^3)*d^2*e^2 - 4*I*(3*a^2*b + b^3
)*c*d*e*f + 4*(a^3*c^2 + a^3 + a*b^2)*f^2 + 2*I*(2*a^2*b + 2*b^3 + (3*a^2*b
 + b^3)*c^2)*f^2 + (12*a^3*d^2*e^2 - 24*a^3*c*d*e*f + 6*I*(3*a^2*b + b^3)*d
^2*e^2 - 12*I*(3*a^2*b + b^3)*c*d*e*f + 12*(a^3*c^2 + a^3 + a*b^2)*f^2 + 6*
I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2)*f^2)*cosh(d*x + c)^2)*sinh(d*x +
c)^2 + ((8*a^3*d^2*e^2 - 16*a^3*c*d*e*f + 4*I*(3*a^2*b + b^3)*d^2*e^2 - 8*I
*(3*a^2*b + b^3)*c*d*e*f + 8*(a^3*c^2 + a^3 + a*b^2)*f^2 + 4*I*(2*a^2*b + 2
*b^3 + (3*a^2*b + b^3)*c^2)*f^2)*cosh(d*x + c)^3 + (8*a^3*d^2*e^2 - 16*a^3*
c*d*e*f + 4*I*(3*a^2*b + b^3)*d^2*e^2 - 8*I*(3*a^2*b + b^3)*c*d*e*f + 8*(a^
3*c^2 + a^3 + a*b^2)*f^2 + 4*I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2)*f^2)
*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + I) - (2*
a^3*d^2*e^2 - 4*a^3*c*d*e*f - I*(3*a^2*b + b^3)*d^2*e^2 + 2*I*(3*a^2*b + b^
3)*c*d*e*f + (2*a^3*d^2*e^2 - 4*a^3*c*d*e*f - I*(3*a^2*b + b^3)*d^2*e^2 + 2
I(3*a^2*b + b^3)*c*d*e*f + 2*(a^3*c^2 + a^3 + a*b^2)*f^2 - I*(2*a^2*b + 2
*b^3 + (3*a^2*b + b^3)*c^2)*f^2)*cosh(d*x + c)^4 + (8*a^3*d^2*e^2 - 16*a^3*
c*d*e*f - 4*I*(3*a^2*b + b^3)*d^2*e^2 + 8*I*(3*a^2*b + b^3)*c*d*e*f + 8*(a^
3*c^2 + a^3 + a*b^2)*f^2 - 4*I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2)*f^2)
*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^3*d^2*e^2 - 4*a^3*c*d*e*f - I*(3*a^2*
b + b^3)*d^2*e^2 + 2*I*(3*a^2*b + b^3)*c*d*e*f + 2*(a^3*c^2 + a^3 + a*b^2)*
f^2 - I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2)*f^2)*sinh(d*x + c)^4 + 2*(a
^3*c^2 + a^3 + a*b^2)*f^2 - I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2)*f^2 +
 (4*a^3*d^2*e^2 - 8*a^3*c*d*e*f - 2*I*(3*a^2*b + b^3)*d^2*e^2 + 4*I*(3*a^2*
b + b^3)*c*d*e*f + 4*(a^3*c^2 + a^3 + a*b^2)*f^2 - 2*I*(2*a^2*b + 2*b^3 + (
3*a^2*b + b^3)*c^2)*f^2)*cosh(d*x + c)^2 + (4*a^3*d^2*e^2 - 8*a^3*c*d*e*f -

2*I*(3*a^2*b + b^3)*d^2*e^2 + 4*I*(3*a^2*b + b^3)*c*d*e*f + 4*(a^3*c^2 + a
^3 + a*b^2)*f^2 - 2*I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2)*f^2 + (12*a^3
*d^2*e^2 - 24*a^3*c*d*e*f - 6*I*(3*a^2*b + b^3)*d^2*e^2 + 12*I*(3*a^2*b + b
^3)*c*d*e*f + 12*(a^3*c^2 + a^3 + a*b^2)*f^2 - 6*I*(2*a^2*b + 2*b^3 + (3*a^
2*b + b^3)*c^2)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^3*d^2*e^2 - 1
6*a^3*c*d*e*f - 4*I*(3*a^2*b + b^3)*d^2*e^2 + 8*I*(3*a^2*b + b^3)*c*d*e*f +
 8*(a^3*c^2 + a^3 + a*b^2)*f^2 - 4*I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2
)*f^2)*cosh(d*x + c)^3 + (8*a^3*d^2*e^2 - 16*a^3*c*d*e*f - 4*I*(3*a^2*b + b
^3)*d^2*e^2 + 8*I*(3*a^2*b + b^3)*c*d*e*f + 8*(a^3*c^2 + a^3 + a*b^2)*f^2 -
 4*I*(2*a^2*b + 2*b^3 + (3*a^2*b + b^3)*c^2)*f^2)*cosh(d*x + c))*sinh(d*x +
 c))*log(cosh(d*x + c) + sinh(d*x + c) - I) - (2*a^3*d^2*f^2*x^2 + 4*a^3*d^
2*e*f*x + 4*a^3*c*d*e*f - 2*a^3*c^2*f^2 - I*(3*a^2*b + b^3)*d^2*f^2*x^2 - 2
I(3*a^2*b + b^3)*d^2*e*f*x - 2*I*(3*a^2*b + b^3)*c*d*e*f + I*(3*a^2*b + b
^3)*c^2*f^2 + (2*a^3*d^2*f^2*x^2 + 4*a^3*d^2*e*f*x + 4*a^3*c*d*e*f - 2*a^3*
c^2*f^2 - I*(3*a^2*b + b^3)*d^2*f^2*x^2 - 2*I*(3*a^2*b + b^3)*d^2*e*f*x - 2
I(3*a^2*b + b^3)*c*d*e*f + I*(3*a^2*b + b^3)*c^2*f^2)*cosh(d*x + c)^4 + (
8*a^3*d^2*f^2*x^2 + 16*a^3*d^2*e*f*x + 16*a^3*c*d*e*f - 8*a^3*c^2*f^2 - 4*I
*(3*a^2*b + b^3)*d^2*f^2*x^2 - 8*I*(3*a^2*b + b^3)*d^2*e*f*x - 8*I*(3*a^2*b
 + b^3)*c*d*e*f + 4*I*(3*a^2*b + b^3)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^
3 + (2*a^3*d^2*f^2*x^2 + 4*a^3*d^2*e*f*x + 4*a^3*c*d*e*f - 2*a^3*c^2*f^2 -
I*(3*a^2*b + b^3)*d^2*f^2*x^2 - 2*I*(3*a^2*b + b^3)*d^2*e*f*x - 2*I*(3*a^2*
b + b^3)*c*d*e*f + I*(3*a^2*b + b^3)*c^2*f^2)*sinh(d*x + c)^4 + (4*a^3*d^2*
f^2*x^2 + 8*a^3*d^2*e*f*x + 8*a^3*c*d*e*f - 4*a^3*c^2*f^2 - 2*I*(3*a^2*b +
b^3)*d^2*f^2*x^2 - 4*I*(3*a^2*b + b^3)*d^2*e*f*x - 4*I*(3*a^2*b + b^3)*c*d*
e*f + 2*I*(3*a^2*b + b^3)*c^2*f^2)*cosh(d*x + c)^2 + (4*a^3*d^2*f^2*x^2 + 8
*a^3*d^2*e*f*x + 8*a^3*c*d*e*f - 4*a^3*c^2*f^2 - 2*I*(3*a^2*b + b^3)*d^2*f^
2*x^2 - 4*I*(3*a^2*b + b^3)*d^2*e*f*x - 4*I*(3*a^2*b + b^3)*c*d*e*f + 2*I*(
3*a^2*b + b^3)*c^2*f^2 + (12*a^3*d^2*f^2*x^2 + 24*a^3*d^2*e*f*x + 24*a^3*c*
d*e*f - 12*a^3*c^2*f^2 - 6*I*(3*a^2*b + b^3)*d^2*f^2*x^2 - 12*I*(3*a^2*b +
b^3)*d^2*e*f*x - 12*I*(3*a^2*b + b^3)*c*d*e*f + 6*I*(3*a^2*b + b^3)*c^2*f^2
)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^3*d^2*f^2*x^2 + 16*a^3*d^2*e*f*x
 + 16*a^3*c*d*e*f - 8*a^3*c^2*f^2 - 4*I*(3*a^2*b + b^3)*d^2*f^2*x^2 - 8*I*(
3*a^2*b + b^3)*d^2*e*f*x - 8*I*(3*a^2*b + b^3)*c*d*e*f + 4*I*(3*a^2*b + b^3
)*c^2*f^2)*cosh(d*x + c)^3 + (8*a^3*d^2*f^2*x^2 + 16*a^3*d^2*e*f*x + 16*a^3
*c*d*e*f - 8*a^3*c^2*f^2 - 4*I*(3*a^2*b + b^3)*d^2*f^2*x^2 - 8*I*(3*a^2*b +
 b^3)*d^2*e*f*x - 8*I*(3*a^2*b + b^3)*c*d*e*f + 4*I*(3*a^2*b + b^3)*c^2*f^2
)*cosh(d*x + c))*sinh(d*x + c))*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1)
- (2*a^3*d^2*f^2*x^2 + 4*a^3*d^2*e*f*x + 4*a^3*c*d*e*f - 2*a^3*c^2*f^2 + I*
(3*a^2*b + b^3)*d^2*f^2*x^2 + 2*I*(3*a^2*b + b^3)*d^2*e*f*x + 2*I*(3*a^2*b
+ b^3)*c*d*e*f - I*(3*a^2*b + b^3)*c^2*f^2 + (2*a^3*d^2*f^2*x^2 + 4*a^3*d^2
*e*f*x + 4*a^3*c*d*e*f - 2*a^3*c^2*f^2 + I*(3*a^2*b + b^3)*d^2*f^2*x^2 + 2*
I*(3*a^2*b + b^3)*d^2*e*f*x + 2*I*(3*a^2*b + b^3)*c*d*e*f - I*(3*a^2*b + b^
3)*c^2*f^2)*cosh(d*x + c)^4 + (8*a^3*d^2*f^2*x^2 + 16*a^3*d^2*e*f*x + 16*a^
3*c*d*e*f - 8*a^3*c^2*f^2 + 4*I*(3*a^2*b + b^3)*d^2*f^2*x^2 + 8*I*(3*a^2*b
+ b^3)*d^2*e*f*x + 8*I*(3*a^2*b + b^3)*c*d*e*f - 4*I*(3*a^2*b + b^3)*c^2*f^

2)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^3*d^2*f^2*x^2 + 4*a^3*d^2*e*f*x + 4*a^3*c*d*e*f - 2*a^3*c^2*f^2 + I*(3*a^2*b + b^3)*d^2*f^2*x^2 + 2*I*(3*a^2*b + b^3)*d^2*e*f*x + 2*I*(3*a^2*b + b^3)*c*d*e*f - I*(3*a^2*b + b^3)*c^2*f^2)*sinh(d*x + c)^4 + (4*a^3*d^2*f^2*x^2 + 8*a^3*d^2*e*f*x + 8*a^3*c*d*e*f - 4*a^3*c^2*f^2 + 2*I*(3*a^2*b + b^3)*d^2*f^2*x^2 + 4*I*(3*a^2*b + b^3)*d^2*e*f*x + 4*I*(3*a^2*b + b^3)*c*d*e*f - 2*I*(3*a^2*b + b^3)*c^2*f^2)*cosh(d*x + c)^2 + (4*a^3*d^2*f^2*x^2 + 8*a^3*d^2*e*f*x + 8*a^3*c*d*e*f - 4*a^3*c^2*f^2 + 2*I*(3*a^2*b + b^3)*d^2*f^2*x^2 + 4*I*(3*a^2*b + b^3)*d^2*e*f*x + 4*I*(3*a^2*b + b^3)*c*d*e*f - 2*I*(3*a^2*b + b^3)*c^2*f^2 + (12*a^3*d^2*f^2*x^2 + 24*a^3*d^2*e*f*x + 24*a^3*c*d*e*f - 12*a^3*c^2*f^2 + 6*I*(3*a^2*b + b^3)*d^2*f^2*x^2 + 12*I*(3*a^2*b + b^3)*d^2*e*f*x + 12*I*(3*a^2*b + b^3)*c*d*e*f - 6*I*(3*a^2*b + b^3)*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^3*d^2*f^2*x^2 + 16*a^3*d^2*e*f*x + 16*a^3*c*d*e*f - 8*a^3*c^2*f^2 + 4*I*(3*a^2*b + b^3)*d^2*f^2*x^2 + 8*I*(3*a^2*b + b^3)*d^2*e*f*x + 8*I*(3*a^2*b + b^3)*c*d*e*f - 4*I*(3*a^2*b + b^3)*c^2*f^2)*cosh(d*x + c)^3 + (8*a^3*d^2*f^2*x^2 + 16*a^3*d^2*e*f*x + 16*a^3*c*d*e*f - 8*a^3*c^2*f^2 + 4*I*(3*a^2*b + b^3)*d^2*f^2*x^2 + 8*I*(3*a^2*b + b^3)*d^2*e*f*x + 8*I*(3*a^2*b + b^3)*c*d*e*f - 4*I*(3*a^2*b + b^3)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) - 4*(a^3*f^2*cosh(d*x + c)^4 + 4*a^3*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*f^2*sinh(d*x + c)^4 + 2*a^3*f^2*cosh(d*x + c)^2 + a^3*f^2 + 2*(3*a^3*f^2*cosh(d*x + c)^2 + a^3*f^2)*sinh(d*x + c)^2 + 4*(a^3*f^2*cosh(d*x + c)^3 + a^3*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 4*(a^3*f^2*cosh(d*x + c)^4 + 4*a^3*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*f^2*sinh(d*x + c)^4 + 2*a^3*f^2*cosh(d*x + c)^2 + a^3*f^2 + 2*(3*a^3*f^2*cosh(d*x + c)^2 + a^3*f^2)*sinh(d*x + c)^2 + 4*(a^3*f^2*cosh(d*x + c)^3 + a^3*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + (4*a^3*f^2 + 2*(2*a^3*f^2 + I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c)^4 + 8*(2*a^3*f^2 + I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + 2*(2*a^3*f^2 + I*(3*a^2*b + b^3)*f^2)*sinh(d*x + c)^4 + 2*I*(3*a^2*b + b^3)*f^2 + 4*(2*a^3*f^2 + I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c)^2 + 4*(2*a^3*f^2 + I*(3*a^2*b + b^3)*f^2 + 3*(2*a^3*f^2 + I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 8*((2*a^3*f^2 + I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c)^3 + (2*a^3*f^2 + I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c))*sinh(d*x + c))*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) + (4*a^3*f^2 + 2*(2*a^3*f^2 - I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c)^4 + 8*(2*a^3*f^2 - I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + 2*(2*a^3*f^2 - I*(3*a^2*b + b^3)*f^2)*sinh(d*x + c)^4 - 2*I*(3*a^2*b + b^3)*f^2 + 4*(2*a^3*f^2 - I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c)^2 + 4*(2*a^3*f^2 - I*(3*a^2*b + b^3)*f^2 + 3*(2*a^3*f^2 - I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 8*((2*a^3*f^2 - I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c)^3 + (2*a^3*f^2 - I*(3*a^2*b + b^3)*f^2)*cosh(d*x + c))*sinh(d*x + c))*polylog(3, -I*cosh(d*x + c) - I*sinh(d*x + c)) - 2*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 - 2*(a^2*b + b^3)*d*e*f - 8*((a^3 + a*b^2)*d*f^2*x + (a^3 + a*b^2)*c*f^2)

```
*cosh(d*x + c)^3 - 3*((a^2*b + b^3)*d^2*f^2*x^2 + (a^2*b + b^3)*d^2*e^2 + 2
*(a^2*b + b^3)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f + (a^2*b + b^3)*d*f^2)*x)*c
osh(d*x + c)^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^2*b + b^3)*d*f^2)*x + 4*((a^
3 + a*b^2)*d^2*f^2*x^2 + (a^3 + a*b^2)*d^2*e^2 + (a^3 + a*b^2)*d*e*f - 2*(a
^3 + a*b^2)*c*f^2 + (2*(a^3 + a*b^2)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x)*cosh
(d*x + c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)^4 + 4*
(a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + 2*a^2*b^
2 + b^4)*d^3*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c)^
2 + (a^4 + 2*a^2*b^2 + b^4)*d^3 + 2*(3*(a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x
 + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^3)*sinh(d*x + c)^2 + 4*((a^4 + 2*a^2*b^
2 + b^4)*d^3*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d^3*cosh(d*x + c))*s
inh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.23, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \left(\tanh^{3}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 3*a^2*b*d^2*f^2*integrate(x^2*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*
b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2
 + b^4*d^2), x) + b^3*d^2*f^2*integrate(x^2*e^(d*x + c)/(a^4*d^2*e^(2*d*x +
 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 +
 2*a^2*b^2*d^2 + b^4*d^2), x) - 2*a^3*d^2*f^2*integrate(x^2/(a^4*d^2*e^(2*d
```

```
*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d
^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + 6*a^2*b*d^2*e*f*integrate(x*e^(d*x + c)
/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*
x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + 2*b^3*d^2*e*f*integrate
(x*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b
^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) - 4*a^3*d^2
*e*f*integrate(x/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) +
 b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) - a^3*f^2
*(2*(d*x + c)/((a^4 + 2*a^2*b^2 + b^4)*d^3) - log(e^(2*d*x + 2*c) + 1)/((a^
4 + 2*a^2*b^2 + b^4)*d^3)) - a*b^2*f^2*(2*(d*x + c)/((a^4 + 2*a^2*b^2 + b^4
)*d^3) - log(e^(2*d*x + 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d^3)) - (a^3*log
(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 + b^4)*d) -
a^3*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) + (3*a^2*b + b^3)
*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) + (b*e^(-d*x - c) - 2*a*e
^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)*e^(-2*d*x
 - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d))*e^2 + 2*a^2*b*f^2*arctan(e^(d*x
 + c))/((a^4 + 2*a^2*b^2 + b^4)*d^3) + 2*b^3*f^2*arctan(e^(d*x + c))/((a^4
+ 2*a^2*b^2 + b^4)*d^3) + (2*a*f^2*x + 2*a*e*f - (b*d*f^2*x^2*e^(3*c) + 2*b
*e*f*e^(3*c) + 2*(d*e*f + f^2)*b*x*e^(3*c))*e^(3*d*x) + 2*(a*d*f^2*x^2*e^(2
*c) + a*e*f*e^(2*c) + (2*d*e*f + f^2)*a*x*e^(2*c))*e^(2*d*x) + (b*d*f^2*x^2
*e^c - 2*b*e*f*e^c + 2*(d*e*f - f^2)*b*x*e^c)*e^(d*x))/(a^2*d^2 + b^2*d^2 +
 (a^2*d^2*e^(4*c) + b^2*d^2*e^(4*c))*e^(4*d*x) + 2*(a^2*d^2*e^(2*c) + b^2*d
^2*e^(2*c))*e^(2*d*x)) + integrate(2*(a^3*b*f^2*x^2 + 2*a^3*b*e*f*x - (a^4*
f^2*x^2*e^c + 2*a^4*e*f*x*e^c)*e^(d*x))/(a^4*b + 2*a^2*b^3 + b^5 - (a^4*b*e
^(2*c) + 2*a^2*b^3*e^(2*c) + b^5*e^(2*c))*e^(2*d*x) - 2*(a^5*e^c + 2*a^3*b^
2*e^c + a*b^4*e^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh(c+d\,x)^3\,\left(e+f\,x\right)^2}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((tanh(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2\tanh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*tanh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**2*tanh(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.417 $\int \frac{(e+fx)\tanh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=894

$$-\frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d}-\frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)a^4}{b\left(a^2+b^2\right)^2d}+\frac{if\text{Li}_2\left(-ie^{c+dx}\right)a^4}{2b^3\left(a^2+b^2\right)d^2}+\frac{if\text{Li}_2\left(-ie^{c+dx}\right)a^4}{b\left(a^2+b^2\right)^2d^2}-\frac{if\text{Li}_2\left(ie^{c+dx}\right)a^4}{2b^3\left(a^2+b^2\right)d^2}-$$

```
[Out] I*a^4*f*polylog(2,-I*exp(d*x+c))/b/(a^2+b^2)^2/d^2+1/2*I*a^2*f*polylog(2,I*
exp(d*x+c))/b^3/d^2-1/2*a^4*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/b^3/(a^2+b^2)/d
-I*a^4*f*polylog(2,I*exp(d*x+c))/b/(a^2+b^2)^2/d^2-1/2*I*a^4*f*polylog(2,I*
exp(d*x+c))/b^3/(a^2+b^2)/d^2+1/2*a^3*f*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2
)^2/d^2+1/2*a^2*f*sech(d*x+c)/b^3/d^2+1/2*a*(f*x+e)*sech(d*x+c)^2/b^2/d-1/2
*a*f*tanh(d*x+c)/b^2/d^2+a^2*(f*x+e)*arctan(exp(d*x+c))/b^3/d-2*a^4*(f*x+e)
*arctan(exp(d*x+c))/b/(a^2+b^2)^2/d-1/2*a^4*f*sech(d*x+c)/b^3/(a^2+b^2)/d^2
-1/2*a^3*(f*x+e)*sech(d*x+c)^2/b^2/(a^2+b^2)/d+1/2*a^3*f*tanh(d*x+c)/b^2/(a
^2+b^2)/d^2+1/2*a^2*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/b^3/d-1/2*I*a^2*f*polyl
og(2,-I*exp(d*x+c))/b^3/d^2-a^4*(f*x+e)*arctan(exp(d*x+c))/b^3/(a^2+b^2)/d+
1/2*I*f*polylog(2,I*exp(d*x+c))/b/d^2+1/2*I*a^4*f*polylog(2,-I*exp(d*x+c))/
b^3/(a^2+b^2)/d^2-1/2*f*sech(d*x+c)/b/d^2+(f*x+e)*arctan(exp(d*x+c))/b/d-1/
2*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/b/d-1/2*I*f*polylog(2,-I*exp(d*x+c))/b/d^
2+a^3*(f*x+e)*ln(1+exp(2*d*x+2*c))/(a^2+b^2)^2/d-a^3*(f*x+e)*ln(1+b*exp(d*x
+c)/(a-(a^2+b^2)^(1/2)))/(a^2+b^2)^2/d-a^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^
2+b^2)^(1/2)))/(a^2+b^2)^2/d-a^3*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/
2)))/(a^2+b^2)^2/d^2-a^3*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/(a^
2+b^2)^2/d^2
```

Rubi [A] time = 1.42, antiderivative size = 894, normalized size of antiderivative = 1.00, number of steps used = 55, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {5567, 5455, 4180, 2279, 2391, 4185, 5583, 5451, 3767, 8, 5573, 5561, 2190, 6742, 3718}

$$-\frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)a^4}{b^3\left(a^2+b^2\right)d}-\frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)a^4}{b\left(a^2+b^2\right)^2d}+\frac{if\text{PolyLog}\left(2,-ie^{c+dx}\right)a^4}{2b^3\left(a^2+b^2\right)d^2}+\frac{if\text{PolyLog}\left(2,-ie^{c+dx}\right)a^4}{b\left(a^2+b^2\right)^2d^2}-$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Tanh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a^2*(e + f*x)*ArcTan[E^(c + d*x)])/(b^3*d) + ((e + f*x)*ArcTan[E^(c + d*x)
])/(b*d) - (2*a^4*(e + f*x)*ArcTan[E^(c + d*x)])/(b*(a^2 + b^2)^2*d) - (a^4
*(e + f*x)*ArcTan[E^(c + d*x)])/(b^3*(a^2 + b^2)*d) - (a^3*(e + f*x)*Log[1
```

```
+ (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/((a^2 + b^2)^2*d) - (a^3*(e + f*x
)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/((a^2 + b^2)^2*d) + (a^3*
(e + f*x)*Log[1 + E^(2*(c + d*x))])/((a^2 + b^2)^2*d) - ((I/2)*a^2*f*PolyLo
g[2, (-I)*E^(c + d*x)])/(b^3*d^2) - ((I/2)*f*PolyLog[2, (-I)*E^(c + d*x)])/
(b*d^2) + (I*a^4*f*PolyLog[2, (-I)*E^(c + d*x)])/(b*(a^2 + b^2)^2*d^2) + ((
I/2)*a^4*f*PolyLog[2, (-I)*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^2) + ((I/2)*a^2
*f*PolyLog[2, I*E^(c + d*x)])/(b^3*d^2) + ((I/2)*f*PolyLog[2, I*E^(c + d*x)
])/(b*d^2) - (I*a^4*f*PolyLog[2, I*E^(c + d*x)])/(b*(a^2 + b^2)^2*d^2) - ((
I/2)*a^4*f*PolyLog[2, I*E^(c + d*x)])/(b^3*(a^2 + b^2)*d^2) - (a^3*f*PolyLo
g[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^2) - (a^3*
f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/((a^2 + b^2)^2*d^2)
 + (a^3*f*PolyLog[2, -E^(2*(c + d*x))])/(2*(a^2 + b^2)^2*d^2) + (a^2*f*Sech
[c + d*x])/(2*b^3*d^2) - (f*Sech[c + d*x])/(2*b*d^2) - (a^4*f*Sech[c + d*x]
)/(2*b^3*(a^2 + b^2)*d^2) + (a*(e + f*x)*Sech[c + d*x]^2)/(2*b^2*d) - (a^3*
(e + f*x)*Sech[c + d*x]^2)/(2*b^2*(a^2 + b^2)*d) - (a*f*Tanh[c + d*x])/(2*b
^2*d^2) + (a^3*f*Tanh[c + d*x])/(2*b^2*(a^2 + b^2)*d^2) + (a^2*(e + f*x)*Se
ch[c + d*x]*Tanh[c + d*x])/(2*b^3*d) - ((e + f*x)*Sech[c + d*x]*Tanh[c + d*
x])/(2*b*d) - (a^4*(e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(2*b^3*(a^2 + b^2
)*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
```

```
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5455

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]*Tanh[(a_.) + (b_.)*
(x_)]^(p_), x_Symbol] :> Int[(c + d*x)^m*Sech[a + b*x]*Tanh[a + b*x]^(p - 2
), x] - Int[(c + d*x)^m*Sech[a + b*x]^3*Tanh[a + b*x]^(p - 2), x] /; FreeQ[
{a, b, c, d, m}, x] && IGtQ[p/2, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
```

```
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5567

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Tanh[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sech[c
 + d*x]*Tanh[c + d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sech[c +
 d*x]*Tanh[c + d*x]^(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5583

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(p_.)*Tanh[(c_.) +
 (d_.)*(x_)]^(n_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/b, Int[(e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1), x], x
] - Dist[a/b, Int[((e + f*x)^m*Sech[c + d*x]^(p + 1)*Tanh[c + d*x]^(n - 1))
/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0
] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\tanh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{sech}(c+dx)\tanh^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\text{sech}(c+dx)\tanh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{b}$$

$$= -\frac{a\int (e+fx)\text{sech}^2(c+dx)\tanh(c+dx)\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)\text{sech}^2(c+dx)\tanh(c+dx)}{a+b\sinh(c+dx)}\,dx}{b^2} +$$

$$= \frac{2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{f\text{sech}(c+dx)}{2bd^2} + \frac{a(e+fx)\text{sech}^2(c+dx)}{2b^2d} - \frac{(e+fx)\text{sec}}{}$$

$$= \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} + \frac{a^2f\text{sech}(c+dx)}{2b^3d^2} - \frac{f\text{sech}(c+dx)}{2bd^2} + \frac{a(e+fx)\text{sech}^2(c+}{2b^2d}$$

$$= \frac{a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{if\text{Li}_2\left(-ie^{c+dx}\right)}{bd^2} + \frac{if\text{Li}_2\left(ie^{c+d}\right.}{bd^2}$$

$$= \frac{a^3(e+fx)^2}{2\left(a^2+b^2\right)^2f} + \frac{a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{if\text{Li}_2\left(-ie^{c+d}\right.}{2bd^2}$$

$$= \frac{a^3(e+fx)^2}{2\left(a^2+b^2\right)^2f} + \frac{a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{a^3(e+fx)\,\text{lo}}{\left(a^2\right.}$$

$$= \frac{a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^4(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)^2d} - \frac{a}{}$$

$$= \frac{a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^4(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)^2d} - \frac{a}{}$$

$$= \frac{a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^4(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)^2d} - \frac{a}{}$$

$$= \frac{a^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b^3d} + \frac{(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{bd} - \frac{2a^4(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{b\left(a^2+b^2\right)^2d} - \frac{a}{}$$

Mathematica [A] time = 7.30, size = 588, normalized size = 0.66

$$-2a^3de\log(a+b\sinh(c+dx))+2a^3cf\log(a+b\sinh(c+dx))-2a^3de(c+dx)+2a^3de\log\left(e^{2(c+dx)}+1\right)+a^3f$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Tanh[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*a^3*d*e*(c + d*x) + 2*a^3*c*f*(c + d*x) + 6*a^2*b*d*e*ArcTan[E^(c + d*x
)] + 2*b^3*d*e*ArcTan[E^(c + d*x)] - 6*a^2*b*c*f*ArcTan[E^(c + d*x)] - 2*b^
3*c*f*ArcTan[E^(c + d*x)] + (3*I)*a^2*b*f*(c + d*x)*Log[1 - I*E^(c + d*x)]
+ I*b^3*f*(c + d*x)*Log[1 - I*E^(c + d*x)] - (3*I)*a^2*b*f*(c + d*x)*Log[1
+ I*E^(c + d*x)] - I*b^3*f*(c + d*x)*Log[1 + I*E^(c + d*x)] - 2*a^3*f*(c +
d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 2*a^3*f*(c + d*x)*Log
[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 2*a^3*d*e*Log[1 + E^(2*(c + d
*x))] - 2*a^3*c*f*Log[1 + E^(2*(c + d*x))] + 2*a^3*f*(c + d*x)*Log[1 + E^(2
*(c + d*x))] - 2*a^3*d*e*Log[a + b*Sinh[c + d*x]] + 2*a^3*c*f*Log[a + b*Sin
h[c + d*x]] - I*b*(3*a^2 + b^2)*f*PolyLog[2, (-I)*E^(c + d*x)] + I*b*(3*a^2
 + b^2)*f*PolyLog[2, I*E^(c + d*x)] - 2*a^3*f*PolyLog[2, (b*E^(c + d*x))/(-
a + Sqrt[a^2 + b^2])] - 2*a^3*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2
+ b^2]))] + a^3*f*PolyLog[2, -E^(2*(c + d*x))] - (a^2 + b^2)*f*Sech[c + d*x
]*(b + a*Sinh[c + d*x]) + (a^2 + b^2)*d*(e + f*x)*Sech[c + d*x]^2*(a - b*Si
nh[c + d*x]))/(2*(a^2 + b^2)^2*d^2)
```

fricas [B] time = 0.74, size = 4709, normalized size = 5.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^2*b + b^3)*f)*cosh(d*
x + c)^3 + 2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^2*b + b^3)*f)*si
nh(d*x + c)^3 - 2*(2*(a^3 + a*b^2)*d*f*x + 2*(a^3 + a*b^2)*d*e + (a^3 + a*b
^2)*f)*cosh(d*x + c)^2 - 2*(2*(a^3 + a*b^2)*d*f*x + 2*(a^3 + a*b^2)*d*e + (
a^3 + a*b^2)*f - 3*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^2*b + b^3)
*f)*cosh(d*x + c))*sinh(d*x + c)^2 - 2*(a^3 + a*b^2)*f - 2*((a^2*b + b^3)*d
*f*x + (a^2*b + b^3)*d*e - (a^2*b + b^3)*f)*cosh(d*x + c) + 2*(a^3*f*cosh(d
*x + c)^4 + 4*a^3*f*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*f*sinh(d*x + c)^4 +
 2*a^3*f*cosh(d*x + c)^2 + a^3*f + 2*(3*a^3*f*cosh(d*x + c)^2 + a^3*f)*sinh
(d*x + c)^2 + 4*(a^3*f*cosh(d*x + c)^3 + a^3*f*cosh(d*x + c))*sinh(d*x + c)
)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(a^3*f*cosh(d*x + c)^4 + 4*a^3*
```

f*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*f*sinh(d*x + c)^4 + 2*a^3*f*cosh(d*x + c)^2 + a^3*f + 2*(3*a^3*f*cosh(d*x + c)^2 + a^3*f)*sinh(d*x + c)^2 + 4*(a^3*f*cosh(d*x + c)^3 + a^3*f*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - ((2*a^3*f + I*(3*a^2*b + b^3)*f)*cosh(d*x + c)^4 + 4*(2*a^3*f + I*(3*a^2*b + b^3)*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^3*f + I*(3*a^2*b + b^3)*f)*sinh(d*x + c)^4 + 2*a^3*f + 2*(2*a^3*f + I*(3*a^2*b + b^3)*f)*cosh(d*x + c)^2 + 2*(2*a^3*f + 3*(2*a^3*f + I*(3*a^2*b + b^3)*f)*cosh(d*x + c)^2 + I*(3*a^2*b + b^3)*f)*sinh(d*x + c)^2 + I*(3*a^2*b + b^3)*f + 4*((2*a^3*f + I*(3*a^2*b + b^3)*f)*cosh(d*x + c)^3 + (2*a^3*f + I*(3*a^2*b + b^3)*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) - ((2*a^3*f - I*(3*a^2*b + b^3)*f)*cosh(d*x + c)^4 + 4*(2*a^3*f - I*(3*a^2*b + b^3)*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^3*f - I*(3*a^2*b + b^3)*f)*sinh(d*x + c)^4 + 2*a^3*f + 2*(2*a^3*f - I*(3*a^2*b + b^3)*f)*cosh(d*x + c)^2 + 2*(2*a^3*f + 3*(2*a^3*f - I*(3*a^2*b + b^3)*f)*cosh(d*x + c)^2 - I*(3*a^2*b + b^3)*f)*sinh(d*x + c)^2 - I*(3*a^2*b + b^3)*f + 4*((2*a^3*f - I*(3*a^2*b + b^3)*f)*cosh(d*x + c)^3 + (2*a^3*f - I*(3*a^2*b + b^3)*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + 2*(a^3*d*e - a^3*c*f + (a^3*d*e - a^3*c*f)*cosh(d*x + c)^4 + 4*(a^3*d*e - a^3*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*d*e - a^3*c*f)*sinh(d*x + c)^4 + 2*(a^3*d*e - a^3*c*f)*cosh(d*x + c)^2 + 2*(a^3*d*e - a^3*c*f + 3*(a^3*d*e - a^3*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^3*d*e - a^3*c*f)*cosh(d*x + c)^3 + (a^3*d*e - a^3*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(a^3*d*e - a^3*c*f + (a^3*d*e - a^3*c*f)*cosh(d*x + c)^4 + 4*(a^3*d*e - a^3*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*d*e - a^3*c*f)*sinh(d*x + c)^4 + 2*(a^3*d*e - a^3*c*f)*cosh(d*x + c)^2 + 2*(a^3*d*e - a^3*c*f + 3*(a^3*d*e - a^3*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^3*d*e - a^3*c*f)*cosh(d*x + c)^3 + (a^3*d*e - a^3*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(a^3*d*f*x + a^3*c*f + (a^3*d*f*x + a^3*c*f)*cosh(d*x + c)^4 + 4*(a^3*d*f*x + a^3*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*d*f*x + a^3*c*f)*sinh(d*x + c)^4 + 2*(a^3*d*f*x + a^3*c*f)*cosh(d*x + c)^2 + 2*(a^3*d*f*x + a^3*c*f + 3*(a^3*d*f*x + a^3*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^3*d*f*x + a^3*c*f)*cosh(d*x + c)^3 + (a^3*d*f*x + a^3*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(a^3*d*f*x + a^3*c*f + (a^3*d*f*x + a^3*c*f)*cosh(d*x + c)^4 + 4*(a^3*d*f*x + a^3*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*d*f*x + a^3*c*f)*sinh(d*x + c)^4 + 2*(a^3*d*f*x + a^3*c*f)*cosh(d*x + c)^2 + 2*(a^3*d*f*x + a^3*c*f + 3*(a^3*d*f*x + a^3*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^3*d*f*x + a^3*c*f)*cosh(d*x + c)^3 + (a^3*d*f*x + a^3*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (2*a^3*d*e - 2*a^3*c*f + (2*a^3*d*e - 2*a^3*c*f + I*(3*a^2*b + b^3)*d*e - I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^4 + (8*a^3*d*e - 8*a^3*c*f + 4*I*(3*a^2*b +

b^3)*d*e - 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^3*d*e - 2*a^3*c*f + I*(3*a^2*b + b^3)*d*e - I*(3*a^2*b + b^3)*c*f)*sinh(d*x + c)^4 + I*(3*a^2*b + b^3)*d*e - I*(3*a^2*b + b^3)*c*f + (4*a^3*d*e - 4*a^3*c*f + 2*I*(3*a^2*b + b^3)*d*e - 2*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^2 + (4*a^3*d*e - 4*a^3*c*f + 2*I*(3*a^2*b + b^3)*d*e - 2*I*(3*a^2*b + b^3)*c*f + (12*a^3*d*e - 12*a^3*c*f + 6*I*(3*a^2*b + b^3)*d*e - 6*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^3*d*e - 8*a^3*c*f + 4*I*(3*a^2*b + b^3)*d*e - 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^3 + (8*a^3*d*e - 8*a^3*c*f + 4*I*(3*a^2*b + b^3)*d*e - 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + I) - (2*a^3*d*e - 2*a^3*c*f + (2*a^3*d*e - 2*a^3*c*f - I*(3*a^2*b + b^3)*d*e + I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^4 + (8*a^3*d*e - 8*a^3*c*f - 4*I*(3*a^2*b + b^3)*d*e + 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^3*d*e - 2*a^3*c*f - I*(3*a^2*b + b^3)*d*e + I*(3*a^2*b + b^3)*c*f)*sinh(d*x + c)^4 - I*(3*a^2*b + b^3)*d*e + I*(3*a^2*b + b^3)*c*f + (4*a^3*d*e - 4*a^3*c*f - 2*I*(3*a^2*b + b^3)*d*e + 2*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^2 + (4*a^3*d*e - 4*a^3*c*f - 2*I*(3*a^2*b + b^3)*d*e + 2*I*(3*a^2*b + b^3)*c*f + (12*a^3*d*e - 12*a^3*c*f - 6*I*(3*a^2*b + b^3)*d*e + 6*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^3*d*e - 8*a^3*c*f - 4*I*(3*a^2*b + b^3)*d*e + 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^3 + (8*a^3*d*e - 8*a^3*c*f - 4*I*(3*a^2*b + b^3)*d*e + 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - I) - (2*a^3*d*f*x + 2*a^3*c*f + (2*a^3*d*f*x + 2*a^3*c*f - I*(3*a^2*b + b^3)*d*f*x - I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^4 + (8*a^3*d*f*x + 8*a^3*c*f - 4*I*(3*a^2*b + b^3)*d*f*x - 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^3*d*f*x + 2*a^3*c*f - I*(3*a^2*b + b^3)*d*f*x - I*(3*a^2*b + b^3)*c*f)*sinh(d*x + c)^4 - I*(3*a^2*b + b^3)*d*f*x - I*(3*a^2*b + b^3)*c*f + (4*a^3*d*f*x + 4*a^3*c*f - 2*I*(3*a^2*b + b^3)*d*f*x - 2*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^2 + (4*a^3*d*f*x + 4*a^3*c*f - 2*I*(3*a^2*b + b^3)*d*f*x - 2*I*(3*a^2*b + b^3)*c*f + (12*a^3*d*f*x + 12*a^3*c*f - 6*I*(3*a^2*b + b^3)*d*f*x - 6*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^3*d*f*x + 8*a^3*c*f - 4*I*(3*a^2*b + b^3)*d*f*x - 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^3 + (8*a^3*d*f*x + 8*a^3*c*f - 4*I*(3*a^2*b + b^3)*d*f*x - 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) - (2*a^3*d*f*x + 2*a^3*c*f + (2*a^3*d*f*x + 2*a^3*c*f + I*(3*a^2*b + b^3)*d*f*x + I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^4 + (8*a^3*d*f*x + 8*a^3*c*f + 4*I*(3*a^2*b + b^3)*d*f*x + 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^3*d*f*x + 2*a^3*c*f + I*(3*a^2*b + b^3)*d*f*x + I*(3*a^2*b + b^3)*c*f)*sinh(d*x + c)^4 + I*(3*a^2*b + b^3)*d*f*x + I*(3*a^2*b + b^3)*c*f + (4*a^3*d*f*x + 4*a^3*c*f + 2*I*(3*a^2*b + b^3)*d*f*x + 2*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^2 + (4*a^3*d*f*x + 4*a^3*c*f + 2*I*(3*a^2*b + b^3)*d*f*x + 2*I*(3*a^2*b + b^3)*c*f + (12*a^3*d*f*x + 12*a^3*c*f + 6*I*(3*a^2*b + b^3)*d*f*x + 6*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^3*d*f*x + 8*a^3*c*f + 4*I*(3*a^2*b + b^3)*d*f*x + 4*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c)^3 + (8*a^3*d*f*x + 8*a^3*c*f + 4*I*(3*a^2*b + b^3)*d*f*x + 4

```
*I*(3*a^2*b + b^3)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-I*cosh(d*x + c)
- I*sinh(d*x + c) + 1) - 2*((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e - 3*((a
^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^2*b + b^3)*f)*cosh(d*x + c)^2 -
(a^2*b + b^3)*f + 2*(2*(a^3 + a*b^2)*d*f*x + 2*(a^3 + a*b^2)*d*e + (a^3 + a
*b^2)*f)*cosh(d*x + c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*
x + c)^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)*sinh(d*x + c)^3 + (a
^4 + 2*a^2*b^2 + b^4)*d^2*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*c
osh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^2 + 2*(3*(a^4 + 2*a^2*b^2 + b^4)
*d^2*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d^2)*sinh(d*x + c)^2 + 4*((a
^4 + 2*a^2*b^2 + b^4)*d^2*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d^2*cos
h(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.34, size = 2284, normalized size = 2.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/(a^2+b^2)^(3/2)/d*b^4*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(
a^2+b^2)^(1/2))+1/(a^2+b^2)^(1/2)/d*b^2*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*ex
p(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d^2*f*c/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*arct
anh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2-2/(a^2+b^2)^(3/2)/d*a^4*e
/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+3/(a^2+b^2
)^(3/2)/d^2*b^2*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2
)^(1/2))*a^2+2/(a^2+b^2)^(3/2)/d^2*a^4*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*e
xp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/d*e/(2*a^2+2*b^2)/(a^2+b^2)^(1/2)*arctanh
(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2-2/d^2/(a^2+b^2)*a^3*f/(2*a^2
+2*b^2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-2/d^2
/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a
^2+b^2)^(1/2)))+2/d^2/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))-2
/d/(a^2+b^2)*a^3*e/(2*a^2+2*b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d/
(a^2+b^2)*a^3*e/(2*a^2+2*b^2)*ln(1+exp(2*d*x+2*c))+2/d^2/(a^2+b^2)*a^3*f/(2
*a^2+2*b^2)*dilog(1-I*exp(d*x+c))+6/d*b/(a^2+b^2)*a^2*e/(2*a^2+2*b^2)*arcta
n(exp(d*x+c))-I/d^2*b^3/(a^2+b^2)*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))-3*I
```

```
/d*b/(a^2+b^2)*a^2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*x-3*I/d^2*b/(a^2+b^2)
*a^2*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c+3*I/d/(a^2+b^2)*a^2*f/(2*a^2+2*b^
2)*ln(1-I*exp(d*x+c))*b*x+3*I/d^2/(a^2+b^2)*a^2*f/(2*a^2+2*b^2)*ln(1-I*exp(
d*x+c))*b*c+2/d*b^3/(a^2+b^2)*e/(2*a^2+2*b^2)*arctan(exp(d*x+c))-3*I/d^2*b/
(a^2+b^2)*a^2*f/(2*a^2+2*b^2)*dilog(1+I*exp(d*x+c))+3*I/d^2/(a^2+b^2)*a^2*f
/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+c))*b+(-b*d*f*x*exp(3*d*x+3*c)+2*a*d*f*x*e
xp(2*d*x+2*c)-b*d*e*exp(3*d*x+3*c)+2*a*d*e*exp(2*d*x+2*c)+b*d*f*x*exp(d*x+c
)-b*f*exp(3*d*x+3*c)+a*f*exp(2*d*x+2*c)+b*d*e*exp(d*x+c)-f*b*exp(d*x+c)+a*f
)/d^2/(a^2+b^2)/(1+exp(2*d*x+2*c))^2+1/(a^2+b^2)^(3/2)/d^2*b^4*f*c/(2*a^2+2
*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-3/(a^2+b^2)^(3/2)/d
*b^2*e/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^2-
1/(a^2+b^2)^(1/2)/d^2*b^2*f*c/(2*a^2+2*b^2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a
)/(a^2+b^2)^(1/2))+I/d^2*b^3/(a^2+b^2)*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*c
-I/d*b^3/(a^2+b^2)*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*x-I/d^2*b^3/(a^2+b^2)
*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c-6/d^2*b/(a^2+b^2)*a^2*f*c/(2*a^2+2*b^
2)*arctan(exp(d*x+c))+I/d*b^3/(a^2+b^2)*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*
x-2/d^2*b^3/(a^2+b^2)*f*c/(2*a^2+2*b^2)*arctan(exp(d*x+c))+I/d^2*b^3/(a^2+b
^2)*f/(2*a^2+2*b^2)*dilog(1-I*exp(d*x+c))-2/d^2/(a^2+b^2)*a^3*f*c/(2*a^2+2*
b^2)*ln(1+exp(2*d*x+2*c))+2/d/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+
c))*x+2/d^2/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*ln(1+I*exp(d*x+c))*c+2/d/(a^2+b^2
)*a^3*f/(2*a^2+2*b^2)*ln(1-I*exp(d*x+c))*x+2/d^2/(a^2+b^2)*a^3*f/(2*a^2+2*b
^2)*ln(1-I*exp(d*x+c))*c-2/d/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*ln((-b*exp(d*x+c
)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-2/d^2/(a^2+b^2)*a^3*f/(2*a^2+2
*b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-2/d/(a^2
+b^2)*a^3*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^
(1/2)))*x-2/d^2/(a^2+b^2)*a^3*f/(2*a^2+2*b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1
/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/d^2/(a^2+b^2)*a^3*f*c/(2*a^2+2*b^2)*ln(b*ex
p(2*d*x+2*c)+2*a*exp(d*x+c)-b)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(\frac{a^3\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{a^3\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{\left(3\,a^2b+b^3\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{be}{\left(a^2+b^2+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(a^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 + b
^4)*d) - a^3*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) + (3*a^2
*b + b^3)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) + (b*e^(-d*x - c
) - 2*a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)*
e^(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d))*e - f*(((b*d*x*e^(3*c)
 + b*e^(3*c))*e^(3*d*x) - (2*a*d*x*e^(2*c) + a*e^(2*c))*e^(2*d*x) - (b*d*x*
e^c - b*e^c)*e^(d*x) - a)/(a^2*d^2 + b^2*d^2 + (a^2*d^2*e^(4*c) + b^2*d^2*e
```

```
^(4*c))*e^(4*d*x) + 2*(a^2*d^2*e^(2*c) + b^2*d^2*e^(2*c))*e^(2*d*x)) - inte
grate(-2*(a^4*x*e^(d*x + c) - a^3*b*x)/(a^4*b + 2*a^2*b^3 + b^5 - (a^4*b*e^
(2*c) + 2*a^2*b^3*e^(2*c) + b^5*e^(2*c))*e^(2*d*x) - 2*(a^5*e^c + 2*a^3*b^2
*e^c + a*b^4*e^c)*e^(d*x)), x) - integrate(-(2*a^3*x - (3*a^2*b*e^c + b^3*e
^c)*x*e^(d*x))/(a^4 + 2*a^2*b^2 + b^4 + (a^4*e^(2*c) + 2*a^2*b^2*e^(2*c) +
b^4*e^(2*c))*e^(2*d*x)), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\tanh (c+d\,x)^3\,\left(e+f\,x\right)}{a+b\sinh (c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((tanh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((tanh(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\tanh^3 (c+dx)}{a+b\sinh (c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*tanh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*tanh(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.418 $\int \frac{\tanh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=120

$$\frac{b\left(3a^2+b^2\right)\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)^2}+\frac{\operatorname{sech}^2(c+dx)(a-b\sinh(c+dx))}{2d\left(a^2+b^2\right)}-\frac{a^3\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{a^3\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}$$

```
[Out] 1/2*b*(3*a^2+b^2)*arctan(sinh(d*x+c))/(a^2+b^2)^2/d+a^3*ln(cosh(d*x+c))/(a^
2+b^2)^2/d-a^3*ln(a+b*sinh(d*x+c))/(a^2+b^2)^2/d+1/2*sech(d*x+c)^2*(a-b*sin
h(d*x+c))/(a^2+b^2)/d
```

Rubi [A] time = 0.20, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2721, 1647, 801, 635, 203, 260}

$$-\frac{a^3\log(a+b\sinh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{b\left(3a^2+b^2\right)\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)^2}+\frac{a^3\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{\operatorname{sech}^2(c+dx)(a-b\sinh(c+dx))}{2d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Tanh[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(3*a^2 + b^2)*ArcTan[Sinh[c + d*x]])/(2*(a^2 + b^2)^2*d) + (a^3*Log[Cosh
[c + d*x]])/((a^2 + b^2)^2*d) - (a^3*Log[a + b*Sinh[c + d*x]])/((a^2 + b^2)
^2*d) + (Sech[c + d*x]^2*(a - b*Sinh[c + d*x]))/(2*(a^2 + b^2)*d)
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 1647

```
Int[(Pq_)*((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :
> With[{Q = PolynomialQuotient[(d + e*x)^m*Pq, a + c*x^2, x], f = Coeff[Pol
ynomialRemainder[(d + e*x)^m*Pq, a + c*x^2, x], x, 0], g = Coeff[Polynomial
Remainder[(d + e*x)^m*Pq, a + c*x^2, x], x, 1]}, Simp[((a*g - c*f*x)*(a + c
*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^
m*(a + c*x^2)^(p + 1)*ExpandToSum[(2*a*c*(p + 1)*Q)/(d + e*x)^m + (c*f*(2*p
 + 3))/(d + e*x)^m, x], x], x]] /; FreeQ[{a, c, d, e}, x] && PolyQ[Pq, x] &
& NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && ILtQ[m, 0]
```

Rule 2721

```
Int[((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*tan[(e_.) + (f_.)*(x_)]^(p
_.), x_Symbol] :> Dist[1/f, Subst[Int[(x^p*(a + x)^m)/(b^2 - x^2)^((p + 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && NeQ[a^2 - b^
2, 0] && IntegerQ[(p + 1)/2]
```

Rubi steps

$$\int \frac{\tanh^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{x^3}{(a+x)\left(-b^2-x^2\right)^2}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= \frac{\text{sech}^2(c+dx)(a-b\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{\text{Subst}\left(\int \frac{\frac{ab^4}{a^2+b^2}+\frac{b^2\left(2a^2+b^2\right)x}{a^2+b^2}}{(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{2b^2d}$$

$$= \frac{\text{sech}^2(c+dx)(a-b\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{\text{Subst}\left(\int \left(\frac{2a^3b^2}{\left(a^2+b^2\right)^2(a+x)} - \frac{b^2\left(3a^2b^2+b^4+2a^3x\right)}{\left(a^2+b^2\right)^2\left(b^2+x^2\right)}\right) dx, x$$

$$= -\frac{a^3\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)^2 d} + \frac{\text{sech}^2(c+dx)(a-b\sinh(c+dx))}{2\left(a^2+b^2\right)d} + \frac{\text{Subst}\left(\int \frac{3a^2b^2+b}{b^2+}\right.}{2}$$

$$= -\frac{a^3\log(a+b\sinh(c+dx))}{\left(a^2+b^2\right)^2 d} + \frac{\text{sech}^2(c+dx)(a-b\sinh(c+dx))}{2\left(a^2+b^2\right)d} + \frac{a^3\,\text{Subst}\left(\int \frac{x}{b^2+x}\right.}{\left(a^2\right.}$$

$$= \frac{b\left(3a^2+b^2\right)\tan^{-1}(\sinh(c+dx))}{2\left(a^2+b^2\right)^2 d} + \frac{a^3\log(\cosh(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{a^3\log(a+b\sinh(c+dx}{\left(a^2+b^2\right)^2 d}$$

Mathematica [C] time = 0.39, size = 152, normalized size = 1.27

$$-\frac{2a^3\log(a+b\sinh(c+dx)) - a\left(a^2+b^2\right)\text{sech}^2(c+dx) + b\left(a^2+b^2\right)\tan^{-1}(\sinh(c+dx)) + b\left(a^2+b^2\right)\tanh(c}{2d\left(a^2\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tanh[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(b*(a^2 + b^2)*ArcTan[Sinh[c + d*x]] - (a^3 - I*(2*a^2*b + b^3))*Log[I
 - Sinh[c + d*x]] - (a^3 + I*(2*a^2*b + b^3))*Log[I + Sinh[c + d*x]] + 2*a^
3*Log[a + b*Sinh[c + d*x]] - a*(a^2 + b^2)*Sech[c + d*x]^2 + b*(a^2 + b^2)*
Sech[c + d*x]*Tanh[c + d*x])/((a^2 + b^2)^2*d)
```

fricas [B] time = 0.49, size = 896, normalized size = 7.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -((a^2*b + b^3)*cosh(d*x + c)^3 + (a^2*b + b^3)*sinh(d*x + c)^3 - 2*(a^3 +
a*b^2)*cosh(d*x + c)^2 - (2*a^3 + 2*a*b^2 - 3*(a^2*b + b^3)*cosh(d*x + c))*
sinh(d*x + c)^2 - ((3*a^2*b + b^3)*cosh(d*x + c)^4 + 4*(3*a^2*b + b^3)*cosh
(d*x + c)*sinh(d*x + c)^3 + (3*a^2*b + b^3)*sinh(d*x + c)^4 + 3*a^2*b + b^3
 + 2*(3*a^2*b + b^3)*cosh(d*x + c)^2 + 2*(3*a^2*b + b^3 + 3*(3*a^2*b + b^3)
*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((3*a^2*b + b^3)*cosh(d*x + c)^3 + (3
*a^2*b + b^3)*cosh(d*x + c))*sinh(d*x + c))*arctan(cosh(d*x + c) + sinh(d*x
 + c)) - (a^2*b + b^3)*cosh(d*x + c) + (a^3*cosh(d*x + c)^4 + 4*a^3*cosh(d*
x + c)*sinh(d*x + c)^3 + a^3*sinh(d*x + c)^4 + 2*a^3*cosh(d*x + c)^2 + a^3
+ 2*(3*a^3*cosh(d*x + c)^2 + a^3)*sinh(d*x + c)^2 + 4*(a^3*cosh(d*x + c)^3
+ a^3*cosh(d*x + c))*sinh(d*x + c))*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x +
 c) - sinh(d*x + c))) - (a^3*cosh(d*x + c)^4 + 4*a^3*cosh(d*x + c)*sinh(d*x
 + c)^3 + a^3*sinh(d*x + c)^4 + 2*a^3*cosh(d*x + c)^2 + a^3 + 2*(3*a^3*cosh
(d*x + c)^2 + a^3)*sinh(d*x + c)^2 + 4*(a^3*cosh(d*x + c)^3 + a^3*cosh(d*x
+ c))*sinh(d*x + c))*log(2*cosh(d*x + c)/(cosh(d*x + c) - sinh(d*x + c))) -
 (a^2*b + b^3 - 3*(a^2*b + b^3)*cosh(d*x + c)^2 + 4*(a^3 + a*b^2)*cosh(d*x
+ c))*sinh(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^4 + 4*(a^4 +
2*a^2*b^2 + b^4)*d*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*
d*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^2 + 2*(3*(a^4
 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d)*sinh(d*x
 + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*d + 4*((a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x
 + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*d*cosh(d*x + c))*sinh(d*x + c))
```

giac [A] time = 3.78, size = 223, normalized size = 1.86

$$\frac{\frac{a^{3}\log\left(e^{(2dx+2c)}+1\right)}{a^{4}+2a^{2}b^{2}+b^{4}}-\frac{a^{3}\log\left(\left|-be^{(2dx+2c)}-2ae^{(dx+c)}+b\right|\right)}{a^{4}+2a^{2}b^{2}+b^{4}}+\frac{\left(3a^{2}be^{c}+b^{3}e^{c}\right)\arctan\left(e^{(dx+c)}\right)e^{(-c)}}{a^{4}+2a^{2}b^{2}+b^{4}}-\frac{\left(a^{2}be^{(3c)}+b^{3}e^{(3c)}\right)e^{(3dx)}-2\left(a^{3}e^{(2c)}+ab^{2}e^{(2c)}\right)e^{(2\cdots}}{\left(a^{2}+b^{2}\right)^{2}\left(e^{(2dx+2c)}+1\right)^{2}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (a^3*log(e^(2*d*x + 2*c) + 1)/(a^4 + 2*a^2*b^2 + b^4) - a^3*log(abs(-b*e^(2
*d*x + 2*c) - 2*a*e^(d*x + c) + b))/(a^4 + 2*a^2*b^2 + b^4) + (3*a^2*b*e^c
+ b^3*e^c)*arctan(e^(d*x + c))*e^(-c)/(a^4 + 2*a^2*b^2 + b^4) - ((a^2*b*e^(
3*c) + b^3*e^(3*c))*e^(3*d*x) - 2*(a^3*e^(2*c) + a*b^2*e^(2*c))*e^(2*d*x) -
 (a^2*b*e^c + b^3*e^c)*e^(d*x))/((a^2 + b^2)^2*(e^(2*d*x + 2*c) + 1)^2))/d
```

maple [B] time = 0.00, size = 472, normalized size = 3.93

$$-\frac{8a^{3}\ln\left(\left(\tanh^{2}\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\left(8a^{4}+16a^{2}b^{2}+8b^{4}\right)}+\frac{\left(\tanh^{3}\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a^{2}b}{d\left(a^{4}+2a^{2}b^{2}+b^{4}\right)\left(\tanh^{2}\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^{2}}+\frac{\left(\mathrm{ta}\cdots\right.}{d\left(a^{4}+2a^{2}b^{2}\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] -8/d*a^3/(8*a^4+16*a^2*b^2+8*b^4)*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x
+1/2*c)*b-a)+1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d
*x+1/2*c)^3*a^2*b+1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(
1/2*d*x+1/2*c)^3*b^3-2/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*ta
nh(1/2*d*x+1/2*c)^2*a^3-2/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2
*tanh(1/2*d*x+1/2*c)^2*a*b^2-1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c)^2
+1)^2*tanh(1/2*d*x+1/2*c)*a^2*b-1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d*x+1/2*c
)^2+1)^2*tanh(1/2*d*x+1/2*c)*b^3+1/d/(a^4+2*a^2*b^2+b^4)*a^3*ln(tanh(1/2*d*
x+1/2*c)^2+1)+3/d/(a^4+2*a^2*b^2+b^4)*arctan(tanh(1/2*d*x+1/2*c))*a^2*b+1/d
/(a^4+2*a^2*b^2+b^4)*arctan(tanh(1/2*d*x+1/2*c))*b^3
```

maxima [A] time = 0.41, size = 217, normalized size = 1.81

$$-\frac{a^3 \log\left(-2\,ae^{(-dx-c)} + be^{(-2\,dx-2\,c)} - b\right)}{\left(a^4 + 2\,a^2b^2 + b^4\right)d} + \frac{a^3 \log\left(e^{(-2\,dx-2\,c)} + 1\right)}{\left(a^4 + 2\,a^2b^2 + b^4\right)d} - \frac{\left(3\,a^2b + b^3\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4 + 2\,a^2b^2 + b^4\right)d} - \frac{be^{(-dx-}}{\left(a^2 + b^2 + 2\left(a^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -a^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + 2*a^2*b^2 + b^
4)*d) + a^3*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) - (3*a^2*
b + b^3)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d) - (b*e^(-d*x - c)
 - 2*a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2*(a^2 + b^2)*e
^(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d)
```

mupad [B] time = 2.37, size = 381, normalized size = 3.18

$$\frac{\frac{2\left(a^3+a\,b^2\right)}{d\left(a^2+b^2\right)^2} - \frac{e^{c+d\,x}\left(a^2\,b+b^3\right)}{d\left(a^2+b^2\right)^2}}{e^{2\,c+2\,d\,x}+1} - \frac{\frac{2\,a}{d\left(a^2+b^2\right)} - \frac{2\,b\,e^{c+d\,x}}{d\left(a^2+b^2\right)}}{2\,e^{2\,c+2\,d\,x} + e^{4\,c+4\,d\,x} + 1} + \frac{\ln\left(1 + e^{c+d\,x}\,1\mathrm{i}\right)\,\left(2\,a + b\,1\mathrm{i}\right)}{2\,\left(d\,a^2 + 2\mathrm{i}\,d\,a\,b - d\,b^2\right)} + \frac{\ln\left(e^{c+d\,x} + 1\mathrm{i}\right)\,\left(b + a\,2\mathrm{i}\right)}{2\,\left(1\mathrm{i}\,d\,a^2 + 2\,d\,a\,b - 1\mathrm{i}\,d\,b^2\right)} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)^3/(a + b*sinh(c + d*x)),x)
```

```
[Out] ((2*(a*b^2 + a^3))/(d*(a^2 + b^2)^2) - (exp(c + d*x)*(a^2*b + b^3))/(d*(a^2
 + b^2)^2))/(exp(2*c + 2*d*x) + 1) - ((2*a)/(d*(a^2 + b^2)) - (2*b*exp(c +
d*x))/(d*(a^2 + b^2)))/(2*exp(2*c + 2*d*x) + exp(4*c + 4*d*x) + 1) + (log(e
xp(c + d*x)*1i + 1)*(2*a + b*1i))/(2*(a^2*d - b^2*d + a*b*d*2i)) + (log(exp
(c + d*x) + 1i)*(a*2i + b))/(2*(a^2*d*1i - b^2*d*1i + 2*a*b*d)) - (a^3*log(
32*a^7*exp(d*x)*exp(c) - b^7 - 6*a^2*b^5 - 9*a^4*b^3 - 16*a^6*b + b^7*exp(2
```

```
*c)*exp(2*d*x) + 16*a^6*b*exp(2*c)*exp(2*d*x) + 12*a^3*b^4*exp(d*x)*exp(c)
+ 18*a^5*b^2*exp(d*x)*exp(c) + 6*a^2*b^5*exp(2*c)*exp(2*d*x) + 9*a^4*b^3*ex
p(2*c)*exp(2*d*x) + 2*a*b^6*exp(d*x)*exp(c)))/(a^4*d + b^4*d + 2*a^2*b^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(tanh(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.419 $\int \frac{\tanh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\tanh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(tanh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\tanh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Tanh[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][Tanh[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\tanh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\tanh^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Tanh[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] $Aborted
```

fricas [A] time = 7.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\tanh(dx+c)^3}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(tanh(d*x + c)^3/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [A] time = 1.52, size = 0, normalized size = 0.00

$$\int \frac{\tanh^{3}\left(dx+c\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] int(tanh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] -(a*f + (b*d*f*x*e^(3*c) + (d*e - f)*b*e^(3*c))*e^(3*d*x) - (2*a*d*f*x*e^(2
*c) + (2*d*e - f)*a*e^(2*c))*e^(2*d*x) - (b*d*f*x*e^c + (d*e + f)*b*e^c)*e^
(d*x))/(a^2*d^2*e^2 + b^2*d^2*e^2 + (a^2*d^2*f^2 + b^2*d^2*f^2)*x^2 + 2*(a^
2*d^2*e*f + b^2*d^2*e*f)*x + (a^2*d^2*e^2*e^(4*c) + b^2*d^2*e^2*e^(4*c) + (
a^2*d^2*f^2*e^(4*c) + b^2*d^2*f^2*e^(4*c))*x^2 + 2*(a^2*d^2*e*f*e^(4*c) + b
^2*d^2*e*f*e^(4*c))*x)*e^(4*d*x) + 2*(a^2*d^2*e^2*e^(2*c) + b^2*d^2*e^2*e^(
2*c) + (a^2*d^2*f^2*e^(2*c) + b^2*d^2*f^2*e^(2*c))*x^2 + 2*(a^2*d^2*e*f*e^(
2*c) + b^2*d^2*e*f*e^(2*c))*x)*e^(2*d*x)) + integrate(-(2*a^3*d^2*f^2*x^2 +
 4*a^3*d^2*e*f*x + 2*a*b^2*f^2 + 2*(d^2*e^2 + f^2)*a^3 - ((3*d^2*e^2 + 2*f^
2)*a^2*b*e^c + (d^2*e^2 + 2*f^2)*b^3*e^c + (3*a^2*b*d^2*f^2*e^c + b^3*d^2*f
^2*e^c)*x^2 + 2*(3*a^2*b*d^2*e*f*e^c + b^3*d^2*e*f*e^c)*x)*e^(d*x))/(a^4*d^
2*e^3 + 2*a^2*b^2*d^2*e^3 + b^4*d^2*e^3 + (a^4*d^2*f^3 + 2*a^2*b^2*d^2*f^3
+ b^4*d^2*f^3)*x^3 + 3*(a^4*d^2*e*f^2 + 2*a^2*b^2*d^2*e*f^2 + b^4*d^2*e*f^2
)*x^2 + 3*(a^4*d^2*e^2*f + 2*a^2*b^2*d^2*e^2*f + b^4*d^2*e^2*f)*x + (a^4*d^
```

```
2*e^3*e^(2*c) + 2*a^2*b^2*d^2*e^3*e^(2*c) + b^4*d^2*e^3*e^(2*c) + (a^4*d^2*
f^3*e^(2*c) + 2*a^2*b^2*d^2*f^3*e^(2*c) + b^4*d^2*f^3*e^(2*c))*x^3 + 3*(a^4
*d^2*e*f^2*e^(2*c) + 2*a^2*b^2*d^2*e*f^2*e^(2*c) + b^4*d^2*e*f^2*e^(2*c))*x
^2 + 3*(a^4*d^2*e^2*f*e^(2*c) + 2*a^2*b^2*d^2*e^2*f*e^(2*c) + b^4*d^2*e^2*f
*e^(2*c))*x)*e^(2*d*x)), x) + integrate(-2*(a^4*e^(d*x + c) - a^3*b)/(a^4*b
*e + 2*a^2*b^3*e + b^5*e + (a^4*b*f + 2*a^2*b^3*f + b^5*f)*x - (a^4*b*e*e^(
2*c) + 2*a^2*b^3*e*e^(2*c) + b^5*e*e^(2*c) + (a^4*b*f*e^(2*c) + 2*a^2*b^3*f
*e^(2*c) + b^5*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^5*e*e^c + 2*a^3*b^2*e*e^c + a
*b^4*e*e^c + (a^5*f*e^c + 2*a^3*b^2*f*e^c + a*b^4*f*e^c)*x)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\tanh\left(c+d\,x\right)^3}{\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tanh(c + d*x)^3/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(tanh(c + d*x)^3/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tanh^3(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tanh(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(tanh(c + d*x)**3/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.420 $\int \frac{(e+fx)^3 \coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=451

$$-\frac{6f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^4}-\frac{6f^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^4}+\frac{6f^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^3}+\frac{6f^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^3}-\frac{3f(e+}{}$$

```
[Out] (f*x+e)^3*ln(1-exp(2*d*x+2*c))/a/d-(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))/a/d-(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d+3/2*f*(f*
x+e)^2*polylog(2,exp(2*d*x+2*c))/a/d^2-3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c
)/(a-(a^2+b^2)^(1/2)))/a/d^2-3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+
b^2)^(1/2)))/a/d^2-3/2*f^2*(f*x+e)*polylog(3,exp(2*d*x+2*c))/a/d^3+6*f^2*(f
*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/d^3+6*f^2*(f*x+e)*poly
log(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d^3+3/4*f^3*polylog(4,exp(2*d*x+
2*c))/a/d^4-6*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/d^4-6*f^3*
polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d^4
```

Rubi [A] time = 0.77, antiderivative size = 451, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {5569, 3716, 2190, 2531, 6609, 2282, 6589, 5561}

$$\frac{6f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^3}+\frac{6f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ad^3}-\frac{3f(e+fx)^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(((e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*d)) - ((e
 + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*d) + ((e + f*x
)^3*Log[1 - E^(2*(c + d*x))])/(a*d) - (3*f*(e + f*x)^2*PolyLog[2, -((b*E^(c
 + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*d^2) - (3*f*(e + f*x)^2*PolyLog[2, -((
b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*d^2) + (3*f*(e + f*x)^2*PolyLog[
2, E^(2*(c + d*x))])/(2*a*d^2) + (6*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*
x))/(a - Sqrt[a^2 + b^2]))])/(a*d^3) + (6*f^2*(e + f*x)*PolyLog[3, -((b*E^(
c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*d^3) - (3*f^2*(e + f*x)*PolyLog[3, E^
(2*(c + d*x))])/(2*a*d^3) - (6*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a
^2 + b^2]))])/(a*d^4) - (6*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))])/(a*d^4) + (3*f^3*PolyLog[4, E^(2*(c + d*x))])/(4*a*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\coth(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{2\int \frac{e^{2(c+dx)}(e+fx)^3}{1-e^{2(c+dx)}}\,dx}{a} - \frac{b\int \frac{e^{c+dx}(e+fx)^3}{a-\sqrt{a^2+b^2}+be^{c+dx}}\,dx}{a} - \frac{b\int \frac{e^{c+dx}(e+fx)^3}{a+\sqrt{a^2+b^2}+be^{c+dx}}\,dx}{a}$$

$$= -\frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)^3\log(1-}{ad}$$

$$= -\frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)^3\log(1-}{ad}$$

$$= -\frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)^3\log(1-}{ad}$$

$$= -\frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)^3\log(1-}{ad}$$

$$= -\frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)^3\log(1-}{ad}$$

Mathematica [B] time = 17.05, size = 1924, normalized size = 4.27

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]

[Out] -1/2*(E^(2*c)*((e + f*x)^4/(E^(2*c)*f) - (2*(1 - E^(-2*c))*(e + f*x)^3*Log[
1 - E^(-c - d*x)])/d - (2*(1 - E^(-2*c))*(e + f*x)^3*Log[1 + E^(-c - d*x)])
/d + (6*(-1 + E^(2*c))*f*(d^2*(e + f*x)^2*PolyLog[2, -E^(-c - d*x)] + 2*f*(
d*(e + f*x)*PolyLog[3, -E^(-c - d*x)] + f*PolyLog[4, -E^(-c - d*x)])))/(d^4
*E^(2*c)) + (6*(-1 + E^(2*c))*f*(d^2*(e + f*x)^2*PolyLog[2, E^(-c - d*x)] +
 2*f*(d*(e + f*x)*PolyLog[3, E^(-c - d*x)] + f*PolyLog[4, E^(-c - d*x)])))/
(d^4*E^(2*c))))/(a*(-1 + E^(2*c))) + (4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*x^2
 + 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*f^3*x^4 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^
(2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) +
 (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2
 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (2*e^3*Log[b - 2*a*E^(c + d*x) - b*E^(2*
(c + d*x))])/d - (2*e^3*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x
)))])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^
(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a
^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - S
qrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*
x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c
+ d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1
+ (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x*Lo
g[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^
(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d
 + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)
])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2
+ b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(
a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*
E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*Poly
Log[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*
(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(
a^2 + b^2)*E^(2*c)]))])/d^2 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E
^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*
E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyL
og[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*
E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2
*c)]))])/d^3 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2
+ b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/
(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2
*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*P
olyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 +
(12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))
])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2
+ b^2)*E^(2*c)]))])/d^4 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + S
qrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c +
 d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4)/(2*a*(-1 + E^(2*c)))
```

fricas [C] time = 0.82, size = 1228, normalized size = 2.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(6*f^3*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*f^3*polylog(4, (a*cosh(d*x +
 c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2
)/b^2))/b) - 6*f^3*polylog(4, cosh(d*x + c) + sinh(d*x + c)) - 6*f^3*polylo
g(4, -cosh(d*x + c) - sinh(d*x + c)) + 3*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2
*e^2*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sin
h(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 3*(d^2*f^3*x^2 + 2*d^2*e*f^
2*x + d^2*e^2*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c
) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 3*(d^2*f^3*x^2 + 2
*d^2*e*f^2*x + d^2*e^2*f)*dilog(cosh(d*x + c) + sinh(d*x + c)) - 3*(d^2*f^3
*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f)*dilog(-cosh(d*x + c) - sinh(d*x + c)) + (
d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*log(2*b*cosh(d*x + c) +
2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (d^3*e^3 - 3*c*d^2*e
^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) -
 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*
e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*log(-(a*cosh(d*x + c) +
a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
 - b)/b) + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f -
 3*c^2*d*e*f^2 + c^3*f^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (d^3*f^3*x^3 +
 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*log(cosh(d*x + c) + sinh(d*x +
c) + 1) - (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*log(cosh(d*x
+ c) + sinh(d*x + c) - 1) - (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x
+ 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*log(-cosh(d*x + c) - sinh(d*x +
c) + 1) - 6*(d*f^3*x + d*e*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x +
c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*(d*f
^3*x + d*e*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
 + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(d*f^3*x + d*e*f^2)*
polylog(3, cosh(d*x + c) + sinh(d*x + c)) + 6*(d*f^3*x + d*e*f^2)*polylog(3
, -cosh(d*x + c) - sinh(d*x + c)))/(a*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.84, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \coth (dx+c)}{a+b \sinh (dx+c)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^3\left(\frac{\log\left(-2\, ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{ad}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}\right)+\frac{3\left(dx\log\left(e^{(dx+c)}+1\right)+\mathrm{Li}_2\left(\right.\right.}{ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e^3*(log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a*d) - log(e^(-d*x -
 c) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d)) + 3*(d*x*log(e^(d*x + c) + 1)
 + dilog(-e^(d*x + c)))*e^2*f/(a*d^2) + 3*(d*x*log(-e^(d*x + c) + 1) + dilo
g(e^(d*x + c)))*e^2*f/(a*d^2) + 3*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dil
og(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*e*f^2/(a*d^3) + 3*(d^2*x^2*l
og(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c))
)*e*f^2/(a*d^3) + (d^3*x^3*log(e^(d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x +
 c)) - 6*d*x*polylog(3, -e^(d*x + c)) + 6*polylog(4, -e^(d*x + c)))*f^3/(a*
d^4) + (d^3*x^3*log(-e^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*
x*polylog(3, e^(d*x + c)) + 6*polylog(4, e^(d*x + c)))*f^3/(a*d^4) - 1/2*(d
^4*f^3*x^4 + 4*d^4*e*f^2*x^3 + 6*d^4*e^2*f*x^2)/(a*d^4) + integrate(-2*(b*f
^3*x^3 + 3*b*e*f^2*x^2 + 3*b*e^2*f*x - (a*f^3*x^3*e^c + 3*a*e*f^2*x^2*e^c +
 3*a*e^2*f*x*e^c)*e^(d*x))/(a*b*e^(2*d*x + 2*c) + 2*a^2*e^(d*x + c) - a*b),
 x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth (c+d\,x)\,{\left(e+f\,x\right)}^3}{a+b\,\sinh (c+d\,x)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((coth(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{3}\coth\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**3*coth(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.421 $\int \frac{(e+fx)^2 \coth(c+dx)}{a+b \sinh(c+dx)} \, dx$

Optimal. Leaf size=325

$$\frac{2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^3}+\frac{2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^3}-\frac{2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2}-\frac{2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^2}-\frac{(e+fx)^2}{}$$

```
[Out] (f*x+e)^2*ln(1-exp(2*d*x+2*c))/a/d-(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))/a/d-(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d+f*(f*x+e)
*polylog(2,exp(2*d*x+2*c))/a/d^2-2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^
2+b^2)^(1/2)))/a/d^2-2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)
))/a/d^2-1/2*f^2*polylog(3,exp(2*d*x+2*c))/a/d^3+2*f^2*polylog(3,-b*exp(d*x
+c)/(a-(a^2+b^2)^(1/2)))/a/d^3+2*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/a/d^3
```

Rubi [A] time = 0.65, antiderivative size = 325, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {5569, 3716, 2190, 2531, 2282, 6589, 5561}

$$-\frac{2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2}-\frac{2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ad^2}+\frac{2f^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^3}+\frac{2f^2\text{P}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(((e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*d)) - ((e
 + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*d) + ((e + f*x
)^2*Log[1 - E^(2*(c + d*x))])/(a*d) - (2*f*(e + f*x)*PolyLog[2, -((b*E^(c +
 d*x))/(a - Sqrt[a^2 + b^2]))])/(a*d^2) - (2*f*(e + f*x)*PolyLog[2, -((b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*d^2) + (f*(e + f*x)*PolyLog[2, E^(2*
(c + d*x))])/(a*d^2) + (2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 +
b^2]))])/(a*d^3) + (2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
))])/(a*d^3) - (f^2*PolyLog[3, E^(2*(c + d*x))])/(2*a*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\coth(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{2\int \frac{e^{2(c+dx)}(e+fx)^2}{1-e^{2(c+dx)}}\,dx}{a} - \frac{b\int \frac{e^{c+dx}(e+fx)^2}{a-\sqrt{a^2+b^2}+be^{c+dx}}\,dx}{a} - \frac{b\int \frac{e^{c+dx}(e+fx)^2}{a+\sqrt{a^2+b^2}+be^{c+dx}}\,dx}{a}$$

$$= -\frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)^2\log\left(1\right.}{ad}$$

$$= -\frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)^2\log\left(1\right.}{ad}$$

$$= -\frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)^2\log\left(1\right.}{ad}$$

$$= -\frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)^2\log\left(1\right.}{ad}$$

Mathematica [B] time = 5.75, size = 1013, normalized size = 3.12

$$\frac{-\frac{2(e+fx)^3}{\left(-1+e^{2c}\right)f} + \frac{3\log\left(1-e^{-c-dx}\right)(e+fx)^2}{d} + \frac{3\log\left(1+e^{-c-dx}\right)(e+fx)^2}{d} - \frac{6f\left(d(e+fx)\mathrm{Li}_2\left(-e^{-c-dx}\right)+f\mathrm{Li}_3\left(-e^{-c-dx}\right)\right)}{d^3} - \frac{6f\left(d(e+fx)\mathrm{Li}_2\left(e^{-c-dx}\right)+f\mathrm{Li}_3\right.}{d^3}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((-2*(e + f*x)^3)/((-1 + E^(2*c))*f) + (3*(e + f*x)^2*Log[1 - E^(-c - d*x)]
)/d + (3*(e + f*x)^2*Log[1 + E^(-c - d*x)])/d - (6*f*(d*(e + f*x)*PolyLog[2
, -E^(-c - d*x)] + f*PolyLog[3, -E^(-c - d*x)]))/d^3 - (6*f*(d*(e + f*x)*Po
lyLog[2, E^(-c - d*x)] + f*PolyLog[3, E^(-c - d*x)]))/d^3 + (6*d^3*e^2*E^(2
*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*d^2*e^2*Log[b - 2
*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^(2*c)*Log[b - 2*a*E^(c +
d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c -
Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))
/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d
*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (
```

```
b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2*e*f*x*Log[1 +
 (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f
*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f
^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d
^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2
*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E
^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[
2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLo
g[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*
f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] -
6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))]
+ 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^
(2*c)]))])/(d^3*(-1 + E^(2*c))))/(3*a)
```

fricas [C] time = 0.62, size = 813, normalized size = 2.50

$$\frac{2 f^2 \text{polylog}\left(3, \frac{a \cosh(dx+c)+a \sinh(dx+c)+(b \cosh(dx+c)+b \sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}}{b}\right) + 2 f^2 \text{polylog}\left(3, \frac{a \cosh(dx+c)+a \sinh(dx+c)-(b \cosh \ldots}{b}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*f^2*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b
*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 2*f^2*polylog(3, (a*cosh(d*x +
c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2))/b) - 2*f^2*polylog(3, cosh(d*x + c) + sinh(d*x + c)) - 2*f^2*polylog
(3, -cosh(d*x + c) - sinh(d*x + c)) - 2*(d*f^2*x + d*e*f)*dilog((a*cosh(d*x
 + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2) - b)/b + 1) - 2*(d*f^2*x + d*e*f)*dilog((a*cosh(d*x + c) + a*sinh(
d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b
 + 1) + 2*(d*f^2*x + d*e*f)*dilog(cosh(d*x + c) + sinh(d*x + c)) + 2*(d*f^2
*x + d*e*f)*dilog(-cosh(d*x + c) - sinh(d*x + c)) - (d^2*e^2 - 2*c*d*e*f +
c^2*f^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b
^2) + 2*a) - (d^2*e^2 - 2*c*d*e*f + c^2*f^2)*log(2*b*cosh(d*x + c) + 2*b*si
nh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (d^2*f^2*x^2 + 2*d^2*e*f*x
 + 2*c*d*e*f - c^2*f^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d
*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (d^2*f^2*x^2 + 2
*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) -
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (d^2*f
^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*log(cosh(d*x + c) + sinh(d*x + c) + 1) + (d
^2*e^2 - 2*c*d*e*f + c^2*f^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1) + (d^2
*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*log(-cosh(d*x + c) - sinh(d*x
 + c) + 1))/(a*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\coth\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^{2}\left(\frac{\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{ad}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}\right)+\frac{2\left(dx\log\left(e^{(dx+c)}+1\right)+\mathrm{Li}_2\left(\cdots\right.\right.}{ad^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e^2*(log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a*d) - log(e^(-d*x -
 c) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d)) + 2*(d*x*log(e^(d*x + c) + 1)
 + dilog(-e^(d*x + c)))*e*f/(a*d^2) + 2*(d*x*log(-e^(d*x + c) + 1) + dilog(
e^(d*x + c)))*e*f/(a*d^2) + (d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^
(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*f^2/(a*d^3) + (d^2*x^2*log(-e^(d*x
 + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*f^2/(a*d
^3) - 2/3*(d^3*f^2*x^3 + 3*d^3*e*f*x^2)/(a*d^3) + integrate(-2*(b*f^2*x^2 +
 2*b*e*f*x - (a*f^2*x^2*e^c + 2*a*e*f*x*e^c)*e^(d*x))/(a*b*e^(2*d*x + 2*c)
+ 2*a^2*e^(d*x + c) - a*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\mathrm{coth}\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{a+b\,\mathrm{sinh}\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((coth(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^2 \coth\left(c + dx\right)}{a + b \sinh\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*coth(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.422 $\int \frac{(e+fx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=205

$$-\frac{f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2}-\frac{f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^2}-\frac{(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{ad}-\frac{(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{ad}+\frac{f\text{Li}_2\left(e^{2(c+d}\right.}{2ad^2}$$

```
[Out] (f*x+e)*ln(1-exp(2*d*x+2*c))/a/d-(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/
2)))/a/d-(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d+1/2*f*polylog(2
,exp(2*d*x+2*c))/a/d^2-f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/d^2
-f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/d^2
```

Rubi [A] time = 0.38, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {5569, 3716, 2190, 2279, 2391, 5561}

$$-\frac{f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2}-\frac{f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ad^2}+\frac{f\text{PolyLog}\left(2,e^{2(c+dx)}\right)}{2ad^2}-\frac{(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{ad}-\cdots$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(((e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*d)) - ((e +
 f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*d) + ((e + f*x)*Lo
g[1 - E^(2*(c + d*x))])/(a*d) - (f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a
^2 + b^2]))])/(a*d^2) - (f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2
]))])/(a*d^2) + (f*PolyLog[2, E^(2*(c + d*x))])/(2*a*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\coth(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cosh(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{2\int \frac{e^{2(c+dx)}(e+fx)}{1-e^{2(c+dx)}}\,dx}{a} - \frac{b\int \frac{e^{c+dx}(e+fx)}{a-\sqrt{a^2+b^2}+be^{c+dx}}\,dx}{a} - \frac{b\int \frac{e^{c+dx}(e+fx)}{a+\sqrt{a^2+b^2}+be^{c+dx}}\,dx}{a}$$

$$= -\frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)\log\left(1-e\right.}{ad}$$

$$= -\frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)\log\left(1-e\right.}{ad}$$

$$= -\frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad} - \frac{(e+fx)\log\left(1+\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad} + \frac{(e+fx)\log\left(1-e\right.}{ad}$$

Mathematica [A] time = 0.88, size = 236, normalized size = 1.15

$$-\frac{f\operatorname{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right) + f\operatorname{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right) + f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) + f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right) + de\log(a}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((-(f*(c + d*x)^2) - f*(c + d*x)*Log[1 - E^(-2*(c + d*x))] + f*(c + d*x)*L
og[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c
 + d*x))/(a + Sqrt[a^2 + b^2])] - d*e*Log[Sinh[c + d*x]] + c*f*Log[Sinh[c +
 d*x]] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c + d*x]] + (f*P
olyLog[2, E^(-2*(c + d*x))])/2 + f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^
2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*d^2
))
```

fricas [B] time = 0.50, size = 476, normalized size = 2.32

$$-\frac{f\operatorname{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}-b}{b}+1\right) + f\operatorname{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)-(b\cosh(dx+c)+b\sin}{b}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(f*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*
x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + f*dilog((a*cosh(d*x + c) + a*si
nh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b
)/b + 1) - f*dilog(cosh(d*x + c) + sinh(d*x + c)) - f*dilog(-cosh(d*x + c)
- sinh(d*x + c)) + (d*e - c*f)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) +
2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (d*e - c*f)*log(2*b*cosh(d*x + c) + 2*b*
sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (d*f*x + c*f)*log(-(a*co
sh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2) - b)/b) + (d*f*x + c*f)*log(-(a*cosh(d*x + c) + a*sinh(d*x +
 c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (
d*f*x + d*e)*log(cosh(d*x + c) + sinh(d*x + c) + 1) - (d*e - c*f)*log(cosh(
d*x + c) + sinh(d*x + c) - 1) - (d*f*x + c*f)*log(-cosh(d*x + c) - sinh(d*x
 + c) + 1))/(a*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.21, size = 451, normalized size = 2.20

$$\frac{f \operatorname{dilog}\left(\mathrm{e}^{dx+c}+1\right)}{d^{2} a}-\frac{f \operatorname{dilog}\left(\frac{-b\,\mathrm{e}^{dx+c}+\sqrt{a^{2}+b^{2}}-a}{-a+\sqrt{a^{2}+b^{2}}}\right)}{d^{2} a}-\frac{f \operatorname{dilog}\left(\frac{b\,\mathrm{e}^{dx+c}+\sqrt{a^{2}+b^{2}}+a}{a+\sqrt{a^{2}+b^{2}}}\right)}{d^{2} a}-\frac{f \operatorname{dilog}\left(\mathrm{e}^{dx+c}\right)}{d^{2} a}+\frac{e \ln\left(\mathrm{e}^{dx+c}+1\right)}{a d}-\frac{e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/d^2*f/a*dilog(exp(d*x+c)+1)-1/d^2*f/a*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2
)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2*f/a*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)
/(a+(a^2+b^2)^(1/2)))-1/d^2*f*dilog(exp(d*x+c))/a+1/a/d*e*ln(exp(d*x+c)+1)-
1/d*e/a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+1/a/d*e*ln(exp(d*x+c)-1)+1/a/
d*ln(exp(d*x+c)+1)*f*x-1/d*f/a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^
2+b^2)^(1/2)))*x-1/d^2*f/a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^
2)^(1/2)))*c-1/d*f/a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)
))*x-1/d^2*f/a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1
/d^2*f*c/a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-1/a/d^2*f*c*ln(exp(d*x+c)-
1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e\left(\frac{\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{ad}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}\right)+f\int\frac{2\,x\left(e^{(dx+c)}+e\right.}{\left(b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e*(log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a*d) - log(e^(-d*x - c
) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d)) + f*integrate(2*x*(e^(d*x + c)
+ e^(-d*x - c))/((b*(e^(d*x + c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c) - e^(-
d*x - c))), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\coth\left(c+d\,x\right)\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((coth(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(e+fx\right)\coth\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*coth(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.423 $\int \frac{\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=34

$$\frac{\log(\sinh(c+dx))}{ad}-\frac{\log(a+b\sinh(c+dx))}{ad}$$

[Out] ln(sinh(d*x+c))/a/d-ln(a+b*sinh(d*x+c))/a/d

Rubi [A] time = 0.05, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2721, 36, 29, 31}

$$\frac{\log(\sinh(c+dx))}{ad}-\frac{\log(a+b\sinh(c+dx))}{ad}$$

Antiderivative was successfully verified.

[In] Int[Coth[c + d*x]/(a + b*Sinh[c + d*x]),x]

[Out] Log[Sinh[c + d*x]]/(a*d) - Log[a + b*Sinh[c + d*x]]/(a*d)

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2721

```
Int[((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*tan[(e_.) + (f_.)*(x_)]^(p
_.), x_Symbol] :> Dist[1/f, Subst[Int[(x^p*(a + x)^m)/(b^2 - x^2)^((p + 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && NeQ[a^2 - b^
2, 0] && IntegerQ[(p + 1)/2]
```

Rubi steps

$$\int \frac{\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{1}{x(a+x)}\,dx, x, b\sinh(c+dx)\right)}{d}$$
$$= \frac{\text{Subst}\left(\int \frac{1}{x}\,dx, x, b\sinh(c+dx)\right)}{ad} - \frac{\text{Subst}\left(\int \frac{1}{a+x}\,dx, x, b\sinh(c+dx)\right)}{ad}$$
$$= \frac{\log(\sinh(c+dx))}{ad} - \frac{\log(a+b\sinh(c+dx))}{ad}$$

Mathematica [A] time = 0.02, size = 28, normalized size = 0.82

$$\frac{\log(\sinh(c+dx)) - \log(a+b\sinh(c+dx))}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Coth[c + d*x]/(a + b*Sinh[c + d*x]),x]
[Out] (Log[Sinh[c + d*x]] - Log[a + b*Sinh[c + d*x]])/(a*d)
```

fricas [A] time = 0.65, size = 67, normalized size = 1.97

$$-\frac{\log\left(\frac{2\,(b\sinh(dx+c)+a)}{\cosh(dx+c)-\sinh(dx+c)}\right) - \log\left(\frac{2\,\sinh(dx+c)}{\cosh(dx+c)-\sinh(dx+c)}\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] -(log(2*(b*sinh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) - log(2*sinh
(d*x + c)/(cosh(d*x + c) - sinh(d*x + c))))/(a*d)
```

giac [A] time = 0.37, size = 63, normalized size = 1.85

$$\frac{\frac{\log\left(e^{(dx+c)}+1\right)}{a} - \frac{\log\left(\left|be^{(2\,dx+2\,c)}+2\,ae^{(dx+c)}-b\right|\right)}{a} + \frac{\log\left(\left|e^{(dx+c)}-1\right|\right)}{a}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] (log(e^(d*x + c) + 1)/a - log(abs(b*e^(2*d*x + 2*c) + 2*a*e^(d*x + c) - b))
/a + log(abs(e^(d*x + c) - 1))/a)/d
```

maple [A] time = 0.00, size = 35, normalized size = 1.03

$$\frac{\ln\left(\sinh\left(dx+c\right)\right)}{ad}-\frac{\ln\left(a+b\sinh\left(dx+c\right)\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] ln(sinh(d*x+c))/a/d-ln(a+b*sinh(d*x+c))/a/d
```

maxima [B] time = 0.32, size = 75, normalized size = 2.21

$$-\frac{\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{ad}+\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}+\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a*d) + log(e^(-d*x - c) +
 1)/(a*d) + log(e^(-d*x - c) - 1)/(a*d)
```

mupad [B] time = 0.41, size = 254, normalized size = 7.47

$$\frac{2\,\mathrm{atan}\left(\frac{a\,\sqrt{-a^2\,d^2}+b\,e^{d\,x}\,e^{c}\,\sqrt{-a^2\,d^2}-2\,a\,e^{2\,c}\,e^{2\,d\,x}\,\sqrt{-a^2\,d^2}-b\,e^{3\,c}\,e^{3\,d\,x}\,\sqrt{-a^2\,d^2}}{a^2\,d}\right)}{\sqrt{-a^2\,d^2}}-\frac{2\,\mathrm{atan}\left(\left(4\,a^4\,b\,d\,\sqrt{-a^2\,d^2}+4\,a^2\,b^3\,d\,\sqrt{-a^2\,d^2}\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)/(a + b*sinh(c + d*x)),x)
```

```
[Out] (2*atan((a*(-a^2*d^2)^(1/2) + b*exp(d*x)*exp(c)*(-a^2*d^2)^(1/2) - 2*a*exp(
2*c)*exp(2*d*x)*(-a^2*d^2)^(1/2) - b*exp(3*c)*exp(3*d*x)*(-a^2*d^2)^(1/2))/
(a^2*d)))/(-a^2*d^2)^(1/2) - (2*atan((4*a^4*b*d*(-a^2*d^2)^(1/2) + 4*a^2*b^
3*d*(-a^2*d^2)^(1/2))*(1/(8*a*b*d^2*(a^2 + b^2)^2) - exp(d*x)*exp(c)*(1/(16
*b^2*d^2*(a^2 + b^2)^2) - (a^2 + 2*b^2)^2/(16*a^4*b^2*d^2*(a^2 + b^2)^2)) +
 (a^2 + 2*b^2)/(8*a^3*b*d^2*(a^2 + b^2)^2)))))/(-a^2*d^2)^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\coth\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(coth(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.424 $\int \frac{\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Coth[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Coth[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 28.63, size = 0, normalized size = 0.00

$$\int \frac{\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Coth[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Integrate[Coth[c + d*x]/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\coth(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(coth(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] integrate(coth(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.57, size = 0, normalized size = 0.00

$$\int \frac{\coth(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] int(coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] integrate(coth(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\coth(c+dx)}{(e+fx)\,(a+b\sinh(c+dx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(coth(c + d*x)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(coth(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.425 $\int \frac{(e+fx)^3 \cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=638

$$-\frac{6f^3\sqrt{a^2+b^2}\,\mathrm{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{abd^4}+\frac{6f^3\sqrt{a^2+b^2}\,\mathrm{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{abd^4}+\frac{6f^2\sqrt{a^2+b^2}\,(e+fx)\mathrm{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{abd^3}-\frac{6f^2\sqrt{a^2}}{}$$

```
[Out] 1/4*(f*x+e)^4/b/f-2*(f*x+e)^3*arctanh(exp(d*x+c))/a/d-3*f*(f*x+e)^2*polylog
(2,-exp(d*x+c))/a/d^2+3*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a/d^2+6*f^2*(f*x+
e)*polylog(3,-exp(d*x+c))/a/d^3-6*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a/d^3-6
*f^3*polylog(4,-exp(d*x+c))/a/d^4+6*f^3*polylog(4,exp(d*x+c))/a/d^4-(f*x+e)
^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d+(f*x+e)^3*l
n(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d-3*f*(f*x+e)^2*p
olylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d^2+3*f*(f*
x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d^2
+6*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)
/a/b/d^3-6*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^
2)^(1/2)/a/b/d^3-6*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^
2)^(1/2)/a/b/d^4+6*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^
2)^(1/2)/a/b/d^4
```

Rubi [A] time = 1.28, antiderivative size = 638, normalized size of antiderivative = 1.00, number of steps used = 33, number of rules used = 14, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {5585, 5450, 3296, 2637, 4182, 2531, 6609, 2282, 6589, 5565, 32, 3322, 2264, 2190}

$$\frac{6f^2\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{abd^3}-\frac{6f^2\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{abd^3}-\frac{3f\sqrt{a^2+b^2}\,(e+f}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e + f*x)^4/(4*b*f) - (2*(e + f*x)^3*ArcTanh[E^(c + d*x)])/(a*d) - (Sqrt[a^
2 + b^2]*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*b*d
) + (Sqrt[a^2 + b^2]*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2])])/(a*b*d) - (3*f*(e + f*x)^2*PolyLog[2, -E^(c + d*x)])/(a*d^2) + (3*f*(
e + f*x)^2*PolyLog[2, E^(c + d*x)])/(a*d^2) - (3*Sqrt[a^2 + b^2]*f*(e + f*x
)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*b*d^2) + (3*Sq
rt[a^2 + b^2]*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2]))])/(a*b*d^2) + (6*f^2*(e + f*x)*PolyLog[3, -E^(c + d*x)])/(a*d^3) - (6*
f^2*(e + f*x)*PolyLog[3, E^(c + d*x)])/(a*d^3) + (6*Sqrt[a^2 + b^2]*f^2*(e
```

```
+ f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*b*d^3) - (6
*Sqrt[a^2 + b^2]*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))])/(a*b*d^3) - (6*f^3*PolyLog[4, -E^(c + d*x)])/(a*d^4) + (6*f^3*Pol
yLog[4, E^(c + d*x)])/(a*d^4) - (6*Sqrt[a^2 + b^2]*f^3*PolyLog[4, -((b*E^(c
 + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*b*d^4) + (6*Sqrt[a^2 + b^2]*f^3*PolyLo
g[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*b*d^4)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
```

```
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\cosh(c+dx)\coth(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^3\text{csch}(c+dx)\,dx}{a} + \frac{\int (e+fx)^3\,dx}{b} - \frac{\left(a^2+b^2\right)\int \frac{(e+fx)^3}{a+b\sinh(c+}}{ab}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\left(2\left(a^2+b^2\right)\right)\int \frac{e^{c+dx}(e+fx}{-b+2ae^{c+dx}+be}}{ab}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{3f(e+fx)^2\text{Li}_2\left(-e^{c+dx}\right)}{ad^2} +$$

$$= \frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)^3\log\left(1+\right.}{abd}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)^3\log\left(1+\right.}{abd}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)^3\log\left(1+\right.}{abd}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)^3\log\left(1+\right.}{abd}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)^3\log\left(1+\right.}{abd}$$

Mathematica [A] time = 2.23, size = 802, normalized size = 1.26

$$\frac{ax\left(4e^3+6fxe^2+4f^2x^2e+f^3x^3\right)d^4+4\sqrt{a^2+b^2}\left(2e^3\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^3-f^3x^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3-3ef^2x\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (a*d^4*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3) + 4*Sqrt[a^2 + b^2]*(2
*d^3*e^3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 3*d^3*e^2*f*x*Log[1
```

```
 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c
 + d*x))/(a - Sqrt[a^2 + b^2])] - d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a -
Sqrt[a^2 + b^2])] + 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b
^2])] + 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^
3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 3*d^2*f*(e + f*x
)^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 3*d^2*f*(e + f*x)^
2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 6*d*e*f^2*PolyLog[
3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*d*f^3*x*PolyLog[3, (b*E^(c +
 d*x))/(-a + Sqrt[a^2 + b^2])] - 6*d*e*f^2*PolyLog[3, -((b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2]))] - 6*d*f^3*x*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2
 + b^2]))] - 6*f^3*PolyLog[4, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*f
^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) - 4*b*(2*d^3*(e +
f*x)^3*ArcTanh[Cosh[c + d*x] + Sinh[c + d*x]] + 3*f*(d^2*(e + f*x)^2*PolyLo
g[2, -Cosh[c + d*x] - Sinh[c + d*x]] - 2*d*f*(e + f*x)*PolyLog[3, -Cosh[c +
 d*x] - Sinh[c + d*x]] + 2*f^2*PolyLog[4, -Cosh[c + d*x] - Sinh[c + d*x]])
- 3*f*(d^2*(e + f*x)^2*PolyLog[2, Cosh[c + d*x] + Sinh[c + d*x]] - 2*d*f*(e
 + f*x)*PolyLog[3, Cosh[c + d*x] + Sinh[c + d*x]] + 2*f^2*PolyLog[4, Cosh[c
 + d*x] + Sinh[c + d*x]])))/(4*a*b*d^4)
```

fricas [C] time = 0.51, size = 1470, normalized size = 2.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] 1/4*(a*d^4*f^3*x^4 + 4*a*d^4*e*f^2*x^3 + 6*a*d^4*e^2*f*x^2 + 4*a*d^4*e^3*x
- 24*b*f^3*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x +
 c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*b*
f^3*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (
b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*b*f^3*pol
ylog(4, cosh(d*x + c) + sinh(d*x + c)) - 24*b*f^3*polylog(4, -cosh(d*x + c)
 - sinh(d*x + c)) - 12*(b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*sqrt
((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 12*(b*d^2*f^3*x^2
 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x +
 c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2
)/b^2) - b)/b + 1) + 4*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c
^3*f^3)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2
*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 4*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*
d*e*f^2 - b*c^3*f^3)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh
(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 4*(b*d^3*f^3*x^3 + 3*b*d^3*e
*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)
*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*
```

```
x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 4*(b*d^3*f^3*x^3
+ 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 +
 b*c^3*f^3)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) -
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 24*(b*
d*f^3*x + b*d*e*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*
sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/
b) - 24*(b*d*f^3*x + b*d*e*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*
x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
b^2)/b^2))/b) + 12*(b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*dilog(co
sh(d*x + c) + sinh(d*x + c)) - 12*(b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*
e^2*f)*dilog(-cosh(d*x + c) - sinh(d*x + c)) - 4*(b*d^3*f^3*x^3 + 3*b*d^3*e
*f^2*x^2 + 3*b*d^3*e^2*f*x + b*d^3*e^3)*log(cosh(d*x + c) + sinh(d*x + c) +
 1) + 4*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*log(cos
h(d*x + c) + sinh(d*x + c) - 1) + 4*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*
b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*log(-cosh(d*
x + c) - sinh(d*x + c) + 1) - 24*(b*d*f^3*x + b*d*e*f^2)*polylog(3, cosh(d*
x + c) + sinh(d*x + c)) + 24*(b*d*f^3*x + b*d*e*f^2)*polylog(3, -cosh(d*x +
 c) - sinh(d*x + c)))/(a*b*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [F] time = 1.61, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \cosh\left(dx+c\right) \coth\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\frac{dx+c}{bd}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}+\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}-\frac{\sqrt{a^{2}+b^{2}}\,\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{abd}\right)-\frac{3\left(dx\log\left(e^{(dx+c)}+1\right)+\right.}{ad^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] e^3*((d*x + c)/(b*d) - log(e^(-d*x - c) + 1)/(a*d) + log(e^(-d*x - c) - 1)/
(a*d) - sqrt(a^2 + b^2)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d
*x - c) - a + sqrt(a^2 + b^2)))/(a*b*d)) - 3*(d*x*log(e^(d*x + c) + 1) + di
log(-e^(d*x + c)))*e^2*f/(a*d^2) + 3*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(
d*x + c)))*e^2*f/(a*d^2) + 1/4*(f^3*x^4 + 4*e*f^2*x^3 + 6*e^2*f*x^2)/b - 3*
(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e
^(d*x + c)))*e*f^2/(a*d^3) + 3*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog
(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*e*f^2/(a*d^3) - (d^3*x^3*log(e^(
d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x +
c)) + 6*polylog(4, -e^(d*x + c)))*f^3/(a*d^4) + (d^3*x^3*log(-e^(d*x + c) +
 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*poly
log(4, e^(d*x + c)))*f^3/(a*d^4) - integrate(2*((a^2*f^3*e^c + b^2*f^3*e^c)
*x^3 + 3*(a^2*e*f^2*e^c + b^2*e*f^2*e^c)*x^2 + 3*(a^2*e^2*f*e^c + b^2*e^2*f
*e^c)*x)*e^(d*x)/(a*b^2*e^(2*d*x + 2*c) + 2*a^2*b*e^(d*x + c) - a*b^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)\,\coth(c+d\,x)\,\left(e+f\,x\right)^3}{a+b\,\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*coth(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*coth(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^3\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*cosh(c + d*x)*coth(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.426 $\int \frac{(e+fx)^2 \cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=462

$$\frac{2f^2\sqrt{a^2+b^2}\,\mathrm{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{abd^3}-\frac{2f^2\sqrt{a^2+b^2}\,\mathrm{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{abd^3}-\frac{2f\sqrt{a^2+b^2}\,(e+fx)\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{abd^2}+\frac{2f\sqrt{a^2+b^2}}{}$$

```
[Out] 1/3*(f*x+e)^3/b/f-2*(f*x+e)^2*arctanh(exp(d*x+c))/a/d-2*f*(f*x+e)*polylog(2
,-exp(d*x+c))/a/d^2+2*f*(f*x+e)*polylog(2,exp(d*x+c))/a/d^2+2*f^2*polylog(3
,-exp(d*x+c))/a/d^3-2*f^2*polylog(3,exp(d*x+c))/a/d^3-(f*x+e)^2*ln(1+b*exp(
d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d+(f*x+e)^2*ln(1+b*exp(d*x+
c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d-2*f*(f*x+e)*polylog(2,-b*exp(
d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d^2+2*f*(f*x+e)*polylog(2,-
b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d^2+2*f^2*polylog(3,-
b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d^3-2*f^2*polylog(3,-
b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d^3
```

Rubi [A] time = 1.04, antiderivative size = 462, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {5585, 5450, 3296, 2638, 4182, 2531, 2282, 6589, 5565, 32, 3322, 2264, 2190}

$$-\frac{2f\sqrt{a^2+b^2}\,(e+fx)\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{abd^2}+\frac{2f\sqrt{a^2+b^2}\,(e+fx)\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{abd^2}+\frac{2f^2\sqrt{a^2+b^2}\,\mathrm{Poly}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e + f*x)^3/(3*b*f) - (2*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d) - (Sqrt[a^
2 + b^2]*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*b*d
) + (Sqrt[a^2 + b^2]*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2])])/(a*b*d) - (2*f*(e + f*x)*PolyLog[2, -E^(c + d*x)])/(a*d^2) + (2*f*(e
+ f*x)*PolyLog[2, E^(c + d*x)])/(a*d^2) - (2*Sqrt[a^2 + b^2]*f*(e + f*x)*Po
lyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*b*d^2) + (2*Sqrt[a^2
 + b^2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(
a*b*d^2) + (2*f^2*PolyLog[3, -E^(c + d*x)])/(a*d^3) - (2*f^2*PolyLog[3, E^(
c + d*x)])/(a*d^3) + (2*Sqrt[a^2 + b^2]*f^2*PolyLog[3, -((b*E^(c + d*x))/(a
 - Sqrt[a^2 + b^2]))])/(a*b*d^3) - (2*Sqrt[a^2 + b^2]*f^2*PolyLog[3, -((b*E
^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*b*d^3)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh(c+dx)\coth(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^2\operatorname{csch}(c+dx)\,dx}{a} + \frac{\int (e+fx)^2\,dx}{b} - \frac{\left(a^2+b^2\right)\int \frac{(e+fx)}{a+b\sinh(}}{ab}$$

$$= \frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\left(2\left(a^2+b^2\right)\right)\int \frac{e^{c+dx}(e+}{-b+2ae^{c+dx}+}}{ab}$$

$$= \frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2f(e+fx)\mathrm{Li}_2\left(-e^{c+dx}\right)}{ad^2} +$$

$$= \frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)^2\log\left(1\right.}{abd}$$

$$= \frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)^2\log\left(1\right.}{abd}$$

$$= \frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)^2\log\left(1\right.}{abd}$$

$$= \frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)^2\log\left(1\right.}{abd}$$

Mathematica [A] time = 1.71, size = 489, normalized size = 1.06

$$\frac{\sqrt{a^2+b^2}\left(2d^2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) - 2d^2efx\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) + 2d^2efx\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right) - d^2f^2x^2\log\left(\frac{be^{c}}{a-\sqrt{a}}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (x*(3*e^2 + 3*e*f*x + f^2*x^2))/(3*b) + ((e + f*x)^2*Log[1 - E^(c + d*x)] -
 (e + f*x)^2*Log[1 + E^(c + d*x)] - (2*f*(d*(e + f*x)*PolyLog[2, -E^(c + d*
x)] - f*PolyLog[3, -E^(c + d*x)]))/d^2 + (2*f*(d*(e + f*x)*PolyLog[2, E^(c
+ d*x)] - f*PolyLog[3, E^(c + d*x)]))/d^2)/(a*d) + (Sqrt[a^2 + b^2]*(2*d^2*
e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 2*d^2*e*f*x*Log[1 + (b*E
^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a
 - Sqrt[a^2 + b^2])] + 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2])] + d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 2*d*f
*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*d*f*(e +
f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 2*f^2*PolyLog[3
, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*f^2*PolyLog[3, -((b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2]))]))/(a*b*d^3)
```

fricas [C] time = 0.48, size = 992, normalized size = 2.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] 1/3*(a*d^3*f^2*x^3 + 3*a*d^3*e*f*x^2 + 3*a*d^3*e^2*x + 6*b*f^2*sqrt((a^2 +
b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*b*f^2*sqrt((a^2 + b^2)/b^2
)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*b*f^2*polylog(3, cosh(d*x + c) + s
inh(d*x + c)) + 6*b*f^2*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) - 6*(b*d
*f^2*x + b*d*e*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x
 + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b +
1) + 6*(b*d*f^2*x + b*d*e*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) +
 a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2
) - b)/b + 1) + 3*(b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sqrt((a^2 + b^2)/b^
2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) +
2*a) - 3*(b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sqrt((a^2 + b^2)/b^2)*log(2*
b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 3*
(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*sqrt((a^2 + b^2)/
b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*
x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 3*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x +
2*b*c*d*e*f - b*c^2*f^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*si
nh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b
)/b) + 6*(b*d*f^2*x + b*d*e*f)*dilog(cosh(d*x + c) + sinh(d*x + c)) - 6*(b*
d*f^2*x + b*d*e*f)*dilog(-cosh(d*x + c) - sinh(d*x + c)) - 3*(b*d^2*f^2*x^2
 + 2*b*d^2*e*f*x + b*d^2*e^2)*log(cosh(d*x + c) + sinh(d*x + c) + 1) + 3*(b
*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1)
```

```
+ 3*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*log(-cosh(d*x
 + c) - sinh(d*x + c) + 1))/(a*b*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [F] time = 1.09, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \cosh\left(dx+c\right) \coth\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\frac{dx+c}{bd}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}+\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}-\frac{\sqrt{a^{2}+b^{2}}\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{abd}\right)+\frac{f^{2}x^{3}+3\,efx^{2}}{3\,b}-\frac{2\left(dx\,\mathrm{lo}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] e^2*((d*x + c)/(b*d) - log(e^(-d*x - c) + 1)/(a*d) + log(e^(-d*x - c) - 1)/
(a*d) - sqrt(a^2 + b^2)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d
*x - c) - a + sqrt(a^2 + b^2)))/(a*b*d)) + 1/3*(f^2*x^3 + 3*e*f*x^2)/b - 2*
(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))*e*f/(a*d^2) + 2*(d*x*log(-
e^(d*x + c) + 1) + dilog(e^(d*x + c)))*e*f/(a*d^2) - (d^2*x^2*log(e^(d*x +
c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*f^2/(a*d^
3) + (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(
3, e^(d*x + c)))*f^2/(a*d^3) - integrate(2*((a^2*f^2*e^c + b^2*f^2*e^c)*x^2
 + 2*(a^2*e*f*e^c + b^2*e*f*e^c)*x)*e^(d*x)/(a*b^2*e^(2*d*x + 2*c) + 2*a^2*
b*e^(d*x + c) - a*b^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh (c + d\,x)\ \coth (c + d\,x)\ {\left(e + f\,x\right)}^2}{a + b\sinh (c + d\,x)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*coth(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)*coth(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + f x\right)^{2} \cosh{\left(c + d x \right)} \coth{\left(c + d x \right)}}{a + b \sinh{\left(c + d x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**2*cosh(c + d*x)*coth(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.427 $\int \frac{(e+fx)\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=286

$$-\frac{f\sqrt{a^2+b^2}\,\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{abd^2}+\frac{f\sqrt{a^2+b^2}\,\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{abd^2}-\frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{abd}+\frac{\sqrt{a^2+b^2}\,(e\ \cdots}{}$$

```
[Out] e*x/b+1/2*f*x^2/b-2*(f*x+e)*arctanh(exp(d*x+c))/a/d-f*polylog(2,-exp(d*x+c)
)/a/d^2+f*polylog(2,exp(d*x+c))/a/d^2-(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2
)^(1/2)))*(a^2+b^2)^(1/2)/a/b/d+(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2
)))*(a^2+b^2)^(1/2)/a/b/d-f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a
^2+b^2)^(1/2)/a/b/d^2+f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b
^2)^(1/2)/a/b/d^2
```

Rubi [A] time = 0.58, antiderivative size = 286, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 11, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.367, Rules used = {5585, 5450, 3296, 2637, 4182, 2279, 2391, 5565, 3322, 2264, 2190}

$$-\frac{f\sqrt{a^2+b^2}\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{abd^2}+\frac{f\sqrt{a^2+b^2}\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{abd^2}-\frac{f\mathrm{PolyLog}\left(2,-e^{c+dx}\right)}{ad^2}+\frac{f\mathrm{PolyLog}\left(\cdots\right)}{ad^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e*x)/b + (f*x^2)/(2*b) - (2*(e + f*x)*ArcTanh[E^(c + d*x)])/(a*d) - (Sqrt[
a^2 + b^2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*b*d
) + (Sqrt[a^2 + b^2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
)])/(a*b*d) - (f*PolyLog[2, -E^(c + d*x)])/(a*d^2) + (f*PolyLog[2, E^(c + d
*x)])/(a*d^2) - (Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a
^2 + b^2]))])/(a*b*d^2) + (Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2]))])/(a*b*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh(c+dx)\coth(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cosh^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)\text{csch}(c+dx)\,dx}{a} + \frac{\int (e+fx)\,dx}{b} - \frac{\left(a^2+b^2\right)\int \frac{e+fx}{a+b\sinh(c+dx)}}{ab}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\left(2\left(a^2+b^2\right)\right)\int \frac{e^{c+dx}(e+fx)}{-b+2ae^{c+dx}+be^{2(c}}}{ab}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\left(2\sqrt{a^2+b^2}\right)\int \frac{e^{c+dx}(e+fx)}{2a-2\sqrt{a^2+b^2}+2be}}{a}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(1+\frac{}{a-}\right.}{abd}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(1+\frac{}{a-}\right.}{abd}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(1+\frac{}{a-}\right.}{abd}$$

Mathematica [A] time = 1.78, size = 339, normalized size = 1.19

$$2\sqrt{a^2+b^2}\left(2de\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) - f\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right) + f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right) - f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) + f(c+$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-(a*(c + d*x)*(c*f - d*(2*e + f*x))) + 2*b*d*e*Log[Tanh[(c + d*x)/2]] - 2*
b*c*f*Log[Tanh[(c + d*x)/2]] + 2*b*f*((c + d*x)*(Log[1 - E^(-c - d*x)] - Lo
g[1 + E^(-c - d*x)]) + PolyLog[2, -E^(-c - d*x)] - PolyLog[2, E^(-c - d*x)]
) + 2*Sqrt[a^2 + b^2]*(2*d*e*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] -
 2*c*f*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - f*(c + d*x)*Log[1 + (
b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))
/(a + Sqrt[a^2 + b^2])] - f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2
])] + f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(2*a*b*d^2)
```

fricas [B] time = 0.52, size = 598, normalized size = 2.09

$$\frac{ad^2fx^2 + 2\,ad^2ex - 2\,bf\sqrt{\frac{a^2+b^2}{b^2}}\,\mathrm{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}-b}{b}+1\right) + 2\,bf\sqrt{\frac{a^2+b^2}{b^2}}\,\mathrm{Li}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] 1/2*(a*d^2*f*x^2 + 2*a*d^2*e*x - 2*b*f*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(
d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2) - b)/b + 1) + 2*b*f*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c
) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2) - b)/b + 1) + 2*b*f*dilog(cosh(d*x + c) + sinh(d*x + c)) - 2*b*f*dilog
(-cosh(d*x + c) - sinh(d*x + c)) + 2*(b*d*e - b*c*f)*sqrt((a^2 + b^2)/b^2)*
log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a
) - 2*(b*d*e - b*c*f)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sin
h(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(b*d*f*x + b*c*f)*sqrt((a
^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
 b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(b*d*f*x + b*c*f)*sqrt(
(a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
 + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(b*d*f*x + b*d*e)*log
(cosh(d*x + c) + sinh(d*x + c) + 1) + 2*(b*d*e - b*c*f)*log(cosh(d*x + c) +
 sinh(d*x + c) - 1) + 2*(b*d*f*x + b*c*f)*log(-cosh(d*x + c) - sinh(d*x + c
) + 1))/(a*b*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] Timed out
```

maple [B] time = 0.28, size = 970, normalized size = 3.39

$$\frac{f\,x^2}{2b}+\frac{ex}{b}-\frac{2afc\,\mathrm{arctanh}\left(\frac{2b\,\mathrm{e}^{dx+c}+2a}{2\sqrt{a^2+b^2}}\right)}{d^2b\sqrt{a^2+b^2}}-\frac{af\ln\left(\frac{-b\,\mathrm{e}^{dx+c}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)x}{db\sqrt{a^2+b^2}}-\frac{af\ln\left(\frac{-b\,\mathrm{e}^{dx+c}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)c}{d^2b\sqrt{a^2+b^2}}+\frac{af\ln\left(\frac{b\,\mathrm{e}^{dx+c}+\sqrt{a^2+}}{a+\sqrt{a^2+b}}\right.}{db\sqrt{a^2+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2*f*x^2/b+e*x/b-2/d^2*a/b*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)
+2*a)/(a^2+b^2)^(1/2))-1/d*a/b*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2
)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a/b*f/(a^2+b^2)^(1/2)*ln((-b*exp(d
*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d*a/b*f/(a^2+b^2)^(1/2)*
ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2*a/b*f/(a^2
+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/d*
a/b*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d
^2*f*c*b/a/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2)
)-1/a/d*ln(exp(d*x+c)+1)*f*x-1/d^2*f*b/a/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+
c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d^2*f*b/a/(a^2+b^2)^(1/2)*dil
og((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/a/d^2*f*c*ln(exp
(d*x+c)-1)-1/d*f*b/a/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(
-a+(a^2+b^2)^(1/2)))*x-1/d^2*f*b/a/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b
^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+2/d*e*b/a/(a^2+b^2)^(1/2)*arctanh(1/2*
(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/a/d*e*ln(exp(d*x+c)+1)+1/a/d*e*ln(e
xp(d*x+c)-1)-1/d^2*a/b*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/
2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d^2*a/b*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)
+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/d*f*b/a/(a^2+b^2)^(1/2)*ln((b*ex
p(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2*f*b/a/(a^2+b^2)^(1
/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d^2*f/a*di
log(exp(d*x+c)+1)-1/d^2*f*dilog(exp(d*x+c))/a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(4\left(a^2e^c+b^2e^c\right)\int\frac{xe^{(dx)}}{ab^2e^{(2\,dx+2\,c)}+2\,a^2be^{(dx+c)}-ab^2}\,dx-\frac{x^2}{b}-2\int\frac{x}{ae^{(dx+c)}+a}\,dx-2\int\frac{x}{ae^{(dx+c)}-a}\,dx\right)f+e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] -1/2*(4*(a^2*e^c + b^2*e^c)*integrate(x*e^(d*x)/(a*b^2*e^(2*d*x + 2*c) + 2*
a^2*b*e^(d*x + c) - a*b^2), x) - x^2/b - 2*integrate(x/(a*e^(d*x + c) + a),
 x) - 2*integrate(x/(a*e^(d*x + c) - a), x))*f + e*((d*x + c)/(b*d) - log(e
^(-d*x - c) + 1)/(a*d) + log(e^(-d*x - c) - 1)/(a*d) - sqrt(a^2 + b^2)*log(
(b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2
)))/(a*b*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)\,\coth(c+d\,x)\,\left(e+f\,x\right)}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*coth(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)*coth(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)*cosh(c + d*x)*coth(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.428 $\int \frac{\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=71

$$\frac{2\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{abd}-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{x}{b}$$

```
[Out] x/b-arctanh(cosh(d*x+c))/a/d+2*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^
(1/2))*(a^2+b^2)^(1/2)/a/b/d
```

Rubi [A] time = 0.21, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {2889, 3058, 2660, 618, 204, 3770}

$$\frac{2\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{abd}-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{x}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] x/b - ArcTanh[Cosh[c + d*x]]/(a*d) + (2*Sqrt[a^2 + b^2]*ArcTanh[(b - a*Tanh
[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(a*b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2889

```
Int[cos[(e_.) + (f_.)*(x_)]^2*((d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)*((a_) +
(b_.)*sin[(e_.) + (f_.)*(x_)])^(m_), x_Symbol] :> Int[(d*Sin[e + f*x])^n*(a
 + b*Sin[e + f*x])^m*(1 - Sin[e + f*x]^2), x] /; FreeQ[{a, b, d, e, f, m, n
}, x] && NeQ[a^2 - b^2, 0] && (IGtQ[m, 0] || IntegersQ[2*m, 2*n])
```

Rule 3058

```
Int[((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2)/(((a_) + (b_.)*sin[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])), x_Symbol] :> Simp[(C*x
)/(b*d), x] + (Dist[(A*b^2 + a^2*C)/(b*(b*c - a*d)), Int[1/(a + b*Sin[e + f
*x]), x], x] - Dist[(c^2*C + A*d^2)/(d*(b*c - a*d)), Int[1/(c + d*Sin[e + f
*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, C}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \int \frac{\operatorname{csch}(c+dx)\left(1+\sinh^2(c+dx)\right)}{a+b\sinh(c+dx)}\,dx$$

$$= \frac{x}{b} + \frac{\int \operatorname{csch}(c+dx)\,dx}{a} - \frac{\left(a^2+b^2\right)\int \frac{1}{a+b\sinh(c+dx)}\,dx}{ab}$$

$$= \frac{x}{b} - \frac{\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{\left(2i\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx, x, \tan\left(\frac{1}{2}(\right.\right.}{abd}$$

$$= \frac{x}{b} - \frac{\tanh^{-1}(\cosh(c+dx))}{ad} - \frac{\left(4i\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{1}{-4\left(a^2+b^2\right)-x^2}\,dx, x, -2ib\right.}{abd}$$

$$= \frac{x}{b} - \frac{\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{2\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{abd}$$

Mathematica [A] time = 0.14, size = 80, normalized size = 1.13

$$\frac{2\sqrt{-a^2-b^2}\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)+a(c+dx)+b\log\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)}{abd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (a*(c + d*x) + 2*Sqrt[-a^2 - b^2]*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^
2 - b^2]] + b*Log[Tanh[(c + d*x)/2]])/(a*b*d)
```

fricas [B] time = 0.52, size = 209, normalized size = 2.94

$$\frac{adx-b\log\left(\cosh\left(dx+c\right)+\sinh\left(dx+c\right)+1\right)+b\log\left(\cosh\left(dx+c\right)+\sinh\left(dx+c\right)-1\right)+\sqrt{a^2+b^2}\log\left(\frac{b^2\cosh\cdots}{\cdots}\right)}{abd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (a*d*x - b*log(cosh(d*x + c) + sinh(d*x + c) + 1) + b*log(cosh(d*x + c) + s
inh(d*x + c) - 1) + sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x
 + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*s
inh(d*x + c) + 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x + c) + a))/(
b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x +
 c) + a)*sinh(d*x + c) - b)))/(a*b*d)
```

giac [B] time = 1.49, size = 139, normalized size = 1.96

$$\frac{\frac{dx}{b}-\frac{\left(a^2e^c+b^2e^c\right)e^{(-c)}\log\left(\frac{\left|2\,be^{(dx+2\,c)}+2\,ae^c-2\,\sqrt{a^2+b^2}\,e^c\right|}{\left|2\,be^{(dx+2\,c)}+2\,ae^c+2\,\sqrt{a^2+b^2}\,e^c\right|}\right)}{\sqrt{a^2+b^2}\,ab}-\frac{\log\left(e^{(dx+c)}+1\right)}{a}+\frac{\log\left(\left|e^{(dx+c)}-1\right|\right)}{a}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (d*x/b - (a^2*e^c + b^2*e^c)*e^(-c)*log(abs(2*b*e^(d*x + 2*c) + 2*a*e^c - 2
*sqrt(a^2 + b^2)*e^c)/abs(2*b*e^(d*x + 2*c) + 2*a*e^c + 2*sqrt(a^2 + b^2)*e
^c))/(sqrt(a^2 + b^2)*a*b) - log(e^(d*x + c) + 1)/a + log(abs(e^(d*x + c) -
 1))/a)/d
```

maple [B] time = 0.00, size = 150, normalized size = 2.11

$$-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{db}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{db}-\frac{2a\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{db\sqrt{a^2+b^2}}-\frac{2b\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{da\sqrt{a^2+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/d/b*ln(tanh(1/2*d*x+1/2*c)-1)+1/d/b*ln(tanh(1/2*d*x+1/2*c)+1)-2/d*a/b/(a
^2+b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))-2/
d/a*b/(a^2+b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(
1/2))+1/d/a*ln(tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.42, size = 126, normalized size = 1.77

$$\frac{dx+c}{bd}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}+\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}-\frac{\sqrt{a^2+b^2}\,\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{abd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] (d*x + c)/(b*d) - log(e^(-d*x - c) + 1)/(a*d) + log(e^(-d*x - c) - 1)/(a*d)
 - sqrt(a^2 + b^2)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x -
c) - a + sqrt(a^2 + b^2)))/(a*b*d)
```

mupad [B] time = 0.47, size = 384, normalized size = 5.41

$$\frac{x}{b}+\frac{\ln\left(32\,a\,b^2+32\,a^3-32\,a^3\,e^{d\,x}\,e^c-32\,a\,b^2\,e^{d\,x}\,e^c\right)}{a\,d}-\frac{\ln\left(32\,a\,b^2+32\,a^3+32\,a^3\,e^{d\,x}\,e^c+32\,a\,b^2\,e^{d\,x}\,e^c\right)}{a\,d}-\frac{\ln\left(12\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*coth(c + d*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] x/b + log(32*a*b^2 + 32*a^3 - 32*a^3*exp(d*x)*exp(c) - 32*a*b^2*exp(d*x)*ex
p(c))/(a*d) - log(32*a*b^2 + 32*a^3 + 32*a^3*exp(d*x)*exp(c) + 32*a*b^2*exp
(d*x)*exp(c))/(a*d) - (log(128*a^5*exp(d*x)*exp(c) - 64*a^2*b^3 - 64*a^4*b
- 32*a*b^3*(a^2 + b^2)^(1/2) - 64*a^3*b*(a^2 + b^2)^(1/2) + 160*a^3*b^2*exp
(d*x)*exp(c) + 128*a^4*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2) + 32*a*b^4*exp(d*x
)*exp(c) + 96*a^2*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2))*(a^2 + b^2)^(1/2))
/(a*b*d) + (log(128*a^5*exp(d*x)*exp(c) - 64*a^2*b^3 - 64*a^4*b + 32*a*b^3*
```

```
(a^2 + b^2)^(1/2) + 64*a^3*b*(a^2 + b^2)^(1/2) + 160*a^3*b^2*exp(d*x)*exp(c
) - 128*a^4*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2) + 32*a*b^4*exp(d*x)*exp(c) -
96*a^2*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2))*(a^2 + b^2)^(1/2))/(a*b*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(cosh(c + d*x)*coth(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.429 $\int \frac{\cosh(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=35

$$\mathrm{Int}\left(\frac{\cosh(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]*Coth[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]*Coth[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),
 x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\cosh(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 57.14, size = 0, normalized size = 0.00

$$\int \frac{\cosh(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]*Coth[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x
]
```

```
[Out] Integrate[(Cosh[c + d*x]*Coth[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),
x]
```

fricas [A] time = 0.60, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\cosh(dx+c)\coth(dx+c)}{afx+ae+(bfx+be)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] integral(cosh(d*x + c)*coth(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x
+ c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] Timed out
```

maple [A] time = 0.89, size = 0, normalized size = 0.00

$$\int \frac{\cosh \left(dx+c\right) \coth \left(dx+c\right)}{\left(fx+e\right) \left(a+b \sinh \left(dx+c\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2\left(a^{2}e^{c}+b^{2}e^{c}\right)\int -\frac{e^{(dx)}}{ab^{2}fx+ab^{2}e-\left(ab^{2}fxe^{(2c)}+ab^{2}ee^{(2c)}\right)e^{(2dx)}-2\left(a^{2}bfxe^{c}+a^{2}bee^{c}\right)e^{(dx)}}\,dx+\frac{\log\left(fx+e\right)}{bf}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] -2*(a^2*e^c + b^2*e^c)*integrate(-e^(d*x)/(a*b^2*f*x + a*b^2*e - (a*b^2*f*x
*e^(2*c) + a*b^2*e*e^(2*c))*e^(2*d*x) - 2*(a^2*b*f*x*e^c + a^2*b*e*e^c)*e^(
d*x)), x) + log(f*x + e)/(b*f) + integrate(1/(a*f*x + a*e + (a*f*x*e^c + a*
e*e^c)*e^(d*x)), x) + integrate(-1/(a*f*x + a*e - (a*f*x*e^c + a*e*e^c)*e^(
d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh\left(c+d\,x\right)\,\coth\left(c+d\,x\right)}{\left(e+f\,x\right)\,\left(a+b\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*coth(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)*coth(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh\left(c+dx\right)\coth\left(c+dx\right)}{\left(a+b\sinh\left(c+dx\right)\right)\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(cosh(c + d*x)*coth(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.430 $\int \frac{(e+fx)^3\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=656

$$-\frac{6f^3\left(a^2+b^2\right)\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^4}-\frac{6f^3\left(a^2+b^2\right)\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ab^2d^4}+\frac{6f^2\left(a^2+b^2\right)(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^3}+\frac{6f^2\left(a^2\right.}{}$$

```
[Out] -1/4*(f*x+e)^4/a/f+1/4*(a^2+b^2)*(f*x+e)^4/a/b^2/f-6*f^3*cosh(d*x+c)/b/d^4-
3*f*(f*x+e)^2*cosh(d*x+c)/b/d^2+(f*x+e)^3*ln(1-exp(2*d*x+2*c))/a/d-(a^2+b^2
)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/b^2/d-(a^2+b^2)*(f*x+e
)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/b^2/d+3/2*f*(f*x+e)^2*polylog(
2,exp(2*d*x+2*c))/a/d^2-3*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-
(a^2+b^2)^(1/2)))/a/b^2/d^2-3*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)
/(a+(a^2+b^2)^(1/2)))/a/b^2/d^2-3/2*f^2*(f*x+e)*polylog(3,exp(2*d*x+2*c))/a
/d^3+6*(a^2+b^2)*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a
/b^2/d^3+6*(a^2+b^2)*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)
))/a/b^2/d^3+3/4*f^3*polylog(4,exp(2*d*x+2*c))/a/d^4-6*(a^2+b^2)*f^3*polylo
g(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/b^2/d^4-6*(a^2+b^2)*f^3*polylog(4,
-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/b^2/d^4+6*f^2*(f*x+e)*sinh(d*x+c)/b/d^
3+(f*x+e)^3*sinh(d*x+c)/b/d
```

Rubi [A] time = 1.23, antiderivative size = 656, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 17, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5585, 5450, 5446, 3311, 32, 2635, 8, 3716, 2190, 2531, 6609, 2282, 6589, 5565, 3296, 2638, 5561}

$$\frac{6f^2\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^3}+\frac{6f^2\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ab^2d^3}-\frac{3f\left(a^2+b^2\right)(e+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]^2*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(e + f*x)^4/(4*a*f) + ((a^2 + b^2)*(e + f*x)^4)/(4*a*b^2*f) - (6*f^3*Cosh[
c + d*x])/(b*d^4) - (3*f*(e + f*x)^2*Cosh[c + d*x])/(b*d^2) - ((a^2 + b^2)*
(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*b^2*d) - ((a
^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*b^
2*d) + ((e + f*x)^3*Log[1 - E^(2*(c + d*x))])/(a*d) - (3*(a^2 + b^2)*f*(e +
 f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*b^2*d^2) -
 (3*(a^2 + b^2)*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
b^2]))])/(a*b^2*d^2) + (3*f*(e + f*x)^2*PolyLog[2, E^(2*(c + d*x))])/(2*a*d
^2) + (6*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a
```

```
^2 + b^2]))])/(a*b^2*d^3) + (6*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*b^2*d^3) - (3*f^2*(e + f*x)*PolyLog[
3, E^(2*(c + d*x))])/(2*a*d^3) - (6*(a^2 + b^2)*f^3*PolyLog[4, -((b*E^(c +
d*x))/(a - Sqrt[a^2 + b^2]))])/(a*b^2*d^4) - (6*(a^2 + b^2)*f^3*PolyLog[4,
-((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*b^2*d^4) + (3*f^3*PolyLog[4,
E^(2*(c + d*x))])/(4*a*d^4) + (6*f^2*(e + f*x)*Sinh[c + d*x])/(b*d^3) + ((e
 + f*x)^3*Sinh[c + d*x])/(b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
```

]

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3 \cosh^2(c+dx) \coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3 \cosh^2(c+dx)\coth(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^3 \coth(c+dx)\,dx}{a} + \frac{\int (e+fx)^3\cosh(c+dx)\,dx}{b} - \frac{\left(a^2+\right.}{}$$

$$= -\frac{(e+fx)^4}{4af} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4ab^2f} + \frac{(e+fx)^3\sinh(c+dx)}{bd} - \frac{2\int \frac{e^2}{}}{}$$

$$= -\frac{(e+fx)^4}{4af} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4ab^2f} - \frac{3f(e+fx)^2\cosh(c+dx)}{bd^2} - \frac{\left(a^2\right.}{}$$

$$= -\frac{(e+fx)^4}{4af} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4ab^2f} - \frac{3f(e+fx)^2\cosh(c+dx)}{bd^2} - \frac{\left(a^2\right.}{}$$

$$= -\frac{(e+fx)^4}{4af} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4ab^2f} - \frac{6f^3\cosh(c+dx)}{bd^4} - \frac{3f(e+fx)}{}$$

$$= -\frac{(e+fx)^4}{4af} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4ab^2f} - \frac{6f^3\cosh(c+dx)}{bd^4} - \frac{3f(e+fx)}{}$$

$$= -\frac{(e+fx)^4}{4af} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4ab^2f} - \frac{6f^3\cosh(c+dx)}{bd^4} - \frac{3f(e+fx)}{}$$

Mathematica [B] time = 16.38, size = 3099, normalized size = 4.72

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]^2*Coth[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/2*(E^(2*c)*((e + f*x)^4/(E^(2*c)*f) - (2*(1 - E^(-2*c))*(e + f*x)^3*Log[
1 - E^(-c - d*x)])/d - (2*(1 - E^(-2*c))*(e + f*x)^3*Log[1 + E^(-c - d*x)])
/d + (6*(-1 + E^(2*c))*f*(d^2*(e + f*x)^2*PolyLog[2, -E^(-c - d*x)] + 2*f*(
d*(e + f*x)*PolyLog[3, -E^(-c - d*x)] + f*PolyLog[4, -E^(-c - d*x)])))/(d^4
*E^(2*c)) + (6*(-1 + E^(2*c))*f*(d^2*(e + f*x)^2*PolyLog[2, E^(-c - d*x)] +
 2*f*(d*(e + f*x)*PolyLog[3, E^(-c - d*x)] + f*PolyLog[4, E^(-c - d*x)])))/
(d^4*E^(2*c))))/(a*(-1 + E^(2*c))) + ((a^2 + b^2)*(4*e^3*E^(2*c)*x + 6*e^2*
```

```
E^(2*c)*f*x^2 + 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*f^3*x^4 + (4*a*Sqrt[-(a^2 + b
^2)^2]*e^3*E^(2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^
2)^(3/2)*d) + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTanh[(a + b*E^(c + d
*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (2*e^3*Log[b - 2*a*E^(c + d
*x) - b*E^(2*(c + d*x))])/d - (2*e^3*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 +
E^(2*(c + d*x)))])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(
a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*
E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x
))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (
b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1
 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f
^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d +
(6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/
d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*
E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 +
 b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c
 + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a
*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*
c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e
+ f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])
)])/d^2 - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a
*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (12*e*f^2*PolyLog[3, -((b*E^(2*c
 + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*Pol
yLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (1
2*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))
])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^
2 + b^2)*E^(2*c)]))])/d^3 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c
 + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^
(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog
[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^
(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c
)]))])/d^3 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^
2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c
 - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x
))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4,
-((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4))/(2*a*b^2*(
-1 + E^(2*c))) + Csch[c]*(Cosh[c + d*x]/(8*b^2*d^4) - Sinh[c + d*x]/(8*b^2*
d^4))*(-4*a*d^4*e^3*x*Cosh[d*x] - 6*a*d^4*e^2*f*x^2*Cosh[d*x] - 4*a*d^4*e*f
^2*x^3*Cosh[d*x] - a*d^4*f^3*x^4*Cosh[d*x] - 4*a*d^4*e^3*x*Cosh[2*c + d*x]
- 6*a*d^4*e^2*f*x^2*Cosh[2*c + d*x] - 4*a*d^4*e*f^2*x^3*Cosh[2*c + d*x] - a
*d^4*f^3*x^4*Cosh[2*c + d*x] - 2*b*d^3*e^3*Cosh[c + 2*d*x] + 6*b*d^2*e^2*f*
Cosh[c + 2*d*x] - 12*b*d*e*f^2*Cosh[c + 2*d*x] + 12*b*f^3*Cosh[c + 2*d*x] -
 6*b*d^3*e^2*f*x*Cosh[c + 2*d*x] + 12*b*d^2*e*f^2*x*Cosh[c + 2*d*x] - 12*b*
d*f^3*x*Cosh[c + 2*d*x] - 6*b*d^3*e*f^2*x^2*Cosh[c + 2*d*x] + 6*b*d^2*f^3*x
^2*Cosh[c + 2*d*x] - 2*b*d^3*f^3*x^3*Cosh[c + 2*d*x] + 2*b*d^3*e^3*Cosh[3*c
```

```
 + 2*d*x] - 6*b*d^2*e^2*f*Cosh[3*c + 2*d*x] + 12*b*d*e*f^2*Cosh[3*c + 2*d*x
] - 12*b*f^3*Cosh[3*c + 2*d*x] + 6*b*d^3*e^2*f*x*Cosh[3*c + 2*d*x] - 12*b*d
^2*e*f^2*x*Cosh[3*c + 2*d*x] + 12*b*d*f^3*x*Cosh[3*c + 2*d*x] + 6*b*d^3*e*f
^2*x^2*Cosh[3*c + 2*d*x] - 6*b*d^2*f^3*x^2*Cosh[3*c + 2*d*x] + 2*b*d^3*f^3*
x^3*Cosh[3*c + 2*d*x] - 4*b*d^3*e^3*Sinh[c] - 12*b*d^2*e^2*f*Sinh[c] - 24*b
*d*e*f^2*Sinh[c] - 24*b*f^3*Sinh[c] - 12*b*d^3*e^2*f*x*Sinh[c] - 24*b*d^2*e
*f^2*x*Sinh[c] - 24*b*d*f^3*x*Sinh[c] - 12*b*d^3*e*f^2*x^2*Sinh[c] - 12*b*d
^2*f^3*x^2*Sinh[c] - 4*b*d^3*f^3*x^3*Sinh[c] - 4*a*d^4*e^3*x*Sinh[d*x] - 6*
a*d^4*e^2*f*x^2*Sinh[d*x] - 4*a*d^4*e*f^2*x^3*Sinh[d*x] - a*d^4*f^3*x^4*Sin
h[d*x] - 4*a*d^4*e^3*x*Sinh[2*c + d*x] - 6*a*d^4*e^2*f*x^2*Sinh[2*c + d*x]
- 4*a*d^4*e*f^2*x^3*Sinh[2*c + d*x] - a*d^4*f^3*x^4*Sinh[2*c + d*x] - 2*b*d
^3*e^3*Sinh[c + 2*d*x] + 6*b*d^2*e^2*f*Sinh[c + 2*d*x] - 12*b*d*e*f^2*Sinh[
c + 2*d*x] + 12*b*f^3*Sinh[c + 2*d*x] - 6*b*d^3*e^2*f*x*Sinh[c + 2*d*x] + 1
2*b*d^2*e*f^2*x*Sinh[c + 2*d*x] - 12*b*d*f^3*x*Sinh[c + 2*d*x] - 6*b*d^3*e*
f^2*x^2*Sinh[c + 2*d*x] + 6*b*d^2*f^3*x^2*Sinh[c + 2*d*x] - 2*b*d^3*f^3*x^3
*Sinh[c + 2*d*x] + 2*b*d^3*e^3*Sinh[3*c + 2*d*x] - 6*b*d^2*e^2*f*Sinh[3*c +
 2*d*x] + 12*b*d*e*f^2*Sinh[3*c + 2*d*x] - 12*b*f^3*Sinh[3*c + 2*d*x] + 6*b
*d^3*e^2*f*x*Sinh[3*c + 2*d*x] - 12*b*d^2*e*f^2*x*Sinh[3*c + 2*d*x] + 12*b*
d*f^3*x*Sinh[3*c + 2*d*x] + 6*b*d^3*e*f^2*x^2*Sinh[3*c + 2*d*x] - 6*b*d^2*f
^3*x^2*Sinh[3*c + 2*d*x] + 2*b*d^3*f^3*x^3*Sinh[3*c + 2*d*x])
```

fricas [C] time = 0.59, size = 3344, normalized size = 5.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -1/4*(2*a*b*d^3*f^3*x^3 + 2*a*b*d^3*e^3 + 6*a*b*d^2*e^2*f + 12*a*b*d*e*f^2
+ 12*a*b*f^3 + 6*(a*b*d^3*e*f^2 + a*b*d^2*f^3)*x^2 - 2*(a*b*d^3*f^3*x^3 + a
*b*d^3*e^3 - 3*a*b*d^2*e^2*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*d^3*e*f^2
 - a*b*d^2*f^3)*x^2 + 3*(a*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*
cosh(d*x + c)^2 - 2*(a*b*d^3*f^3*x^3 + a*b*d^3*e^3 - 3*a*b*d^2*e^2*f + 6*a*
b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(a*b*d^3*e^
2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x)*sinh(d*x + c)^2 + 6*(a*b*d^3*e^2*f
+ 2*a*b*d^2*e*f^2 + 2*a*b*d*f^3)*x - (a^2*d^4*f^3*x^4 + 4*a^2*d^4*e*f^2*x^3
 + 6*a^2*d^4*e^2*f*x^2 + 4*a^2*d^4*e^3*x + 8*a^2*c*d^3*e^3 - 12*a^2*c^2*d^2
*e^2*f + 8*a^2*c^3*d*e*f^2 - 2*a^2*c^4*f^3)*cosh(d*x + c) + 12*(((a^2 + b^2
)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*cosh(d*x
 + c) + ((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*
d^2*e^2*f)*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cos
h(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 12*(((a^2
 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*co
sh(d*x + c) + ((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 +
```

```
 b^2)*d^2*e^2*f)*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) -
(b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 12*
((b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c) + (b^2
*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*sinh(d*x + c))*dilog(cosh
(d*x + c) + sinh(d*x + c)) - 12*((b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2
*d^2*e^2*f)*cosh(d*x + c) + (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*
e^2*f)*sinh(d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) + 4*(((a^2 + b^
2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 - (a^2 +
 b^2)*c^3*f^3)*cosh(d*x + c) + ((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e
^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*sinh(d*x + c))*log(
2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) +
4*(((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e
*f^2 - (a^2 + b^2)*c^3*f^3)*cosh(d*x + c) + ((a^2 + b^2)*d^3*e^3 - 3*(a^2 +
 b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*sinh(d
*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b
^2) + 2*a) + 4*(((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*
(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e
*f^2 + (a^2 + b^2)*c^3*f^3)*cosh(d*x + c) + ((a^2 + b^2)*d^3*f^3*x^3 + 3*(a
^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e
^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*f^3)*sinh(d*x + c))*log(
-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*s
qrt((a^2 + b^2)/b^2) - b)/b) + 4*(((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*
d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(
a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*f^3)*cosh(d*x + c) + ((a^2 + b^2)*
d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + 3*(
a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*f^3)*s
inh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) +
b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 4*((b^2*d^3*f^3*x^3 + 3*b^
2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + b^2*d^3*e^3)*cosh(d*x + c) + (b^2*d^3
*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + b^2*d^3*e^3)*sinh(d*x
+ c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) - 4*((b^2*d^3*e^3 - 3*b^2*c*d^
2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c) + (b^2*d^3*e^3 - 3
*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*sinh(d*x + c))*log(cosh
(d*x + c) + sinh(d*x + c) - 1) - 4*((b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2
+ 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*
cosh(d*x + c) + (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x
+ 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*sinh(d*x + c))*log(-
cosh(d*x + c) - sinh(d*x + c) + 1) + 24*((a^2 + b^2)*f^3*cosh(d*x + c) + (a
^2 + b^2)*f^3*sinh(d*x + c))*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c)
+ (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*((a^2
+ b^2)*f^3*cosh(d*x + c) + (a^2 + b^2)*f^3*sinh(d*x + c))*polylog(4, (a*cos
h(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2))/b) - 24*(b^2*f^3*cosh(d*x + c) + b^2*f^3*sinh(d*x + c))*poly
log(4, cosh(d*x + c) + sinh(d*x + c)) - 24*(b^2*f^3*cosh(d*x + c) + b^2*f^3
*sinh(d*x + c))*polylog(4, -cosh(d*x + c) - sinh(d*x + c)) - 24*(((a^2 + b^
```

```
2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*cosh(d*x + c) + ((a^2 + b^2)*d*f^3*x + (a
^2 + b^2)*d*e*f^2)*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x
+ c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 24*(
((a^2 + b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*cosh(d*x + c) + ((a^2 + b^2)*d*
f^3*x + (a^2 + b^2)*d*e*f^2)*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))
/b) + 24*((b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c) + (b^2*d*f^3*x + b^2*d*
e*f^2)*sinh(d*x + c))*polylog(3, cosh(d*x + c) + sinh(d*x + c)) + 24*((b^2*
d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c) + (b^2*d*f^3*x + b^2*d*e*f^2)*sinh(d*x
 + c))*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) - (a^2*d^4*f^3*x^4 + 4*a^
2*d^4*e*f^2*x^3 + 6*a^2*d^4*e^2*f*x^2 + 4*a^2*d^4*e^3*x + 8*a^2*c*d^3*e^3 -
 12*a^2*c^2*d^2*e^2*f + 8*a^2*c^3*d*e*f^2 - 2*a^2*c^4*f^3 + 4*(a*b*d^3*f^3*
x^3 + a*b*d^3*e^3 - 3*a*b*d^2*e^2*f + 6*a*b*d*e*f^2 - 6*a*b*f^3 + 3*(a*b*d^
3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(a*b*d^3*e^2*f - 2*a*b*d^2*e*f^2 + 2*a*b*d*f
^3)*x)*cosh(d*x + c))*sinh(d*x + c))/(a*b^2*d^4*cosh(d*x + c) + a*b^2*d^4*s
inh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] sage0*x
```

maple [F] time = 2.68, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\left(\cosh^{2}\left(dx+c\right)\right)\coth\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/2*e^3*(2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) + e^(-d*x - c)/(b*d) -
2*log(e^(-d*x - c) + 1)/(a*d) - 2*log(e^(-d*x - c) - 1)/(a*d) + 2*(a^2 + b^
2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a*b^2*d)) + 3*(d*x*log(
e^(d*x + c) + 1) + dilog(-e^(d*x + c)))*e^2*f/(a*d^2) + 3*(d*x*log(-e^(d*x
+ c) + 1) + dilog(e^(d*x + c)))*e^2*f/(a*d^2) + 3*(d^2*x^2*log(e^(d*x + c)
+ 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*e*f^2/(a*d^3
) + 3*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog
(3, e^(d*x + c)))*e*f^2/(a*d^3) + (d^3*x^3*log(e^(d*x + c) + 1) + 3*d^2*x^2
*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x + c)) + 6*polylog(4, -e^(d*
x + c)))*f^3/(a*d^4) + (d^3*x^3*log(-e^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^(
d*x + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*polylog(4, e^(d*x + c)))*f^3/
(a*d^4) - 1/2*(d^4*f^3*x^4 + 4*d^4*e*f^2*x^3 + 6*d^4*e^2*f*x^2)/(a*d^4) - 1
/4*(a*d^4*f^3*x^4*e^c + 4*a*d^4*e*f^2*x^3*e^c + 6*a*d^4*e^2*f*x^2*e^c - 2*(
b*d^3*f^3*x^3*e^(2*c) + 3*(d^3*e*f^2 - d^2*f^3)*b*x^2*e^(2*c) + 3*(d^3*e^2*
f - 2*d^2*e*f^2 + 2*d*f^3)*b*x*e^(2*c) - 3*(d^2*e^2*f - 2*d*e*f^2 + 2*f^3)*
b*e^(2*c))*e^(d*x) + 2*(b*d^3*f^3*x^3 + 3*(d^3*e*f^2 + d^2*f^3)*b*x^2 + 3*(
d^3*e^2*f + 2*d^2*e*f^2 + 2*d*f^3)*b*x + 3*(d^2*e^2*f + 2*d*e*f^2 + 2*f^3)*
b)*e^(-d*x))*e^(-c)/(b^2*d^4) + integrate(-2*((a^2*b*f^3 + b^3*f^3)*x^3 + 3
*(a^2*b*e*f^2 + b^3*e*f^2)*x^2 + 3*(a^2*b*e^2*f + b^3*e^2*f)*x - ((a^3*f^3*
e^c + a*b^2*f^3*e^c)*x^3 + 3*(a^3*e*f^2*e^c + a*b^2*e*f^2*e^c)*x^2 + 3*(a^3
*e^2*f*e^c + a*b^2*e^2*f*e^c)*x)*e^(d*x))/(a*b^3*e^(2*d*x + 2*c) + 2*a^2*b^
2*e^(d*x + c) - a*b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)^2\coth(c+d\,x)\,\left(e+f\,x\right)^3}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*coth(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^2*coth(c + d*x)*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^3\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)**2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**3*cosh(c + d*x)**2*coth(c + d*x)/(a + b*sinh(c + d*x)),
 x)
```

3.431 $\int \frac{(e+fx)^2\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=486

$$\frac{2f^2\left(a^2+b^2\right)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^3}+\frac{2f^2\left(a^2+b^2\right)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ab^2d^3}-\frac{2f\left(a^2+b^2\right)(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^2}-\frac{2f\left(a^2+b\right.}{}$$

```
[Out] -1/3*(f*x+e)^3/a/f+1/3*(a^2+b^2)*(f*x+e)^3/a/b^2/f-2*f*(f*x+e)*cosh(d*x+c)/
b/d^2+(f*x+e)^2*ln(1-exp(2*d*x+2*c))/a/d-(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x
+c)/(a-(a^2+b^2)^(1/2)))/a/b^2/d-(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(
a^2+b^2)^(1/2)))/a/b^2/d+f*(f*x+e)*polylog(2,exp(2*d*x+2*c))/a/d^2-2*(a^2+b
^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/b^2/d^2-2*(a^2
+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/b^2/d^2-1/2*
f^2*polylog(3,exp(2*d*x+2*c))/a/d^3+2*(a^2+b^2)*f^2*polylog(3,-b*exp(d*x+c)
/(a-(a^2+b^2)^(1/2)))/a/b^2/d^3+2*(a^2+b^2)*f^2*polylog(3,-b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))/a/b^2/d^3+2*f^2*sinh(d*x+c)/b/d^3+(f*x+e)^2*sinh(d*x+c)/b
/d
```

Rubi [A] time = 1.03, antiderivative size = 486, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 13, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.382, Rules used = {5585, 5450, 5446, 3310, 3716, 2190, 2531, 2282, 6589, 5565, 3296, 2637, 5561}

$$-\frac{2f\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^2}-\frac{2f\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ab^2d^2}+\frac{2f^2\left(a^2+b^2\right)\text{Pol}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]^2*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(e + f*x)^3/(3*a*f) + ((a^2 + b^2)*(e + f*x)^3)/(3*a*b^2*f) - (2*f*(e + f*
x)*Cosh[c + d*x])/(b*d^2) - ((a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c + d*x)
)/(a - Sqrt[a^2 + b^2])])/(a*b^2*d) - ((a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E
^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*b^2*d) + ((e + f*x)^2*Log[1 - E^(2*(
c + d*x))])/(a*d) - (2*(a^2 + b^2)*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))
/(a - Sqrt[a^2 + b^2]))])/(a*b^2*d^2) - (2*(a^2 + b^2)*f*(e + f*x)*PolyLog[
2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*b^2*d^2) + (f*(e + f*x)*Po
lyLog[2, E^(2*(c + d*x))])/(a*d^2) + (2*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*b^2*d^3) + (2*(a^2 + b^2)*f^2*PolyLog
[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*b^2*d^3) - (f^2*PolyLog[3
, E^(2*(c + d*x))])/(2*a*d^3) + (2*f^2*Sinh[c + d*x])/(b*d^3) + ((e + f*x)^
2*Sinh[c + d*x])/(b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
```

```
0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh^2(c+dx)\coth(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,d}{a}$$

$$= \frac{\int (e+fx)^2\coth(c+dx)\,dx}{a} + \frac{\int (e+fx)^2\cosh(c+dx)\,dx}{b} - \frac{(a^2+}{}$$

$$= -\frac{(e+fx)^3}{3af} + \frac{(a^2+b^2)(e+fx)^3}{3ab^2f} + \frac{(e+fx)^2\sinh(c+dx)}{bd} - \frac{2\int}{}$$

$$= -\frac{(e+fx)^3}{3af} + \frac{(a^2+b^2)(e+fx)^3}{3ab^2f} - \frac{2f(e+fx)\cosh(c+dx)}{bd^2} - \frac{(a}{}$$

$$= -\frac{(e+fx)^3}{3af} + \frac{(a^2+b^2)(e+fx)^3}{3ab^2f} - \frac{2f(e+fx)\cosh(c+dx)}{bd^2} - \frac{(a}{}$$

$$= -\frac{(e+fx)^3}{3af} + \frac{(a^2+b^2)(e+fx)^3}{3ab^2f} - \frac{2f(e+fx)\cosh(c+dx)}{bd^2} - \frac{(a}{}$$

$$= -\frac{(e+fx)^3}{3af} + \frac{(a^2+b^2)(e+fx)^3}{3ab^2f} - \frac{2f(e+fx)\cosh(c+dx)}{bd^2} - \frac{(a}{}$$

Mathematica [B] time = 7.22, size = 1196, normalized size = 2.46

$$\frac{1}{3}\left(-\frac{ax\left(3e^2+3fxe+f^2x^2\right)\coth(c)}{b^2} - \frac{e^{2c}\left(\frac{2e^{-2c}(e+fx)^3}{f} - \frac{3\left(1-e^{-2c}\right)\log\left(1-e^{-c-dx}\right)(e+fx)^2}{d} - \frac{3\left(1-e^{-2c}\right)\log\left(1+e^{-c-dx}\right)(e+fx)^2}{d} + \right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]^2*Coth[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (-((a*x*(3*e^2 + 3*e*f*x + f^2*x^2)*Coth[c])/b^2) - (E^(2*c)*((2*(e + f*x)^
3)/(E^(2*c)*f) - (3*(1 - E^(-2*c))*(e + f*x)^2*Log[1 - E^(-c - d*x)])/d - (
3*(1 - E^(-2*c))*(e + f*x)^2*Log[1 + E^(-c - d*x)])/d + (6*(-1 + E^(2*c))*f
*(d*(e + f*x)*PolyLog[2, -E^(-c - d*x)] + f*PolyLog[3, -E^(-c - d*x)]))/(d^
3*E^(2*c)) + (6*(-1 + E^(2*c))*f*(d*(e + f*x)*PolyLog[2, E^(-c - d*x)] + f*
PolyLog[3, E^(-c - d*x)]))/(d^3*E^(2*c))))/(a*(-1 + E^(2*c))) + ((a^2 + b^2
)*(6*d^3*e^2*E^(2*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*
d^2*e^2*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^(2*c)*Lo
g[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c
+ d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 +
(b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[
1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*
f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*
d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] -
6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(
2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)
*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt
[(a^2 + b^2)*E^(2*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^
(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(
e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])
)] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)
]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^
2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 +
b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sq
rt[(a^2 + b^2)*E^(2*c)])])))/(a*b^2*d^3*(-1 + E^(2*c))) + (3*Cosh[d*x]*(-2*
d*f*(e + f*x)*Cosh[c] + (2*f^2 + d^2*(e + f*x)^2)*Sinh[c]))/(b*d^3) + (3*((
2*f^2 + d^2*(e + f*x)^2)*Cosh[c] - 2*d*f*(e + f*x)*Sinh[c])*Sinh[d*x])/(b*d
^3))/3
```

fricas [C] time = 0.52, size = 2101, normalized size = 4.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -1/6*(3*a*b*d^2*f^2*x^2 + 3*a*b*d^2*e^2 + 6*a*b*d*e*f + 6*a*b*f^2 - 3*(a*b*
d^2*f^2*x^2 + a*b*d^2*e^2 - 2*a*b*d*e*f + 2*a*b*f^2 + 2*(a*b*d^2*e*f - a*b*
d*f^2)*x)*cosh(d*x + c)^2 - 3*(a*b*d^2*f^2*x^2 + a*b*d^2*e^2 - 2*a*b*d*e*f
+ 2*a*b*f^2 + 2*(a*b*d^2*e*f - a*b*d*f^2)*x)*sinh(d*x + c)^2 + 6*(a*b*d^2*e
*f + a*b*d*f^2)*x - 2*(a^2*d^3*f^2*x^3 + 3*a^2*d^3*e*f*x^2 + 3*a^2*d^3*e^2*
```

x + 6*a^2*c*d^2*e^2 - 6*a^2*c^2*d*e*f + 2*a^2*c^3*f^2)*cosh(d*x + c) + 12*(
((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c) + ((a^2 + b^2)*d*f^
2*x + (a^2 + b^2)*d*e*f)*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x
 + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b +
1) + 12*(((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c) + ((a^2 +
b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b + 1) - 12*((b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c) + (b^2*d*f^2*x +
b^2*d*e*f)*sinh(d*x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) - 12*((b^2*d
*f^2*x + b^2*d*e*f)*cosh(d*x + c) + (b^2*d*f^2*x + b^2*d*e*f)*sinh(d*x + c)
)*dilog(-cosh(d*x + c) - sinh(d*x + c)) + 6*(((a^2 + b^2)*d^2*e^2 - 2*(a^2
+ b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c) + ((a^2 + b^2)*d^2*e^2
- 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*sinh(d*x + c))*log(2*b*cosh(
d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 6*(((a^2
+ b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)
 + ((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*sinh
(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)
/b^2) + 2*a) + 6*(((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a
^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c) + ((a^2 + b^2)*d^2*f
^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*
f^2)*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 6*(((a^2 + b^2)*d^2*
f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2
*f^2)*cosh(d*x + c) + ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x +
2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*sinh(d*x + c))*log(-(a*cosh(d*
x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
b^2)/b^2) - b)/b) - 6*((b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + b^2*d^2*e^2)*co
sh(d*x + c) + (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + b^2*d^2*e^2)*sinh(d*x +
c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) - 6*((b^2*d^2*e^2 - 2*b^2*c*d*e*
f + b^2*c^2*f^2)*cosh(d*x + c) + (b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2
)*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - 1) - 6*((b^2*d^2*f^2*x
^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c) + (b^2*d^
2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*sinh(d*x + c))*l
og(-cosh(d*x + c) - sinh(d*x + c) + 1) - 12*((a^2 + b^2)*f^2*cosh(d*x + c)
+ (a^2 + b^2)*f^2*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x +
 c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*((
a^2 + b^2)*f^2*cosh(d*x + c) + (a^2 + b^2)*f^2*sinh(d*x + c))*polylog(3, (a
*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2))/b) + 12*(b^2*f^2*cosh(d*x + c) + b^2*f^2*sinh(d*x + c))*
polylog(3, cosh(d*x + c) + sinh(d*x + c)) + 12*(b^2*f^2*cosh(d*x + c) + b^2
*f^2*sinh(d*x + c))*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) - 2*(a^2*d^3
*f^2*x^3 + 3*a^2*d^3*e*f*x^2 + 3*a^2*d^3*e^2*x + 6*a^2*c*d^2*e^2 - 6*a^2*c^
2*d*e*f + 2*a^2*c^3*f^2 + 3*(a*b*d^2*f^2*x^2 + a*b*d^2*e^2 - 2*a*b*d*e*f +
2*a*b*f^2 + 2*(a*b*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/(a
*b^2*d^3*cosh(d*x + c) + a*b^2*d^3*sinh(d*x + c))

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 1.71Not invertible Error: B
ad Argument Value
```

maple [F] time = 1.73, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 (\cosh^2(dx+c)) \coth(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}e^2\left(\frac{2(dx+c)a}{b^2d} - \frac{e^{(dx+c)}}{bd} + \frac{e^{(-dx-c)}}{bd} - \frac{2\log\left(e^{(-dx-c)}+1\right)}{ad} - \frac{2\log\left(e^{(-dx-c)}-1\right)}{ad} + \frac{2\left(a^2+b^2\right)\log\left(-2ae^{(-dx-c)}\right.}{ab^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -1/2*e^2*(2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) + e^(-d*x - c)/(b*d) -
2*log(e^(-d*x - c) + 1)/(a*d) - 2*log(e^(-d*x - c) - 1)/(a*d) + 2*(a^2 + b^
2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a*b^2*d)) + 2*(d*x*log(
e^(d*x + c) + 1) + dilog(-e^(d*x + c)))*e*f/(a*d^2) + 2*(d*x*log(-e^(d*x +
c) + 1) + dilog(e^(d*x + c)))*e*f/(a*d^2) + (d^2*x^2*log(e^(d*x + c) + 1) +
 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*f^2/(a*d^3) + (d^2
*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x
 + c)))*f^2/(a*d^3) - 2/3*(d^3*f^2*x^3 + 3*d^3*e*f*x^2)/(a*d^3) - 1/6*(2*a*
d^3*f^2*x^3*e^c + 6*a*d^3*e*f*x^2*e^c - 3*(b*d^2*f^2*x^2*e^(2*c) + 2*(d^2*e
*f - d*f^2)*b*x*e^(2*c) - 2*(d*e*f - f^2)*b*e^(2*c))*e^(d*x) + 3*(b*d^2*f^2
*x^2 + 2*(d^2*e*f + d*f^2)*b*x + 2*(d*e*f + f^2)*b)*e^(-d*x))*e^(-c)/(b^2*d
^3) + integrate(-2*((a^2*b*f^2 + b^3*f^2)*x^2 + 2*(a^2*b*e*f + b^3*e*f)*x -
```

```
((a^3*f^2*e^c + a*b^2*f^2*e^c)*x^2 + 2*(a^3*e*f*e^c + a*b^2*e*f*e^c)*x)*e^
(d*x))/(a*b^3*e^(2*d*x + 2*c) + 2*a^2*b^2*e^(d*x + c) - a*b^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)^2\coth(c+d\,x)\,\left(e+f\,x\right)^2}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*coth(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((cosh(c + d*x)^2*coth(c + d*x)*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)**2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**2*cosh(c + d*x)**2*coth(c + d*x)/(a + b*sinh(c + d*x)),
 x)
```

3.432 $\int \frac{(e+fx)\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=322

$$-\frac{f\left(a^2+b^2\right)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^2}-\frac{f\left(a^2+b^2\right)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ab^2d^2}-\frac{\left(a^2+b^2\right)(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{ab^2d}-\frac{\left(a^2+b^2\right)(e+$$

```
[Out] -1/2*(f*x+e)^2/a/f+1/2*(a^2+b^2)*(f*x+e)^2/a/b^2/f-f*cosh(d*x+c)/b/d^2+(f*x
+e)*ln(1-exp(2*d*x+2*c))/a/d-(a^2+b^2)*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^
2)^(1/2)))/a/b^2/d-(a^2+b^2)*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))
/a/b^2/d+1/2*f*polylog(2,exp(2*d*x+2*c))/a/d^2-(a^2+b^2)*f*polylog(2,-b*exp
(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/b^2/d^2-(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/
(a+(a^2+b^2)^(1/2)))/a/b^2/d^2+(f*x+e)*sinh(d*x+c)/b/d
```

Rubi [A] time = 0.59, antiderivative size = 322, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {5585, 5450, 5446, 2635, 8, 3716, 2190, 2279, 2391, 5565, 3296, 2638, 5561}

$$-\frac{f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ab^2d^2}-\frac{f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ab^2d^2}+\frac{f\text{PolyLog}\left(2,e^{2(c+dx)}\right)}{2ad^2}-\frac{\left(a^2+b^2\right)(e$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]^2*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(e + f*x)^2/(2*a*f) + ((a^2 + b^2)*(e + f*x)^2)/(2*a*b^2*f) - (f*Cosh[c +
d*x])/(b*d^2) - ((a^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^
2 + b^2])])/(a*b^2*d) - ((a^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2])])/(a*b^2*d) + ((e + f*x)*Log[1 - E^(2*(c + d*x))])/(a*d)
- ((a^2 + b^2)*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*b
^2*d^2) - ((a^2 + b^2)*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])
)])/(a*b^2*d^2) + (f*PolyLog[2, E^(2*(c + d*x))])/(2*a*d^2) + ((e + f*x)*Si
nh[c + d*x])/(b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
```

```
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh^2(c+dx)\coth(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cosh^3(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)\coth(c+dx)\,dx}{a} + \frac{\int (e+fx)\cosh(c+dx)\,dx}{b} - \frac{\left(a^2+b^2\right.}{}$$

$$= -\frac{(e+fx)^2}{2af} + \frac{\left(a^2+b^2\right)(e+fx)^2}{2ab^2f} + \frac{(e+fx)\sinh(c+dx)}{bd} - \frac{2\int \frac{e^{2(}}{1}}{}$$

$$= -\frac{(e+fx)^2}{2af} + \frac{\left(a^2+b^2\right)(e+fx)^2}{2ab^2f} - \frac{f\cosh(c+dx)}{bd^2} - \frac{\left(a^2+b^2\right)(e}{}$$

$$= -\frac{(e+fx)^2}{2af} + \frac{\left(a^2+b^2\right)(e+fx)^2}{2ab^2f} - \frac{f\cosh(c+dx)}{bd^2} - \frac{\left(a^2+b^2\right)(e}{}$$

$$= -\frac{(e+fx)^2}{2af} + \frac{\left(a^2+b^2\right)(e+fx)^2}{2ab^2f} - \frac{f\cosh(c+dx)}{bd^2} - \frac{\left(a^2+b^2\right)(e}{}$$

Mathematica [A] time = 1.63, size = 296, normalized size = 0.92

$$\frac{\left(a^2+b^2\right)\left(-f\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)-f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)-f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)-f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]^2*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (-(a*b*f*Cosh[c + d*x]) + b^2*d*e*Log[Sinh[c + d*x]] - b^2*c*f*Log[Sinh[c +
 d*x]] + (b^2*f*((c + d*x)*(c + d*x + 2*Log[1 - E^(-2*(c + d*x))]) - PolyLo
g[2, E^(-2*(c + d*x))]))/2 + (a^2 + b^2)*((f*(c + d*x)^2)/2 - f*(c + d*x)*L
og[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - f*(c + d*x)*Log[1 + (b*E^(c
 + d*x))/(a + Sqrt[a^2 + b^2])] - d*e*Log[a + b*Sinh[c + d*x]] + c*f*Log[a
+ b*Sinh[c + d*x]] - f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] -
 f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]) + a*b*d*(e + f*x)*
Sinh[c + d*x])/(a*b^2*d^2)
```

fricas [B] time = 0.53, size = 1108, normalized size = 3.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -1/2*(a*b*d*f*x + a*b*d*e + a*b*f - (a*b*d*f*x + a*b*d*e - a*b*f)*cosh(d*x
+ c)^2 - (a*b*d*f*x + a*b*d*e - a*b*f)*sinh(d*x + c)^2 - (a^2*d^2*f*x^2 + 2
*a^2*d^2*e*x + 4*a^2*c*d*e - 2*a^2*c^2*f)*cosh(d*x + c) + 2*((a^2 + b^2)*f*
cosh(d*x + c) + (a^2 + b^2)*f*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sin
h(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)
/b + 1) + 2*((a^2 + b^2)*f*cosh(d*x + c) + (a^2 + b^2)*f*sinh(d*x + c))*dil
og((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))
*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(b^2*f*cosh(d*x + c) + b^2*f*sinh(d*
x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) - 2*(b^2*f*cosh(d*x + c) + b^2
*f*sinh(d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) + 2*(((a^2 + b^2)*d
*e - (a^2 + b^2)*c*f)*cosh(d*x + c) + ((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*s
inh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b
^2)/b^2) + 2*a) + 2*(((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c) + ((
a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*
b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(((a^2 + b^2)*d*f*x
+ (a^2 + b^2)*c*f)*cosh(d*x + c) + ((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*si
nh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b
*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(((a^2 + b^2)*d*f*x + (a^
2 + b^2)*c*f)*cosh(d*x + c) + ((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*sinh(d*
x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*((b^2*d*f*x + b^2*d*e)*cosh(d*
x + c) + (b^2*d*f*x + b^2*d*e)*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x
+ c) + 1) - 2*((b^2*d*e - b^2*c*f)*cosh(d*x + c) + (b^2*d*e - b^2*c*f)*sinh
(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - 1) - 2*((b^2*d*f*x + b^2*c*f
)*cosh(d*x + c) + (b^2*d*f*x + b^2*c*f)*sinh(d*x + c))*log(-cosh(d*x + c) -
 sinh(d*x + c) + 1) - (a^2*d^2*f*x^2 + 2*a^2*d^2*e*x + 4*a^2*c*d*e - 2*a^2*
c^2*f + 2*(a*b*d*f*x + a*b*d*e - a*b*f)*cosh(d*x + c))*sinh(d*x + c))/(a*b^
2*d^2*cosh(d*x + c) + a*b^2*d^2*sinh(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.37, size = 932, normalized size = 2.89

$$\frac{e\ln\left(\mathrm{e}^{dx+c}+1\right)}{ad}+\frac{e\ln\left(\mathrm{e}^{dx+c}-1\right)}{ad}-\frac{aex}{b^2}+\frac{\left(dfx+de-f\right)\mathrm{e}^{dx+c}}{2d^2b}-\frac{\left(dfx+de+f\right)\mathrm{e}^{-dx-c}}{2d^2b}+\frac{af\,x^2}{2b^2}-\frac{e\ln\left(b\,\mathrm{e}^{2dx+2c}+2a\right.}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/a/d*e*ln(exp(d*x+c)+1)+1/a/d*e*ln(exp(d*x+c)-1)-a*e*x/b^2+1/2*(d*f*x+d*e-
f)/d^2/b*exp(d*x+c)-1/2*(d*f*x+d*e+f)/d^2/b*exp(-d*x-c)+1/2*a*f*x^2/b^2+1/d
^2*f/a*dilog(exp(d*x+c)+1)-1/d^2*f*dilog(exp(d*x+c))/a-1/d^2*f/a*dilog((-b*
exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2*f/a*dilog((b*exp(
d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/d*e/a*ln(b*exp(2*d*x+2*c)+
2*a*exp(d*x+c)-b)+2/d*a/b^2*f*c*x+1/d^2*a/b^2*f*c*ln(b*exp(2*d*x+2*c)+2*a*e
xp(d*x+c)-b)-2/d^2*a/b^2*f*c*ln(exp(d*x+c))-1/d*a/b^2*f*ln((-b*exp(d*x+c)+(
a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*a/b^2*f*ln((-b*exp(d*x+c)+(
a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*a/b^2*f*ln((b*exp(d*x+c)+(a^2
+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*a/b^2*f*ln((b*exp(d*x+c)+(a^2+b
^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/d^2*a/b^2*f*c^2-1/d*a/b^2*e*ln(b*exp(
2*d*x+2*c)+2*a*exp(d*x+c)-b)+2/d*a/b^2*e*ln(exp(d*x+c))-1/d^2*a/b^2*f*dilog
((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/d^2*a/b^2*f*dilog(
(-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/a/d*ln(exp(d*x+c)
+1)*f*x-1/a/d^2*f*c*ln(exp(d*x+c)-1)-1/d*f/a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1
/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*f/a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-
a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*f/a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(
a^2+b^2)^(1/2)))*x-1/d^2*f/a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^
2)^(1/2)))*c+1/d^2*f*c/a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}e\left(\frac{2\,(dx+c)a}{b^2d}-\frac{e^{(dx+c)}}{bd}+\frac{e^{(-dx-c)}}{bd}-\frac{2\,\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{2\,\log\left(e^{(-dx-c)}-1\right)}{ad}+\frac{2\left(a^2+b^2\right)\log\left(-2\,ae^{(-dx-c)}\right.}{ab^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/2*e*(2*(d*x + c)*a/(b^2*d) - e^(d*x + c)/(b*d) + e^(-d*x - c)/(b*d) - 2*
log(e^(-d*x - c) + 1)/(a*d) - 2*log(e^(-d*x - c) - 1)/(a*d) + 2*(a^2 + b^2)
*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a*b^2*d)) - 1/4*f*(2*(a*d
^2*x^2*e^c - (b*d*x*e^(2*c) - b*e^(2*c))*e^(d*x) + (b*d*x + b)*e^(-d*x))*e^
(-c)/(b^2*d^2) - integrate(8*((a^3*e^c + a*b^2*e^c)*x*e^(d*x) - (a^2*b + b^
```

```
3)*x)/(a*b^3*e^(2*d*x + 2*c) + 2*a^2*b^2*e^(d*x + c) - a*b^3), x) + 4*integ
rate(x/(a*e^(d*x + c) + a), x) - 4*integrate(x/(a*e^(d*x + c) - a), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)^2\coth(c+d\,x)\,\left(e+f\,x\right)}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*coth(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)^2*coth(c + d*x)*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)**2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*cosh(c + d*x)**2*coth(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.433 $\int \frac{\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=57

$$-\frac{(a^2+b^2)\log(a+b\sinh(c+dx))}{ab^2d}+\frac{\log(\sinh(c+dx))}{ad}+\frac{\sinh(c+dx)}{bd}$$

```
[Out] ln(sinh(d*x+c))/a/d-(a^2+b^2)*ln(a+b*sinh(d*x+c))/a/b^2/d+sinh(d*x+c)/b/d
```

Rubi [A] time = 0.13, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2837, 12, 894}

$$-\frac{(a^2+b^2)\log(a+b\sinh(c+dx))}{ab^2d}+\frac{\log(\sinh(c+dx))}{ad}+\frac{\sinh(c+dx)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]^2*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] Log[Sinh[c + d*x]]/(a*d) - ((a^2 + b^2)*Log[a + b*Sinh[c + d*x]])/(a*b^2*d)
 + Sinh[c + d*x]/(b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\text{Subst}\left(\int \frac{b(-b^2-x^2)}{x(a+x)}\,dx, x, b\sinh(c+dx)\right)}{b^3d}$$
$$= -\frac{\text{Subst}\left(\int \frac{-b^2-x^2}{x(a+x)}\,dx, x, b\sinh(c+dx)\right)}{b^2d}$$
$$= -\frac{\text{Subst}\left(\int \left(-1-\frac{b^2}{ax}+\frac{a^2+b^2}{a(a+x)}\right)dx, x, b\sinh(c+dx)\right)}{b^2d}$$
$$= \frac{\log(\sinh(c+dx))}{ad} - \frac{(a^2+b^2)\log(a+b\sinh(c+dx))}{ab^2d} + \frac{\sinh(c+dx)}{bd}$$

Mathematica [A] time = 0.08, size = 48, normalized size = 0.84

$$\frac{-\left(\frac{a}{b^2}+\frac{1}{a}\right)\log(a+b\sinh(c+dx))+\frac{\log(\sinh(c+dx))}{a}+\frac{\sinh(c+dx)}{b}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]^2*Coth[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (Log[Sinh[c + d*x]]/a - (a^(-1) + a/b^2)*Log[a + b*Sinh[c + d*x]] + Sinh[c
+ d*x]/b)/d
```

fricas [B] time = 0.74, size = 203, normalized size = 3.56

$$\frac{2\,a^2dx\cosh(dx+c)+ab\cosh(dx+c)^2+ab\sinh(dx+c)^2-ab-2\left(\left(a^2+b^2\right)\cosh(dx+c)+\left(a^2+b^2\right)\sinh(d\right.}{2\left(ab^2d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] 1/2*(2*a^2*d*x*cosh(d*x + c) + a*b*cosh(d*x + c)^2 + a*b*sinh(d*x + c)^2 -
a*b - 2*((a^2 + b^2)*cosh(d*x + c) + (a^2 + b^2)*sinh(d*x + c))*log(2*(b*si
nh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) + 2*(b^2*cosh(d*x + c) +
b^2*sinh(d*x + c))*log(2*sinh(d*x + c)/(cosh(d*x + c) - sinh(d*x + c))) + 2
*(a^2*d*x + a*b*cosh(d*x + c))*sinh(d*x + c))/(a*b^2*d*cosh(d*x + c) + a*b^
2*d*sinh(d*x + c))
```

giac [A] time = 0.19, size = 108, normalized size = 1.89

$$\frac{\frac{2\,adx}{b^2}+\frac{e^{(dx+c)}}{b}-\frac{e^{(-dx-c)}}{b}+\frac{2\,\log\left(e^{(dx+c)}+1\right)}{a}+\frac{2\,\log\left(\left|e^{(dx+c)}-1\right|\right)}{a}-\frac{2\left(a^2+b^2\right)\log\left(\left|be^{(2\,dx+2\,c)}+2\,ae^{(dx+c)}-b\right|\right)}{ab^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(2*a*d*x/b^2 + e^(d*x + c)/b - e^(-d*x - c)/b + 2*log(e^(d*x + c) + 1)/
a + 2*log(abs(e^(d*x + c) - 1))/a - 2*(a^2 + b^2)*log(abs(b*e^(2*d*x + 2*c)
 + 2*a*e^(d*x + c) - b))/(a*b^2))/d
```

maple [B] time = 0.14, size = 178, normalized size = 3.12

$$-\frac{1}{db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}+\frac{a\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{d\,b^2}-\frac{1}{db\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{a\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{d\,b^2}-\frac{a\ln\left(\left(\mathrm{t}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/d/b/(tanh(1/2*d*x+1/2*c)-1)+1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)-1)-1/d/b/(t
anh(1/2*d*x+1/2*c)+1)+1/d*a/b^2*ln(tanh(1/2*d*x+1/2*c)+1)-1/d*a/b^2*ln(tanh
(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)-1/d/a*ln(tanh(1/2*d*x+1/2*c)
^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)+1/d/a*ln(tanh(1/2*d*x+1/2*c))
```

maxima [B] time = 0.31, size = 130, normalized size = 2.28

$$-\frac{(dx+c)a}{b^2d}+\frac{e^{(dx+c)}}{2\,bd}-\frac{e^{(-dx-c)}}{2\,bd}+\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}+\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}-\frac{\left(a^2+b^2\right)\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right.}{ab^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*coth(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -(d*x + c)*a/(b^2*d) + 1/2*e^(d*x + c)/(b*d) - 1/2*e^(-d*x - c)/(b*d) + log
(e^(-d*x - c) + 1)/(a*d) + log(e^(-d*x - c) - 1)/(a*d) - (a^2 + b^2)*log(-2
*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a*b^2*d)
```

mupad [B] time = 0.49, size = 360, normalized size = 6.32

$$\frac{e^{c+d\,x}}{2\,b\,d}-\frac{e^{-c-d\,x}}{2\,b\,d}-\frac{\ln\left(8\,a^5\,e^{d\,x}\,e^c-16\,b^5-16\,a^2\,b^3-4\,a^4\,b+16\,b^5\,e^{2\,c}\,e^{2\,d\,x}+4\,a^4\,b\,e^{2\,c}\,e^{2\,d\,x}+32\,a^3\,b^2\,e^{d\,x}\,e^c+16\right.}{a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*coth(c + d*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] exp(c + d*x)/(2*b*d) - exp(- c - d*x)/(2*b*d) - log(8*a^5*exp(d*x)*exp(c) -
 16*b^5 - 16*a^2*b^3 - 4*a^4*b + 16*b^5*exp(2*c)*exp(2*d*x) + 4*a^4*b*exp(2
*c)*exp(2*d*x) + 32*a^3*b^2*exp(d*x)*exp(c) + 16*a^2*b^3*exp(2*c)*exp(2*d*x
) + 32*a*b^4*exp(d*x)*exp(c))/(a*d) + log(4*a^6 + 16*b^6 + 32*a^2*b^4 + 20*
a^4*b^2 - 4*a^6*exp(2*c)*exp(2*d*x) - 16*b^6*exp(2*c)*exp(2*d*x) - 32*a^2*b
^4*exp(2*c)*exp(2*d*x) - 20*a^4*b^2*exp(2*c)*exp(2*d*x))/(a*d) + (a*x)/b^2
- (a*log(8*a^5*exp(d*x)*exp(c) - 16*b^5 - 16*a^2*b^3 - 4*a^4*b + 16*b^5*exp
(2*c)*exp(2*d*x) + 4*a^4*b*exp(2*c)*exp(2*d*x) + 32*a^3*b^2*exp(d*x)*exp(c)
 + 16*a^2*b^3*exp(2*c)*exp(2*d*x) + 32*a*b^4*exp(d*x)*exp(c)))/(b^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh^2(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2*coth(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(cosh(c + d*x)**2*coth(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.434 $\int \frac{\cosh^2(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{\cosh^2(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)^2*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh^2(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]^2*Coth[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]^2*Coth[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\cosh^2(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\cosh^2(c+dx)\coth(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]^2*Coth[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cosh(dx+c)^2\coth(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(cosh(d*x + c)^2*coth(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] sage0*x
```

maple [A] time = 1.44, size = 0, normalized size = 0.00

$$\int \frac{\left(\cosh^2(dx+c)\right)\coth(dx+c)}{\left(fx+e\right)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)^2*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)^2*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{e^{\left(-c+\frac{de}{f}\right)}E_1\left(\frac{\left(fx+e\right)d}{f}\right)}{2\,bf}-\frac{e^{\left(c-\frac{de}{f}\right)}E_1\left(-\frac{\left(fx+e\right)d}{f}\right)}{2\,bf}-\frac{a\log\left(fx+e\right)}{b^2f}+\frac{1}{4}\int\frac{8\left(a^2b+b^3-\left(a^3e^c+ab^2e\right.\right.}{ab^3fx+ab^3e-\left(ab^3fxe^{(2\,c)}+ab^3ee^{(2\,c)}\right)e^{(2\,dx)}-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)^2*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -1/2*e^(-c + d*e/f)*exp_integral_e(1, (f*x + e)*d/f)/(b*f) - 1/2*e^(c - d*e
/f)*exp_integral_e(1, -(f*x + e)*d/f)/(b*f) - a*log(f*x + e)/(b^2*f) + 1/4*
integrate(8*(a^2*b + b^3 - (a^3*e^c + a*b^2*e^c)*e^(d*x))/(a*b^3*f*x + a*b^
3*e - (a*b^3*f*x*e^(2*c) + a*b^3*e*e^(2*c))*e^(2*d*x) - 2*(a^2*b^2*f*x*e^c
+ a^2*b^2*e*e^c)*e^(d*x)), x) - integrate(1/(a*f*x + a*e + (a*f*x*e^c + a*e
```

```
*e^c)*e^(d*x)), x) + integrate(-1/(a*f*x + a*e - (a*f*x*e^c + a*e*e^c)*e^(d
*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh (c + d\,x)^2 \coth (c + d\,x)}{\left(e + f\,x\right)\,\left(a + b\sinh (c + d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)^2*coth(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int((cosh(c + d*x)^2*coth(c + d*x))/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh^2 (c + dx) \coth (c + dx)}{(a + b\sinh (c + dx)) \left(e + fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)**2*coth(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(cosh(c + d*x)**2*coth(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)),
x)
```

3.435 $\int \frac{(e+fx)^3\operatorname{csch}(c+dx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1049

$$\frac{6ib\text{Li}_4\left(-ie^{c+dx}\right)f^3}{\left(a^2+b^2\right)d^4}-\frac{6ib\text{Li}_4\left(ie^{c+dx}\right)f^3}{\left(a^2+b^2\right)d^4}-\frac{6b^2\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)f^3}{a\left(a^2+b^2\right)d^4}-\frac{6b^2\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)f^3}{a\left(a^2+b^2\right)d^4}+\frac{3b^2\text{Li}_4\left(-e^{2(c+dx)}\right)f^3}{4a\left(a^2+b^2\right)d^4}-3$$

```
[Out] b^2*(f*x+e)^3*ln(1+exp(2*d*x+2*c))/a/(a^2+b^2)/d-b^2*(f*x+e)^3*ln(1+b*exp(d
*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d-b^2*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a
+(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d-6*b^2*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+
b^2)^(1/2)))/a/(a^2+b^2)/d^4-6*b^2*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)
^(1/2)))/a/(a^2+b^2)/d^4+3/4*b^2*f^3*polylog(4,-exp(2*d*x+2*c))/a/(a^2+b^2)
/d^4-6*I*b*f^3*polylog(4,I*exp(d*x+c))/(a^2+b^2)/d^4+3/2*b^2*f*(f*x+e)^2*po
lylog(2,-exp(2*d*x+2*c))/a/(a^2+b^2)/d^2-3/2*b^2*f^2*(f*x+e)*polylog(3,-exp
(2*d*x+2*c))/a/(a^2+b^2)/d^3+6*I*b*f^3*polylog(4,-I*exp(d*x+c))/(a^2+b^2)/d
^4-3*I*b*f*(f*x+e)^2*polylog(2,I*exp(d*x+c))/(a^2+b^2)/d^2-6*I*b*f^2*(f*x+e
)*polylog(3,-I*exp(d*x+c))/(a^2+b^2)/d^3+3/2*f^2*(f*x+e)*polylog(3,-exp(2*d
*x+2*c))/a/d^3-3/2*f^2*(f*x+e)*polylog(3,exp(2*d*x+2*c))/a/d^3-2*b*(f*x+e)^
3*arctan(exp(d*x+c))/(a^2+b^2)/d-3/2*f*(f*x+e)^2*polylog(2,-exp(2*d*x+2*c))
/a/d^2+3/2*f*(f*x+e)^2*polylog(2,exp(2*d*x+2*c))/a/d^2+3*I*b*f*(f*x+e)^2*po
lylog(2,-I*exp(d*x+c))/(a^2+b^2)/d^2+6*I*b*f^2*(f*x+e)*polylog(3,I*exp(d*x+
c))/(a^2+b^2)/d^3+3/4*f^3*polylog(4,exp(2*d*x+2*c))/a/d^4-2*(f*x+e)^3*arcta
nh(exp(2*d*x+2*c))/a/d-3/4*f^3*polylog(4,-exp(2*d*x+2*c))/a/d^4-3*b^2*f*(f*
x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d^2-3*b^2*f
*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d^2+6*b
^2*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d^3
+6*b^2*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)
/d^3
```

Rubi [A] time = 1.34, antiderivative size = 1049, normalized size of antiderivative = 1.00, number of steps used = 40, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {5589, 5461, 4182, 2531, 6609, 2282, 6589, 5573, 5561, 2190, 6742, 4180, 3718}

$$\frac{6ib\text{PolyLog}\left(4,-ie^{c+dx}\right)f^3}{\left(a^2+b^2\right)d^4}-\frac{6ib\text{PolyLog}\left(4,ie^{c+dx}\right)f^3}{\left(a^2+b^2\right)d^4}-\frac{6b^2\text{PolyLog}\left(4,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)f^3}{a\left(a^2+b^2\right)d^4}-\frac{6b^2\text{PolyLog}\left(4,-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a\left(a^2+b^2\right)d^4}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csch[c + d*x]*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*b*(e + f*x)^3*ArcTan[E^(c + d*x)])/((a^2 + b^2)*d) - (2*(e + f*x)^3*Arc
Tanh[E^(2*c + 2*d*x)])/(a*d) - (b^2*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a
```

```
- Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)*d) - (b^2*(e + f*x)^3*Log[1 + (b*E^(c +
 d*x))/(a + Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)*d) + (b^2*(e + f*x)^3*Log[1 +
 E^(2*(c + d*x))])/(a*(a^2 + b^2)*d) + ((3*I)*b*f*(e + f*x)^2*PolyLog[2, (-
I)*E^(c + d*x)])/((a^2 + b^2)*d^2) - ((3*I)*b*f*(e + f*x)^2*PolyLog[2, I*E^
(c + d*x)])/((a^2 + b^2)*d^2) - (3*b^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c +
 d*x))/(a - Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)*d^2) - (3*b^2*f*(e + f*x)^2*
PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)*d^2) +
 (3*b^2*f*(e + f*x)^2*PolyLog[2, -E^(2*(c + d*x))])/(2*a*(a^2 + b^2)*d^2) -
 (3*f*(e + f*x)^2*PolyLog[2, -E^(2*c + 2*d*x)])/(2*a*d^2) + (3*f*(e + f*x)^
2*PolyLog[2, E^(2*c + 2*d*x)])/(2*a*d^2) - ((6*I)*b*f^2*(e + f*x)*PolyLog[3
, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^3) + ((6*I)*b*f^2*(e + f*x)*PolyLog[3,
I*E^(c + d*x)])/((a^2 + b^2)*d^3) + (6*b^2*f^2*(e + f*x)*PolyLog[3, -((b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)*d^3) + (6*b^2*f^2*(e + f
*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)*d^
3) - (3*b^2*f^2*(e + f*x)*PolyLog[3, -E^(2*(c + d*x))])/(2*a*(a^2 + b^2)*d^
3) + (3*f^2*(e + f*x)*PolyLog[3, -E^(2*c + 2*d*x)])/(2*a*d^3) - (3*f^2*(e +
 f*x)*PolyLog[3, E^(2*c + 2*d*x)])/(2*a*d^3) + ((6*I)*b*f^3*PolyLog[4, (-I)
*E^(c + d*x)])/((a^2 + b^2)*d^4) - ((6*I)*b*f^3*PolyLog[4, I*E^(c + d*x)])/
((a^2 + b^2)*d^4) - (6*b^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2]))])/(a*(a^2 + b^2)*d^4) - (6*b^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)*d^4) + (3*b^2*f^3*PolyLog[4, -E^(2*(c
+ d*x))])/(4*a*(a^2 + b^2)*d^4) - (3*f^3*PolyLog[4, -E^(2*c + 2*d*x)])/(4*a
*d^4) + (3*f^3*PolyLog[4, E^(2*c + 2*d*x)])/(4*a*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
```

```
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{csch}(c+dx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\text{csch}(c+dx)\text{sech}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{2\int (e+fx)^3\text{csch}(2c+2dx)\,dx}{a} - \frac{b\int (e+fx)^3\text{sech}(c+dx)(a-b\sinh}{a\left(a^2+b^2\right)}$$

$$= \frac{b^2(e+fx)^4}{4a\left(a^2+b^2\right)f} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b\int \left(a(e+fx)^3\text{sech}(c\right.}{}$$

$$= \frac{b^2(e+fx)^4}{4a\left(a^2+b^2\right)f} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx)^3\log\left(1+\right.}{a\left(a^2+b^2\right)d}$$

$$= -\frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx}{}$$

$$= -\frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx}{}$$

$$= -\frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx}{}$$

$$= -\frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx}{}$$

$$= -\frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx}{}$$

$$= -\frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx}{}$$

Mathematica [B] time = 34.48, size = 3872, normalized size = 3.69

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csch[c + d*x]*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x
]

[Out] 2*((a*E^c*((e + f*x)^4/(4*E^c*f) + ((1 + E^(-c))*(e + f*x)^3*Log[1 + E^(-c
- d*x)])/d - (3*(1 + E^c)*f*(d^2*(e + f*x)^2*PolyLog[2, -E^(-c - d*x)] + 2*
f*(d*(e + f*x)*PolyLog[3, -E^(-c - d*x)] + f*PolyLog[4, -E^(-c - d*x)])))/(
d^4*E^c)))/(2*(a^2 + b^2)*(1 + E^c)) + ((I/2)*a*E^c*((e + f*x)^4/(4*E^c*f)
+ ((I + E^(-c))*(e + f*x)^3*Log[1 - I*E^(-c - d*x)])/d - (3*(1 + I*E^c)*f*(
d^2*(e + f*x)^2*PolyLog[2, I*E^(-c - d*x)] + 2*f*(d*(e + f*x)*PolyLog[3, I*
E^(-c - d*x)] + f*PolyLog[4, I*E^(-c - d*x)])))/(d^4*E^c)))/((a^2 + b^2)*(-
I + E^c)) - (b^2*E^(2*c)*((e + f*x)^4/(E^(2*c)*f) - (2*(1 - E^(-2*c))*(e +
f*x)^3*Log[1 - E^(-c - d*x)])/d - (2*(1 - E^(-2*c))*(e + f*x)^3*Log[1 + E^(
-c - d*x)])/d + (6*(-1 + E^(2*c))*f*(d^2*(e + f*x)^2*PolyLog[2, -E^(-c - d*
x)] + 2*f*(d*(e + f*x)*PolyLog[3, -E^(-c - d*x)] + f*PolyLog[4, -E^(-c - d*
x)])))/(d^4*E^(2*c)) + (6*(-1 + E^(2*c))*f*(d^2*(e + f*x)^2*PolyLog[2, E^(-
c - d*x)] + 2*f*(d*(e + f*x)*PolyLog[3, E^(-c - d*x)] + f*PolyLog[4, E^(-c
- d*x)])))/(d^4*E^(2*c))))/(4*a*(a^2 + b^2)*(-1 + E^(2*c))) - ((I/2)*b*((-2
*I)*d^3*e^3*ArcTan[E^(c + d*x)] + 3*d^3*e^2*f*x*Log[1 - I*E^(c + d*x)] + 3*
d^3*e*f^2*x^2*Log[1 - I*E^(c + d*x)] + d^3*f^3*x^3*Log[1 - I*E^(c + d*x)] -
 3*d^3*e^2*f*x*Log[1 + I*E^(c + d*x)] - 3*d^3*e*f^2*x^2*Log[1 + I*E^(c + d*
x)] - d^3*f^3*x^3*Log[1 + I*E^(c + d*x)] - 3*d^2*f*(e + f*x)^2*PolyLog[2, (
-I)*E^(c + d*x)] + 3*d^2*f*(e + f*x)^2*PolyLog[2, I*E^(c + d*x)] + 6*d*e*f^
2*PolyLog[3, (-I)*E^(c + d*x)] + 6*d*f^3*x*PolyLog[3, (-I)*E^(c + d*x)] - 6
*d*e*f^2*PolyLog[3, I*E^(c + d*x)] - 6*d*f^3*x*PolyLog[3, I*E^(c + d*x)] -
6*f^3*PolyLog[4, (-I)*E^(c + d*x)] + 6*f^3*PolyLog[4, I*E^(c + d*x)]))/((a^
2 + b^2)*d^4) - (a*(-((e + f*x)^3*Log[1 - E^(c + d*x)]) + (e + f*x)^3*Log[1
 - I*E^(c + d*x)] + (3*f*(d^2*(e + f*x)^2*PolyLog[2, I*E^(c + d*x)] - 2*d*f
*(e + f*x)*PolyLog[3, I*E^(c + d*x)] + 2*f^2*PolyLog[4, I*E^(c + d*x)]))/d^
3 - (3*f*(d^2*(e + f*x)^2*PolyLog[2, E^(c + d*x)] - 2*d*f*(e + f*x)*PolyLog
[3, E^(c + d*x)] + 2*f^2*PolyLog[4, E^(c + d*x)]))/d^3))/(2*(a^2 + b^2)*d)
+ (b^2*(4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*x^2 + 4*e*E^(2*c)*f^2*x^3 + E^(2*
c)*f^3*x^4 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTan[(a + b*E^(c + d*x
))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3
*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*
d) + (2*e^3*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))])/d - (2*e^3*E^(2*c
)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d + (6*e^2*f*x*Log[1 + (
b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f
*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e
*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d
- (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*
E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b
^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - S
qrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c
 + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c +
d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(
```

```
2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*
Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*
x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*
E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)
])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*
E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(-1 + E^(2*c))*f*(e + f*x)^2*P
olyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 -
(12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]
))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(
a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E
^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*
E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*e*f^2*PolyL
og[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*
e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2
*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2
+ b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/
(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*f^3*PolyLog[4, -((b*E^(2*c
 + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyL
og[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 + (12*
f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d
^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^
2)*E^(2*c)]))])/d^4))/(4*a*(a^2 + b^2)*(-1 + E^(2*c))) - (b^2*x*(4*e^3 + 6*
e^2*f*x + 4*e*f^2*x^2 + f^3*x^3)*Csch[c/2]*Sech[c/2]*Sech[c])/(32*a*(a^2 +
b^2)) + (3*a*e^2*f*x^2*Csch[c/2]*Sech[c/2])/(16*(a^2 + b^2)*(Cosh[c/2] - I*
Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])) + (3*b^2*e^2*f*x^2*Csch[c/2]*Sech[c/2
])/(16*a*(a^2 + b^2)*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])) +
 (a*e*f^2*x^3*Csch[c/2]*Sech[c/2])/(8*(a^2 + b^2)*(Cosh[c/2] - I*Sinh[c/2])
*(Cosh[c/2] + I*Sinh[c/2])) + (b^2*e*f^2*x^3*Csch[c/2]*Sech[c/2])/(8*a*(a^2
 + b^2)*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])) + (a*f^3*x^4*C
sch[c/2]*Sech[c/2])/(32*(a^2 + b^2)*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2] +
I*Sinh[c/2])) + (b^2*f^3*x^4*Csch[c/2]*Sech[c/2])/(32*a*(a^2 + b^2)*(Cosh[c
/2] - I*Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])) - (3*a*e^2*f*x^2*Cosh[c]*Csch
[c/2]*Sech[c/2])/(16*(a^2 + b^2)*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2] + I*S
inh[c/2])) - (a*e*f^2*x^3*Cosh[c]*Csch[c/2]*Sech[c/2])/(8*(a^2 + b^2)*(Cosh
[c/2] - I*Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])) - (a*f^3*x^4*Cosh[c]*Csch[c
/2]*Sech[c/2])/(32*(a^2 + b^2)*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2] + I*Sin
h[c/2])) - (((3*I)/16)*a*e^2*f*x^2*Csch[c/2]*Sech[c/2]*Sinh[c])/((a^2 + b^2
)*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])) - ((I/8)*a*e*f^2*x^3
*Csch[c/2]*Sech[c/2]*Sinh[c])/((a^2 + b^2)*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[
c/2] + I*Sinh[c/2])) - ((I/32)*a*f^3*x^4*Csch[c/2]*Sech[c/2]*Sinh[c])/((a^2
 + b^2)*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])) - (e^3*x*Csch[
c/2]*Sech[c/2]*(-a^2 - b^2 + a^2*Cosh[c] + I*a^2*Sinh[c]))/(8*a*(a^2 + b^2)
*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])))
```

fricas [C] time = 0.67, size = 2454, normalized size = 2.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -(6*b^2*f^3*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c
) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*b^2*f^3*polylog(4, (a*co
sh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2))/b) - 6*(a^2 + b^2)*f^3*polylog(4, cosh(d*x + c) + sinh(d*x
+ c)) - 6*(a^2 + b^2)*f^3*polylog(4, -cosh(d*x + c) - sinh(d*x + c)) + 3*(b
^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*dilog((a*cosh(d*x + c)
+ a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2) - b)/b + 1) + 3*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*di
log((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 3*((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 +
 b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*dilog(cosh(d*x + c) + sinh(d*x +
 c)) + (3*a^2*d^2*f^3*x^2 + 3*I*a*b*d^2*f^3*x^2 + 6*a^2*d^2*e*f^2*x + 6*I*a
*b*d^2*e*f^2*x + 3*a^2*d^2*e^2*f + 3*I*a*b*d^2*e^2*f)*dilog(I*cosh(d*x + c)
 + I*sinh(d*x + c)) + (3*a^2*d^2*f^3*x^2 - 3*I*a*b*d^2*f^3*x^2 + 6*a^2*d^2*
e*f^2*x - 6*I*a*b*d^2*e*f^2*x + 3*a^2*d^2*e^2*f - 3*I*a*b*d^2*e^2*f)*dilog(
-I*cosh(d*x + c) - I*sinh(d*x + c)) - 3*((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 +
 b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*dilog(-cosh(d*x + c) - sinh(d*x
+ c)) + (b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)
*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*
a) + (b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*lo
g(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a)
+ (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*
e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x
 + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) +
 (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e
^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*log(-(a*cosh(d*x + c) + a*sinh(d*x
+ c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) -
((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*
e^2*f*x + (a^2 + b^2)*d^3*e^3)*log(cosh(d*x + c) + sinh(d*x + c) + 1) + (a^
2*d^3*e^3 + I*a*b*d^3*e^3 - 3*a^2*c*d^2*e^2*f - 3*I*a*b*c*d^2*e^2*f + 3*a^2
*c^2*d*e*f^2 + 3*I*a*b*c^2*d*e*f^2 - a^2*c^3*f^3 - I*a*b*c^3*f^3)*log(cosh(
d*x + c) + sinh(d*x + c) + I) + (a^2*d^3*e^3 - I*a*b*d^3*e^3 - 3*a^2*c*d^2*
e^2*f + 3*I*a*b*c*d^2*e^2*f + 3*a^2*c^2*d*e*f^2 - 3*I*a*b*c^2*d*e*f^2 - a^2
*c^3*f^3 + I*a*b*c^3*f^3)*log(cosh(d*x + c) + sinh(d*x + c) - I) - ((a^2 +
b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 - (a^2
 + b^2)*c^3*f^3)*log(cosh(d*x + c) + sinh(d*x + c) - 1) + (a^2*d^3*f^3*x^3
```

```
- I*a*b*d^3*f^3*x^3 + 3*a^2*d^3*e*f^2*x^2 - 3*I*a*b*d^3*e*f^2*x^2 + 3*a^2*d
^3*e^2*f*x - 3*I*a*b*d^3*e^2*f*x + 3*a^2*c*d^2*e^2*f - 3*I*a*b*c*d^2*e^2*f
- 3*a^2*c^2*d*e*f^2 + 3*I*a*b*c^2*d*e*f^2 + a^2*c^3*f^3 - I*a*b*c^3*f^3)*lo
g(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) + (a^2*d^3*f^3*x^3 + I*a*b*d^3*f^3
*x^3 + 3*a^2*d^3*e*f^2*x^2 + 3*I*a*b*d^3*e*f^2*x^2 + 3*a^2*d^3*e^2*f*x + 3*
I*a*b*d^3*e^2*f*x + 3*a^2*c*d^2*e^2*f + 3*I*a*b*c*d^2*e^2*f - 3*a^2*c^2*d*e
*f^2 - 3*I*a*b*c^2*d*e*f^2 + a^2*c^3*f^3 + I*a*b*c^3*f^3)*log(-I*cosh(d*x +
 c) - I*sinh(d*x + c) + 1) - ((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e
*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 +
 b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*f^3)*log(-cosh(d*x + c) - sinh(d*x + c)
 + 1) + (6*a^2*f^3 + 6*I*a*b*f^3)*polylog(4, I*cosh(d*x + c) + I*sinh(d*x +
 c)) + (6*a^2*f^3 - 6*I*a*b*f^3)*polylog(4, -I*cosh(d*x + c) - I*sinh(d*x +
 c)) - 6*(b^2*d*f^3*x + b^2*d*e*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d
*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6
*(b^2*d*f^3*x + b^2*d*e*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c)
- (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*((a^2 +
 b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*polylog(3, cosh(d*x + c) + sinh(d*x +
c)) - (6*a^2*d*f^3*x + 6*I*a*b*d*f^3*x + 6*a^2*d*e*f^2 + 6*I*a*b*d*e*f^2)*p
olylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) - (6*a^2*d*f^3*x - 6*I*a*b*d*f
^3*x + 6*a^2*d*e*f^2 - 6*I*a*b*d*e*f^2)*polylog(3, -I*cosh(d*x + c) - I*sin
h(d*x + c)) + 6*((a^2 + b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*polylog(3, -cos
h(d*x + c) - sinh(d*x + c)))/((a^3 + a*b^2)*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \operatorname{csch}(dx+c) \operatorname{sech}(dx+c)}{b \sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate((f*x + e)^3*csch(d*x + c)*sech(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 1.09, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \operatorname{csch}(dx+c) \operatorname{sech}(dx+c)}{a+b \sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^3\left(\frac{b^2\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^3+ab^2\right)d}-\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}+\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -e^3*(b^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^3 + a*b^2)*d)
 - 2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + a*log(e^(-2*d*x - 2*c) + 1)/(
(a^2 + b^2)*d) - log(e^(-d*x - c) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d))
 + 3*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))*e^2*f/(a*d^2) + 3*(d*
x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))*e^2*f/(a*d^2) + 3*(d^2*x^2*lo
g(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c))
)*e*f^2/(a*d^3) + 3*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c
)) - 2*polylog(3, e^(d*x + c)))*e*f^2/(a*d^3) + (d^3*x^3*log(e^(d*x + c) +
1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x + c)) + 6*pol
ylog(4, -e^(d*x + c)))*f^3/(a*d^4) + (d^3*x^3*log(-e^(d*x + c) + 1) + 3*d^2
*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*polylog(4, e^(d
*x + c)))*f^3/(a*d^4) - 1/2*(d^4*f^3*x^4 + 4*d^4*e*f^2*x^3 + 6*d^4*e^2*f*x^
2)/(a*d^4) + integrate(2*(b^3*f^3*x^3 + 3*b^3*e*f^2*x^2 + 3*b^3*e^2*f*x - (
a*b^2*f^3*x^3*e^c + 3*a*b^2*e*f^2*x^2*e^c + 3*a*b^2*e^2*f*x*e^c)*e^(d*x))/(
a^3*b + a*b^3 - (a^3*b*e^(2*c) + a*b^3*e^(2*c))*e^(2*d*x) - 2*(a^4*e^c + a^
2*b^2*e^c)*e^(d*x)), x) - integrate(-2*(a*f^3*x^3 + 3*a*e*f^2*x^2 + 3*a*e^2
*f*x - (b*f^3*x^3*e^c + 3*b*e*f^2*x^2*e^c + 3*b*e^2*f*x*e^c)*e^(d*x))/(a^2
+ b^2 + (a^2*e^(2*c) + b^2*e^(2*c))*e^(2*d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{\cosh\left(c+d\,x\right)\,\sinh\left(c+d\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cosh(c + d*x)*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)^3/(cosh(c + d*x)*sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.436 $\int \frac{(e+fx)^2\mathbf{csch}(c+dx)\mathbf{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=734

$$\frac{2b^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^3\left(a^2+b^2\right)}+\frac{2b^2f^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^3\left(a^2+b^2\right)}-\frac{b^2f^2\text{Li}_3\left(-e^{2(c+dx)}\right)}{2ad^3\left(a^2+b^2\right)}-\frac{2ibf^2\text{Li}_3\left(-ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}+\frac{2ibf^2\text{Li}_3\left(ie^{c+dx}\right)}{d^3\left(a^2+b^2\right)}-\frac{2b^2}{\cdots}$$

```
[Out] -2*b*(f*x+e)^2*arctan(exp(d*x+c))/(a^2+b^2)/d-2*(f*x+e)^2*arctanh(exp(2*d*x
+2*c))/a/d+b^2*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/a/(a^2+b^2)/d-b^2*(f*x+e)^2*l
n(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d-b^2*(f*x+e)^2*ln(1+b*ex
p(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d+2*I*b*f*(f*x+e)*polylog(2,-I*ex
p(d*x+c))/(a^2+b^2)/d^2-2*I*b*f^2*polylog(3,-I*exp(d*x+c))/(a^2+b^2)/d^3+b^
2*f*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/a/(a^2+b^2)/d^2-f*(f*x+e)*polylog(2,
-exp(2*d*x+2*c))/a/d^2+f*(f*x+e)*polylog(2,exp(2*d*x+2*c))/a/d^2-2*b^2*f*(f
*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d^2-2*b^2*f*
(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d^2+2*I*b*
f^2*polylog(3,I*exp(d*x+c))/(a^2+b^2)/d^3-2*I*b*f*(f*x+e)*polylog(2,I*exp(d
*x+c))/(a^2+b^2)/d^2-1/2*b^2*f^2*polylog(3,-exp(2*d*x+2*c))/a/(a^2+b^2)/d^3
+1/2*f^2*polylog(3,-exp(2*d*x+2*c))/a/d^3-1/2*f^2*polylog(3,exp(2*d*x+2*c))
/a/d^3+2*b^2*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d
^3+2*b^2*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d^3
```

Rubi [A] time = 1.10, antiderivative size = 734, normalized size of antiderivative = 1.00, number of steps used = 33, number of rules used = 12, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {5589, 5461, 4182, 2531, 2282, 6589, 5573, 5561, 2190, 6742, 4180, 3718}

$$-\frac{2b^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2\left(a^2+b^2\right)}-\frac{2b^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ad^2\left(a^2+b^2\right)}+\frac{b^2f(e+fx)\text{PolyLog}\left(2,-e^{2(c+\cdots}\right)}{ad^2\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*b*(e + f*x)^2*ArcTan[E^(c + d*x)])/((a^2 + b^2)*d) - (2*(e + f*x)^2*Arc
Tanh[E^(2*c + 2*d*x)])/(a*d) - (b^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a
- Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)*d) - (b^2*(e + f*x)^2*Log[1 + (b*E^(c +
 d*x))/(a + Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)*d) + (b^2*(e + f*x)^2*Log[1 +
 E^(2*(c + d*x))])/(a*(a^2 + b^2)*d) + ((2*I)*b*f*(e + f*x)*PolyLog[2, (-I)
*E^(c + d*x)])/((a^2 + b^2)*d^2) - ((2*I)*b*f*(e + f*x)*PolyLog[2, I*E^(c +
 d*x)])/((a^2 + b^2)*d^2) - (2*b^2*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))
/(a - Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)*d^2) - (2*b^2*f*(e + f*x)*PolyLog[
```

```
2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)*d^2) + (b^2*f*
(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/(a*(a^2 + b^2)*d^2) - (f*(e + f*x)*
PolyLog[2, -E^(2*c + 2*d*x)])/(a*d^2) + (f*(e + f*x)*PolyLog[2, E^(2*c + 2*
d*x)])/(a*d^2) - ((2*I)*b*f^2*PolyLog[3, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^
3) + ((2*I)*b*f^2*PolyLog[3, I*E^(c + d*x)])/((a^2 + b^2)*d^3) + (2*b^2*f^2
*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)*d^3)
+ (2*b^2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2
+ b^2)*d^3) - (b^2*f^2*PolyLog[3, -E^(2*(c + d*x))])/(2*a*(a^2 + b^2)*d^3)
+ (f^2*PolyLog[3, -E^(2*c + 2*d*x)])/(2*a*d^3) - (f^2*PolyLog[3, E^(2*c + 2
*d*x)])/(2*a*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
```

```
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\mathrm{csch}(c+dx)\mathrm{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\mathrm{csch}(c+dx)\mathrm{sech}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\mathrm{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{2\int (e+fx)^2\mathrm{csch}(2c+2dx)\,dx}{a} - \frac{b\int (e+fx)^2\mathrm{sech}(c+dx)(a-b\sin}{a\left(a^2+b^2\right)}$$

$$= \frac{b^2(e+fx)^3}{3a\left(a^2+b^2\right)f} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b\int \left(a(e+fx)^2\mathrm{sech}(\right.}{}$$

$$= \frac{b^2(e+fx)^3}{3a\left(a^2+b^2\right)f} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx)^2\log\left(1+\right.}{a\left(a^2+b^2\right)}$$

$$= -\frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+f}{}$$

$$= -\frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+f}{}$$

$$= -\frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+f}{}$$

$$= -\frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+f}{}$$

$$= -\frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+f}{}$$

Mathematica [B] time = 28.71, size = 3002, normalized size = 4.09

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] 2*(-1/6*(b^2*x*(3*e^2 + 3*e*f*x + f^2*x^2)*Csch[2*c])/(a*(a^2 + b^2)) + (a*
E^c*((e + f*x)^3/(3*E^c*f) + ((1 + E^(-c))*(e + f*x)^2*Log[1 + E^(-c - d*x)
```

])/d - (2*(1 + E^c)*f*(d*(e + f*x)*PolyLog[2, -E^(-c - d*x)] + f*PolyLog[3, -E^(-c - d*x)]))/(d^3*E^c)))/(2*(a^2 + b^2)*(1 + E^c)) + (d^2*(d*x*((-3*I)*b*e*f*x + a*((-3*I)*e^2*E^c + 3*e*f*x + f^2*x^2)) + 3*(1 + I*E^c)*f*x*(2*a*e - (2*I)*b*e + a*f*x)*Log[1 - I*E^(-c - d*x)] + 3*a*e^2*(1 + I*E^c)*Log[I - E^(c + d*x)]) - (6*I)*d*(-I + E^c)*f*((-I)*b*e + a*(e + f*x))*PolyLog[2, I*E^(-c - d*x)] - (6*I)*a*(-I + E^c)*f^2*PolyLog[3, I*E^(-c - d*x)])/(6*(a - I*b)*((-I)*a + b)*d^3*(-I + E^c)) - (b^2*E^(2*c)*((2*(e + f*x)^3)/(E^(2*c)*f) - (3*(1 - E^(-2*c))*(e + f*x)^2*Log[1 - E^(-c - d*x)])/d - (3*(1 - E^(-2*c))*(e + f*x)^2*Log[1 + E^(-c - d*x)])/d + (6*(-1 + E^(2*c))*f*(d*(e + f*x)*PolyLog[2, -E^(-c - d*x)] + f*PolyLog[3, -E^(-c - d*x)]))/(d^3*E^(2*c)) + (6*(-1 + E^(2*c))*f*(d*(e + f*x)*PolyLog[2, E^(-c - d*x)] + f*PolyLog[3, E^(-c - d*x)]))/(d^3*E^(2*c))))/(6*a*(a^2 + b^2)*(-1 + E^(2*c))) - ((I/2)*b*((-2*I)*d^2*e^2*ArcTan[E^(c + d*x)] + d^2*f^2*x^2*Log[1 - I*E^(c + d*x)] - d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] - 2*d*f^2*x*PolyLog[2, (-I)*E^(c + d*x)] + 2*d*f^2*x*PolyLog[2, I*E^(c + d*x)] + 2*f^2*PolyLog[3, (-I)*E^(c + d*x)] - 2*f^2*PolyLog[3, I*E^(c + d*x)]))/((a^2 + b^2)*d^3) - ((-I)*b*d^3*e*E^(2*c)*f*x^2 + 2*a*d^2*e^2*ArcTan[1 - (1 + I)*E^(c + d*x)] + (2*I)*a*d^2*e^2*E^(2*c)*ArcTan[1 - (1 + I)*E^(c + d*x)] + (2*I)*a*d^2*e*f*x*Log[1 - E^(c + d*x)] - 2*a*d^2*e*E^(2*c)*f*x*Log[1 - E^(c + d*x)] + I*a*d^2*f^2*x^2*Log[1 - E^(c + d*x)] - a*d^2*E^(2*c)*f^2*x^2*Log[1 - E^(c + d*x)] - (2*I)*a*d^2*e*f*x*Log[1 - I*E^(c + d*x)] + 2*b*d^2*e*f*x*Log[1 - I*E^(c + d*x)] + 2*a*d^2*e*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] + (2*I)*b*d^2*e*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] - I*a*d^2*f^2*x^2*Log[1 - I*E^(c + d*x)] + a*d^2*E^(2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] + 2*d*(-I + E^(2*c))*f*(I*b*e + a*(e + f*x))*PolyLog[2, I*E^(c + d*x)] - 2*a*d*(-I + E^(2*c))*f*(e + f*x)*PolyLog[2, E^(c + d*x)] + (2*I)*a*f^2*PolyLog[3, I*E^(c + d*x)] - 2*a*E^(2*c)*f^2*PolyLog[3, I*E^(c + d*x)] - (2*I)*a*f^2*PolyLog[3, E^(c + d*x)] + 2*a*E^(2*c)*f^2*PolyLog[3, E^(c + d*x)])/(2*(a^2 + b^2)*d^3*(-I + E^(2*c))) + (b^2*(6*d^3*e^2*E^(2*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*d^2*e^2*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^(2*c)*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*

```
c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 +
b^2)*E^(2*c)]))])])/(6*a*(a^2 + b^2)*d^3*(-1 + E^(2*c))) + (b^2*e*f*x^2)/(2*
a*(a^2 + b^2)*(Cosh[c] + Sinh[c])^2) + (b^2*f^2*x^3)/(6*a*(a^2 + b^2)*(Cosh
[c] + Sinh[c])^2) + (b^2*f^2*x^3*Coth[2*c])/(6*a*(a^2 + b^2)*(Cosh[c] + Sin
h[c])^2) + (b^2*e*f*x^2*Cosh[2*c]*Csch[c]*Sech[c])/(4*a*(a^2 + b^2)*(Cosh[c
] + Sinh[c])^2) + (e^2*x*Csch[c]^2*(-(a^2*Coth[c]) + Csch[c]*(a^2 + b^2 - I
*a^2*Sinh[c])))/(a*(a^2 + b^2)*(Csch[c/2] - I*Sech[c/2])*(Csch[c/2] + I*Sec
h[c/2])) - ((1/4 - I/4)*a*e*f*x^2*Cosh[c])/((a^2 + b^2)*(Cosh[c] + Sinh[c])
^2*(-I - I*Cosh[c] + Sinh[c] + Sinh[2*c])) + (b*e*f*x^2*Cosh[c])/(4*(a^2 +
b^2)*(Cosh[c] + Sinh[c])^2*(-I - I*Cosh[c] + Sinh[c] + Sinh[2*c])) - ((1/12
 - I/12)*a*f^2*x^3*Cosh[c])/((a^2 + b^2)*(Cosh[c] + Sinh[c])^2*(-I - I*Cosh
[c] + Sinh[c] + Sinh[2*c])) - (b*e*f*x^2*Cosh[3*c])/(4*(a^2 + b^2)*(Cosh[c]
 + Sinh[c])^2*(-I - I*Cosh[c] + Sinh[c] + Sinh[2*c])) - ((1/4 - I/4)*a*e*f*
x^2*Sinh[c])/((a^2 + b^2)*(Cosh[c] + Sinh[c])^2*(-I - I*Cosh[c] + Sinh[c] +
 Sinh[2*c])) + (b*e*f*x^2*Sinh[c])/(4*(a^2 + b^2)*(Cosh[c] + Sinh[c])^2*(-I
 - I*Cosh[c] + Sinh[c] + Sinh[2*c])) - ((1/12 - I/12)*a*f^2*x^3*Sinh[c])/((
a^2 + b^2)*(Cosh[c] + Sinh[c])^2*(-I - I*Cosh[c] + Sinh[c] + Sinh[2*c])) +
((1/4 - I/4)*a*e*f*x^2*Cosh[3*c])/((a^2 + b^2)*(Cosh[c] + Sinh[c])^2*(Cosh[
c] + I*(-I + Sinh[c] + Sinh[2*c]))) + ((1/12 - I/12)*a*f^2*x^3*Cosh[3*c])/(
(a^2 + b^2)*(Cosh[c] + Sinh[c])^2*(Cosh[c] + I*(-I + Sinh[c] + Sinh[2*c])))
 - (b*e*f*x^2*Sinh[3*c])/(4*(a^2 + b^2)*(Cosh[c] + Sinh[c])^2*(-I - I*Cosh[
c] + Sinh[c] + Sinh[2*c])) + ((1/4 - I/4)*a*e*f*x^2*Sinh[3*c])/((a^2 + b^2)
*(Cosh[c] + Sinh[c])^2*(Cosh[c] + I*(-I + Sinh[c] + Sinh[2*c]))) + ((1/12 -
 I/12)*a*f^2*x^3*Sinh[3*c])/((a^2 + b^2)*(Cosh[c] + Sinh[c])^2*(Cosh[c] + I
*(-I + Sinh[c] + Sinh[2*c]))))
```

fricas [C] time = 0.52, size = 1539, normalized size = 2.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] (2*b^2*f^2*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
 + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 2*b^2*f^2*polylog(3, (a*cos
h(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2))/b) - 2*(a^2 + b^2)*f^2*polylog(3, cosh(d*x + c) + sinh(d*x +
 c)) - 2*(a^2 + b^2)*f^2*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) - 2*(b^
2*d*f^2*x + b^2*d*e*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d
*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(b^2*d*f^2
*x + b^2*d*e*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
 + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*((a^2 + b^2)*d*f^
2*x + (a^2 + b^2)*d*e*f)*dilog(cosh(d*x + c) + sinh(d*x + c)) - (2*a^2*d*f^
2*x + 2*I*a*b*d*f^2*x + 2*a^2*d*e*f + 2*I*a*b*d*e*f)*dilog(I*cosh(d*x + c)
```

```
+ I*sinh(d*x + c)) - (2*a^2*d*f^2*x - 2*I*a*b*d*f^2*x + 2*a^2*d*e*f - 2*I*a
*b*d*e*f)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + 2*((a^2 + b^2)*d*f^2*
x + (a^2 + b^2)*d*e*f)*dilog(-cosh(d*x + c) - sinh(d*x + c)) - (b^2*d^2*e^2
 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) +
 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*
f^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2)
+ 2*a) - (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*
log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c
))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b
^2*c*d*e*f - b^2*c^2*f^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + ((a^2 + b^2)*d
^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + (a^2 + b^2)*d^2*e^2)*log(cosh(d*x +
c) + sinh(d*x + c) + 1) - (a^2*d^2*e^2 + I*a*b*d^2*e^2 - 2*a^2*c*d*e*f - 2*
I*a*b*c*d*e*f + a^2*c^2*f^2 + I*a*b*c^2*f^2)*log(cosh(d*x + c) + sinh(d*x +
 c) + I) - (a^2*d^2*e^2 - I*a*b*d^2*e^2 - 2*a^2*c*d*e*f + 2*I*a*b*c*d*e*f +
 a^2*c^2*f^2 - I*a*b*c^2*f^2)*log(cosh(d*x + c) + sinh(d*x + c) - I) + ((a^
2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*log(cosh(d*
x + c) + sinh(d*x + c) - 1) - (a^2*d^2*f^2*x^2 - I*a*b*d^2*f^2*x^2 + 2*a^2*
d^2*e*f*x - 2*I*a*b*d^2*e*f*x + 2*a^2*c*d*e*f - 2*I*a*b*c*d*e*f - a^2*c^2*f
^2 + I*a*b*c^2*f^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) - (a^2*d^2*f
^2*x^2 + I*a*b*d^2*f^2*x^2 + 2*a^2*d^2*e*f*x + 2*I*a*b*d^2*e*f*x + 2*a^2*c*
d*e*f + 2*I*a*b*c*d*e*f - a^2*c^2*f^2 - I*a*b*c^2*f^2)*log(-I*cosh(d*x + c)
 - I*sinh(d*x + c) + 1) + ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*
x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*log(-cosh(d*x + c) - sinh(
d*x + c) + 1) + (2*a^2*f^2 + 2*I*a*b*f^2)*polylog(3, I*cosh(d*x + c) + I*si
nh(d*x + c)) + (2*a^2*f^2 - 2*I*a*b*f^2)*polylog(3, -I*cosh(d*x + c) - I*si
nh(d*x + c)))/((a^3 + a*b^2)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{csch}\left(dx+c\right) \operatorname{sech}\left(dx+c\right)}{b \sinh\left(dx+c\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] integrate((f*x + e)^2*csch(d*x + c)*sech(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [F] time = 0.78, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{csch}\left(dx+c\right) \operatorname{sech}\left(dx+c\right)}{a+b \sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^2\left(\frac{b^2\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^3+ab^2\right)d}-\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}+\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -e^2*(b^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^3 + a*b^2)*d)
 - 2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + a*log(e^(-2*d*x - 2*c) + 1)/(
(a^2 + b^2)*d) - log(e^(-d*x - c) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d))
 + 2*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))*e*f/(a*d^2) + 2*(d*x*
log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))*e*f/(a*d^2) + (d^2*x^2*log(e^(d
*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*f^2/
(a*d^3) + (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*pol
ylog(3, e^(d*x + c)))*f^2/(a*d^3) - 2/3*(d^3*f^2*x^3 + 3*d^3*e*f*x^2)/(a*d^
3) + integrate(2*(b^3*f^2*x^2 + 2*b^3*e*f*x - (a*b^2*f^2*x^2*e^c + 2*a*b^2*
e*f*x*e^c)*e^(d*x))/(a^3*b + a*b^3 - (a^3*b*e^(2*c) + a*b^3*e^(2*c))*e^(2*d
*x) - 2*(a^4*e^c + a^2*b^2*e^c)*e^(d*x)), x) - integrate(-2*(a*f^2*x^2 + 2*
a*e*f*x - (b*f^2*x^2*e^c + 2*b*e*f*x*e^c)*e^(d*x))/(a^2 + b^2 + (a^2*e^(2*c
) + b^2*e^(2*c))*e^(2*d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(e+f\,x\right)}^2}{\mathrm{cosh}\left(c+d\,x\right)\,\mathrm{sinh}\left(c+d\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cosh(c + d*x)*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)^2/(cosh(c + d*x)*sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.437 $\int \frac{(e+fx)\mathbf{csch}(c+dx)\mathbf{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=439

$$-\frac{b^2 f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2\left(a^2+b^2\right)}-\frac{b^2 f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{ad^2\left(a^2+b^2\right)}+\frac{b^2 f\text{Li}_2\left(-e^{2(c+dx)}\right)}{2ad^2\left(a^2+b^2\right)}+\frac{ibf\text{Li}_2\left(-ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)}-\frac{ibf\text{Li}_2\left(ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)}-\frac{b^2(e+fx)\log}{ad\left(\right.}$$

```
[Out] -2*b*(f*x+e)*arctan(exp(d*x+c))/(a^2+b^2)/d-2*(f*x+e)*arctanh(exp(2*d*x+2*c
))/a/d+b^2*(f*x+e)*ln(1+exp(2*d*x+2*c))/a/(a^2+b^2)/d-b^2*(f*x+e)*ln(1+b*ex
p(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d-b^2*(f*x+e)*ln(1+b*exp(d*x+c)/(
a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)/d+I*b*f*polylog(2,-I*exp(d*x+c))/(a^2+b^2)/
d^2-I*b*f*polylog(2,I*exp(d*x+c))/(a^2+b^2)/d^2+1/2*b^2*f*polylog(2,-exp(2*
d*x+2*c))/a/(a^2+b^2)/d^2-1/2*f*polylog(2,-exp(2*d*x+2*c))/a/d^2+1/2*f*poly
log(2,exp(2*d*x+2*c))/a/d^2-b^2*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2
)))/a/(a^2+b^2)/d^2-b^2*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a
^2+b^2)/d^2
```

Rubi [A] time = 0.64, antiderivative size = 439, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 11, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.367, Rules used = {5589, 5461, 4182, 2279, 2391, 5573, 5561, 2190, 6742, 4180, 3718}

$$-\frac{b^2 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2\left(a^2+b^2\right)}-\frac{b^2 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ad^2\left(a^2+b^2\right)}+\frac{b^2 f\text{PolyLog}\left(2,-e^{2(c+dx)}\right)}{2ad^2\left(a^2+b^2\right)}+\frac{ibf\text{PolyLog}\left(2,-ie^{c+dx}\right)}{d^2\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*b*(e + f*x)*ArcTan[E^(c + d*x)])/((a^2 + b^2)*d) - (2*(e + f*x)*ArcTanh
[E^(2*c + 2*d*x)])/(a*d) - (b^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt
[a^2 + b^2])])/(a*(a^2 + b^2)*d) - (b^2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)*d) + (b^2*(e + f*x)*Log[1 + E^(2*(c +
 d*x))])/(a*(a^2 + b^2)*d) + (I*b*f*PolyLog[2, (-I)*E^(c + d*x)])/((a^2 + b
^2)*d^2) - (I*b*f*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^2)*d^2) - (b^2*f*Pol
yLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)*d^2) - (b
^2*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)*d
^2) + (b^2*f*PolyLog[2, -E^(2*(c + d*x))])/(2*a*(a^2 + b^2)*d^2) - (f*PolyL
og[2, -E^(2*c + 2*d*x)])/(2*a*d^2) + (f*PolyLog[2, E^(2*c + 2*d*x)])/(2*a*d
^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
```

```
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\text{csch}(c+dx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{csch}(c+dx)\text{sech}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{2\int (e+fx)\text{csch}(2c+2dx)\,dx}{a} - \frac{b\int (e+fx)\text{sech}(c+dx)(a-b\sinh(}{a\left(a^2+b^2\right)}$$

$$= \frac{b^2(e+fx)^2}{2a\left(a^2+b^2\right)f} - \frac{2(e+fx)\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b\int (a(e+fx)\text{sech}(c+}{}$$

$$= \frac{b^2(e+fx)^2}{2a\left(a^2+b^2\right)f} - \frac{2(e+fx)\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx)\log\left(1+\frac{b}{a-}\right.}{a\left(a^2+b^2\right)d}$$

$$= -\frac{2b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx)}{a(}$$

$$= -\frac{2b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx)}{a(}$$

$$= -\frac{2b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx)}{a(}$$

$$= -\frac{2b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} - \frac{2(e+fx)\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} - \frac{b^2(e+fx)}{a(}$$

<u>Mathematica</u> [B] time = 2.73, size = 1541, normalized size = 3.51

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] 2*(((-1/4*I)*(a^2 - b^2)*(d*e - c*f)*(c + d*x))/(a*(a^2 + b^2)*d^2) - ((I/8
)*(a^2 - b^2)*f*(c + d*x)^2)/(a*(a^2 + b^2)*d^2) - (e*ArcTanh[1 - (2*I)*Tan
h[(c + d*x)/2]])/((a - I*b)*d) + (I*b*e*ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]
])/(a*(a - I*b)*d) + (c*f*ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]])/((a - I*b)*
d^2) - (I*b*c*f*ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]])/(a*(a - I*b)*d^2) + (
e*Log[Cosh[(c + d*x)/2]])/(2*a*d) - (c*f*Log[Cosh[(c + d*x)/2]])/(2*a*d^2)
```

```
- (e*((-1/2*I)*(c + d*x) + Log[Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2]]))/(
2*(a + I*b)*d) + (c*f*((-1/2*I)*(c + d*x) + Log[Cosh[(c + d*x)/2] + I*Sinh[
(c + d*x)/2]]))/(2*(a + I*b)*d^2) - ((I/4)*b*e*((-I)*(c + d*x) + 2*ArcTanh[
1 - (2*I)*Tanh[(c + d*x)/2]] + Log[-1 + Cosh[c + d*x] + I*Sinh[c + d*x]]))/
(a*(a - I*b)*d) + ((I/4)*b*c*f*((-I)*(c + d*x) + 2*ArcTanh[1 - (2*I)*Tanh[(
c + d*x)/2]] + Log[-1 + Cosh[c + d*x] + I*Sinh[c + d*x]]))/(a*(a - I*b)*d^2
) + (I*f*((-1/8*I)*(c + d*x)^2 - (I/2)*(c + d*x)*Log[1 + E^(-c - d*x)] + (I
/2)*PolyLog[2, -E^(-c - d*x)]))/(a*d^2) - ((I/2)*b*f*((-1/2*I)*(c + d*x)^2
+ (I/4)*(3*Pi*(c + d*x) + (1 - I)*(c + d*x)^2 + 2*(Pi - (2*I)*(c + d*x))*Lo
g[1 + I*E^(-c - d*x)] - 4*Pi*Log[1 + E^(c + d*x)] - 2*Pi*Log[-Cos[(Pi + (2*
I)*(c + d*x))/4]] + 4*Pi*Log[Cosh[(c + d*x)/2]] + (4*I)*PolyLog[2, (-I)*E^(
-c - d*x)])))/(a*(a - I*b)*d^2) + ((I/2)*f*((c + d*x)^2/4 + (-3*Pi*(c + d*x
) - (1 - I)*(c + d*x)^2 - 2*(Pi - (2*I)*(c + d*x))*Log[1 + I*E^(-c - d*x)]
+ 4*Pi*Log[1 + E^(c + d*x)] + 2*Pi*Log[-Cos[(Pi + (2*I)*(c + d*x))/4]] - 4*
Pi*Log[Cosh[(c + d*x)/2]] - (4*I)*PolyLog[2, (-I)*E^(-c - d*x)])/4 - (I/2)*
(-1/2*(c + d*x)^2 + 2*(c + d*x)*Log[1 - E^(c + d*x)] + 2*PolyLog[2, E^(c +
d*x)])))/((a - I*b)*d^2) + (b*f*((c + d*x)^2/4 + (-3*Pi*(c + d*x) - (1 - I)
*(c + d*x)^2 - 2*(Pi - (2*I)*(c + d*x))*Log[1 + I*E^(-c - d*x)] + 4*Pi*Log[
1 + E^(c + d*x)] + 2*Pi*Log[-Cos[(Pi + (2*I)*(c + d*x))/4]] - 4*Pi*Log[Cosh
[(c + d*x)/2]] - (4*I)*PolyLog[2, (-I)*E^(-c - d*x)])/4 - (I/2)*(-1/2*(c +
d*x)^2 + 2*(c + d*x)*Log[1 - E^(c + d*x)] + 2*PolyLog[2, E^(c + d*x)])))/(2
*a*(a - I*b)*d^2) - (b^2*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2])] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c +
d*x]] + f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2,
 -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(2*a*(a^2 + b^2)*d^2) + (I*f*(
(E^((I/4)*Pi)*(c + d*x)^2)/4 - ((Pi*(c + d*x))/4 - Pi*Log[1 + E^(c + d*x)]
- 2*(Pi/4 + (I/2)*(c + d*x))*Log[1 - E^((2*I)*(Pi/4 + (I/2)*(c + d*x)))] +
Pi*Log[Cosh[(c + d*x)/2]] + (Pi*Log[Sin[Pi/4 + (I/2)*(c + d*x)]])/2 + I*Pol
yLog[2, E^((2*I)*(Pi/4 + (I/2)*(c + d*x)))])/Sqrt[2]))/(Sqrt[2]*(a + I*b)*d
^2))
```

fricas [B] time = 0.52, size = 808, normalized size = 1.84

$$-\frac{b^2 f \operatorname{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)+(b\cosh(dx+c)+b\sinh(dx+c))\sqrt{\frac{a^2+b^2}{b^2}}-b}{b}+1\right)+b^2 f \operatorname{Li}_2\left(\frac{a\cosh(dx+c)+a\sinh(dx+c)-(b\cosh(dx+c)+b}{b}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] -(b^2*f*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sin
h(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + b^2*f*dilog((a*cosh(d*x + c
```

```
) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/
b^2) - b)/b + 1) - (a^2 + b^2)*f*dilog(cosh(d*x + c) + sinh(d*x + c)) - (a^
2 + b^2)*f*dilog(-cosh(d*x + c) - sinh(d*x + c)) + (a^2*f + I*a*b*f)*dilog(
I*cosh(d*x + c) + I*sinh(d*x + c)) + (a^2*f - I*a*b*f)*dilog(-I*cosh(d*x +
c) - I*sinh(d*x + c)) + (b^2*d*e - b^2*c*f)*log(2*b*cosh(d*x + c) + 2*b*sin
h(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^2*d*e - b^2*c*f)*log(2*b
*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^
2*d*f*x + b^2*c*f)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (b^2*d*f*x + b^2*c*f)
*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2) - b)/b) - ((a^2 + b^2)*d*f*x + (a^2 + b^2)*d*e)*l
og(cosh(d*x + c) + sinh(d*x + c) + 1) + (a^2*d*e + I*a*b*d*e - a^2*c*f - I*
a*b*c*f)*log(cosh(d*x + c) + sinh(d*x + c) + I) + (a^2*d*e - I*a*b*d*e - a^
2*c*f + I*a*b*c*f)*log(cosh(d*x + c) + sinh(d*x + c) - I) - ((a^2 + b^2)*d*
e - (a^2 + b^2)*c*f)*log(cosh(d*x + c) + sinh(d*x + c) - 1) + (a^2*d*f*x -
I*a*b*d*f*x + a^2*c*f - I*a*b*c*f)*log(I*cosh(d*x + c) + I*sinh(d*x + c) +
1) + (a^2*d*f*x + I*a*b*d*f*x + a^2*c*f + I*a*b*c*f)*log(-I*cosh(d*x + c) -
 I*sinh(d*x + c) + 1) - ((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*log(-cosh(d*x
 + c) - sinh(d*x + c) + 1))/((a^3 + a*b^2)*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\operatorname{csch}(dx+c)\operatorname{sech}(dx+c)}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] integrate((f*x + e)*csch(d*x + c)*sech(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.26, size = 1065, normalized size = 2.43

$$\frac{e\ln\left(e^{dx+c}+1\right)}{ad}+\frac{e\ln\left(e^{dx+c}-1\right)}{ad}+\frac{f\,\mathrm{dilog}\left(e^{dx+c}+1\right)}{d^2a}-\frac{f\,\mathrm{dilog}\left(e^{dx+c}\right)}{d^2a}-\frac{f b^2\ln\left(\frac{b e^{dx+c}+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)x}{d\left(a^2+b^2\right)a}-\frac{f b^2\ln\left(\frac{b e^{d}}{}\right.}{d^2\left(a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/a/d*e*ln(exp(d*x+c)+1)+1/a/d*e*ln(exp(d*x+c)-1)+1/d^2*f/a*dilog(exp(d*x+c
)+1)-1/d^2*f*dilog(exp(d*x+c))/a-1/d*f*b^2/(a^2+b^2)/a*ln((b*exp(d*x+c)+(a^
2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*f*b^2/(a^2+b^2)/a*ln((b*exp(d*
```

```
x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d*f*b^2/(a^2+b^2)/a*ln((-b
*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*f*b^2/(a^2+b^2
)/a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d^2*f*c*
b^2/(a^2+b^2)/a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+4*I/d*f/(4*a^2+4*b^2)
*ln(1+I*exp(d*x+c))*b*x+4*I/d^2*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*b*c-4*I/
d*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*b*x-4*I/d^2*f/(4*a^2+4*b^2)*ln(1-I*exp
(d*x+c))*b*c+8/d^2*f*c/(4*a^2+4*b^2)*b*arctan(exp(d*x+c))-1/d^2*f*b^2/(a^2+
b^2)/a*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2*
f*b^2/(a^2+b^2)/a*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)
))-1/d*e*b^2/(a^2+b^2)/a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+4*I/d^2*f/(4
*a^2+4*b^2)*dilog(1+I*exp(d*x+c))*b-4*I/d^2*f/(4*a^2+4*b^2)*dilog(1-I*exp(d
*x+c))*b+1/a/d*ln(exp(d*x+c)+1)*f*x-1/a/d^2*f*c*ln(exp(d*x+c)-1)-4/d*e/(4*a
^2+4*b^2)*a*ln(1+exp(2*d*x+2*c))-8/d*e/(4*a^2+4*b^2)*b*arctan(exp(d*x+c))-4
/d^2*f/(4*a^2+4*b^2)*dilog(1+I*exp(d*x+c))*a-4/d^2*f/(4*a^2+4*b^2)*dilog(1-
I*exp(d*x+c))*a-4/d*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*a*x-4/d^2*f/(4*a^2+4
*b^2)*ln(1+I*exp(d*x+c))*a*c-4/d*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*a*x-4/d
^2*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*a*c+4/d^2*f*c/(4*a^2+4*b^2)*a*ln(1+ex
p(2*d*x+2*c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e\left(\frac{b^2\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^3+ab^2\right)d}-\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}+\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{\mathrm{lo}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] -e*(b^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^3 + a*b^2)*d) -
 2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + a*log(e^(-2*d*x - 2*c) + 1)/((a
^2 + b^2)*d) - log(e^(-d*x - c) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d)) +
 4*f*integrate(2*x/((b*(e^(d*x + c) - e^(-d*x - c)) + 2*a)*(e^(d*x + c) + e
^(-d*x - c))*(e^(d*x + c) - e^(-d*x - c))), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{\cosh\left(c+d\,x\right)\,\sinh\left(c+d\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)*sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.438 $\int \frac{\text{csch}(c+dx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=90

$$-\frac{b^2\log(a+b\sinh(c+dx))}{ad(a^2+b^2)}-\frac{b\tan^{-1}(\sinh(c+dx))}{d(a^2+b^2)}-\frac{a\log(\cosh(c+dx))}{d(a^2+b^2)}+\frac{\log(\sinh(c+dx))}{ad}$$

```
[Out] -b*arctan(sinh(d*x+c))/(a^2+b^2)/d-a*ln(cosh(d*x+c))/(a^2+b^2)/d+ln(sinh(d*
x+c))/a/d-b^2*ln(a+b*sinh(d*x+c))/a/(a^2+b^2)/d
```

Rubi [A] time = 0.17, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {2837, 12, 894, 635, 203, 260}

$$-\frac{b^2\log(a+b\sinh(c+dx))}{ad(a^2+b^2)}-\frac{b\tan^{-1}(\sinh(c+dx))}{d(a^2+b^2)}-\frac{a\log(\cosh(c+dx))}{d(a^2+b^2)}+\frac{\log(\sinh(c+dx))}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Csch[c + d*x]*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((b*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)*d)) - (a*Log[Cosh[c + d*x]])/((a^2
 + b^2)*d) + Log[Sinh[c + d*x]]/(a*d) - (b^2*Log[a + b*Sinh[c + d*x]])/(a*(
a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
```

```
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{b\,\text{Subst}\left(\int \frac{b}{x(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{b^2\,\text{Subst}\left(\int \frac{1}{x(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{b^2\,\text{Subst}\left(\int \left(-\frac{1}{ab^2x}+\frac{1}{a\left(a^2+b^2\right)(a+x)}+\frac{b^2+ax}{b^2\left(a^2+b^2\right)\left(b^2+x^2\right)}\right)dx, x, b\sinh(c+dx)\right)}{d}$$

$$= \frac{\log(\sinh(c+dx))}{ad} - \frac{b^2\log(a+b\sinh(c+dx))}{a\left(a^2+b^2\right)d} - \frac{\text{Subst}\left(\int \frac{b^2+ax}{b^2+x^2}\,dx, x, b\sinh\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{\log(\sinh(c+dx))}{ad} - \frac{b^2\log(a+b\sinh(c+dx))}{a\left(a^2+b^2\right)d} - \frac{a\,\text{Subst}\left(\int \frac{x}{b^2+x^2}\,dx, x, b\sin\right.}{\left(a^2+b^2\right)d}$$

$$= -\frac{b\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d} - \frac{a\log(\cosh(c+dx))}{\left(a^2+b^2\right)d} + \frac{\log(\sinh(c+dx))}{ad} - \frac{b^2\log}{}$$

Mathematica [C] time = 0.15, size = 92, normalized size = 1.02

$$-\frac{\frac{2b^2\log(a+b\sinh(c+dx))}{a(a^2+b^2)}+\frac{\log(-\sinh(c+dx)+i)}{a+ib}+\frac{\log(\sinh(c+dx)+i)}{a-ib}-\frac{2\log(\sinh(c+dx))}{a}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Csch[c + d*x]*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(Log[I - Sinh[c + d*x]]/(a + I*b) - (2*Log[Sinh[c + d*x]])/a + Log[I +
 Sinh[c + d*x]]/(a - I*b) + (2*b^2*Log[a + b*Sinh[c + d*x]])/(a*(a^2 + b^2)
))/d
```

fricas [A] time = 0.60, size = 134, normalized size = 1.49

$$-\frac{2\,ab\arctan\left(\cosh\left(dx+c\right)+\sinh\left(dx+c\right)\right)+b^2\log\left(\frac{2\,(b\sinh(dx+c)+a)}{\cosh(dx+c)-\sinh(dx+c)}\right)+a^2\log\left(\frac{2\,\cosh(dx+c)}{\cosh(dx+c)-\sinh(dx+c)}\right)-\left(a^2+\right.}{\left(a^3+ab^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*a*b*arctan(cosh(d*x + c) + sinh(d*x + c)) + b^2*log(2*(b*sinh(d*x + c)
+ a)/(cosh(d*x + c) - sinh(d*x + c))) + a^2*log(2*cosh(d*x + c)/(cosh(d*x +
 c) - sinh(d*x + c))) - (a^2 + b^2)*log(2*sinh(d*x + c)/(cosh(d*x + c) - si
nh(d*x + c))))/((a^3 + a*b^2)*d)
```

giac [A] time = 0.16, size = 147, normalized size = 1.63

$$-\frac{\frac{2\,b^3\log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{a^3b+ab^3}+\frac{\left(\pi+2\,\arctan\left(\frac{1}{2}\,\left(e^{(2\,dx+2\,c)}-1\right)e^{(-dx-c)}\right)\right)b}{a^2+b^2}+\frac{a\log\left(\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+4\right)}{a^2+b^2}-\frac{2\,\log\left(\left|e^{(dx+c)}-e^{(-dx-c)}\right|\right)}{a}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(2*b^3*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/(a^3*b + a*b^3)
+ (pi + 2*arctan(1/2*(e^(2*d*x + 2*c) - 1)*e^(-d*x - c)))*b/(a^2 + b^2) + a
*log((e^(d*x + c) - e^(-d*x - c))^2 + 4)/(a^2 + b^2) - 2*log(abs(e^(d*x + c
) - e^(-d*x - c)))/a)/d
```

maple [A] time = 0.00, size = 123, normalized size = 1.37

$$-\frac{b^2\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\left(a^2+b^2\right)a}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{da}-\frac{a\ln\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{d\left(a^2+b^2\right)}-\frac{2b\arctan\left(\right.}{d\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/d*b^2/(a^2+b^2)/a*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)+
1/d/a*ln(tanh(1/2*d*x+1/2*c))-1/d/(a^2+b^2)*a*ln(tanh(1/2*d*x+1/2*c)^2+1)-2
/d/(a^2+b^2)*b*arctan(tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.40, size = 138, normalized size = 1.53

$$-\frac{b^2\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^3+ab^2\right)d}+\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}-\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}+\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}+\frac{\log\left(e^{(\cdot}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -b^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^3 + a*b^2)*d) + 2*
b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) - a*log(e^(-2*d*x - 2*c) + 1)/((a^2
+ b^2)*d) + log(e^(-d*x - c) + 1)/(a*d) + log(e^(-d*x - c) - 1)/(a*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\cosh\left(c+d\,x\right)\,\sinh\left(c+d\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int(1/(cosh(c + d*x)*sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(c+dx\right)\operatorname{sech}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(csch(c + d*x)*sech(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.439 $\int \frac{\mathrm{csch}(c+dx)\mathrm{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=35

$$\mathrm{Int}\left(\frac{\mathrm{csch}(c+dx)\mathrm{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\mathrm{csch}(c+dx)\mathrm{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Csch[c + d*x]*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Csch[c + d*x]*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),
 x]
```

Rubi steps

$$\int \frac{\mathrm{csch}(c+dx)\mathrm{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\mathrm{csch}(c+dx)\mathrm{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 28.40, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{csch}(c+dx)\mathrm{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Csch[c + d*x]*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x
]
```

```
[Out] Integrate[(Csch[c + d*x]*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),
x]
```

fricas [A] time = 1.54, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\mathrm{csch}\,(dx+c)\,\mathrm{sech}\,(dx+c)}{afx+ae+\left(bfx+be\right)\sinh\,(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] integral(csch(d*x + c)*sech(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x
+ c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx+c)\operatorname{sech}(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] integrate(csch(d*x + c)*sech(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

maple [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx+c)\operatorname{sech}(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx+c)\operatorname{sech}(dx+c)}{(fx+e)(b\sinh(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] integrate(csch(d*x + c)*sech(d*x + c)/((f*x + e)*(b*sinh(d*x + c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+d\,x)\,\sinh(c+d\,x)\,\left(e+f\,x\right)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int(1/(cosh(c + d*x)*sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(csch(c + d*x)*sech(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.440 $\int \frac{(e+fx)^3\mathbf{csch}(c+dx)\mathbf{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1164

$$-\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{a\left(a^2+b^2\right)^{3/2}d}+\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{a\left(a^2+b^2\right)^{3/2}d}-\frac{3f(e+fx)^2\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b^3}{a\left(a^2+b^2\right)^{3/2}d^2}+\frac{3f(e+fx)}{a\left(a\right.}$$

```
[Out] 3*b*f*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/(a^2+b^2)/d^2-b^3*(f*x+e)^3*ln(1+b*exp
(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d+b^3*(f*x+e)^3*ln(1+b*exp(d
*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d-6*b^3*f^3*polylog(4,-b*exp(d
*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d^4+6*b^3*f^3*polylog(4,-b*exp
(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d^4+3*b*f^2*(f*x+e)*polylog(
2,-exp(2*d*x+2*c))/(a^2+b^2)/d^3+6*I*f^3*polylog(3,I*exp(d*x+c))/a/d^4-b^2*
(f*x+e)^3*sech(d*x+c)/a/(a^2+b^2)/d-6*I*f^2*(f*x+e)*polylog(2,I*exp(d*x+c))
/a/d^3+6*b^2*f*(f*x+e)^2*arctan(exp(d*x+c))/a/(a^2+b^2)/d^2+6*I*f^2*(f*x+e)
*polylog(2,-I*exp(d*x+c))/a/d^3-6*I*b^2*f^3*polylog(3,I*exp(d*x+c))/a/(a^2+
b^2)/d^4-3/2*b*f^3*polylog(3,-exp(2*d*x+2*c))/(a^2+b^2)/d^4-b*(f*x+e)^3*tan
h(d*x+c)/(a^2+b^2)/d-6*I*f^3*polylog(3,-I*exp(d*x+c))/a/d^4+6*I*b^2*f^3*pol
ylog(3,-I*exp(d*x+c))/a/(a^2+b^2)/d^4-6*I*b^2*f^2*(f*x+e)*polylog(2,-I*exp(
d*x+c))/a/(a^2+b^2)/d^3-b*(f*x+e)^3/(a^2+b^2)/d+(f*x+e)^3*sech(d*x+c)/a/d-6
*f*(f*x+e)^2*arctan(exp(d*x+c))/a/d^2-3*f*(f*x+e)^2*polylog(2,-exp(d*x+c))/
a/d^2+3*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a/d^2+6*f^2*(f*x+e)*polylog(3,-ex
p(d*x+c))/a/d^3-6*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a/d^3-2*(f*x+e)^3*arcta
nh(exp(d*x+c))/a/d-6*f^3*polylog(4,-exp(d*x+c))/a/d^4+6*f^3*polylog(4,exp(d
*x+c))/a/d^4+6*I*b^2*f^2*(f*x+e)*polylog(2,I*exp(d*x+c))/a/(a^2+b^2)/d^3-3*
b^3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3
/2)/d^2+3*b^3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a
^2+b^2)^(3/2)/d^2+6*b^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1
/2)))/a/(a^2+b^2)^(3/2)/d^3-6*b^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a
^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d^3
```

Rubi [A] time = 2.20, antiderivative size = 1164, normalized size of antiderivative = 1.00, number of steps used = 53, number of rules used = 22, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.647, Rules used = {5589, 2622, 321, 207, 5462, 6741, 12, 6742, 6273, 4182, 2531, 6609, 2282, 6589, 4180, 5573, 3322, 2264, 2190, 4184, 3718, 5451}

$$-\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{a\left(a^2+b^2\right)^{3/2}d}+\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{a\left(a^2+b^2\right)^{3/2}d}-\frac{3f(e+fx)^2\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b^3}{a\left(a^2+b^2\right)^{3/2}d^2}+\frac{3f}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csch[c + d*x]*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((b*(e + f*x)^3)/((a^2 + b^2)*d)) - (6*f*(e + f*x)^2*ArcTan[E^(c + d*x)])/
(a*d^2) + (6*b^2*f*(e + f*x)^2*ArcTan[E^(c + d*x)])/(a*(a^2 + b^2)*d^2) - (
2*(e + f*x)^3*ArcTanh[E^(c + d*x)])/(a*d) - (b^3*(e + f*x)^3*Log[1 + (b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)^(3/2)*d) + (b^3*(e + f*x)^
3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)^(3/2)*d) +
 (3*b*f*(e + f*x)^2*Log[1 + E^(2*(c + d*x))])/((a^2 + b^2)*d^2) - (3*f*(e +
 f*x)^2*PolyLog[2, -E^(c + d*x)])/(a*d^2) + ((6*I)*f^2*(e + f*x)*PolyLog[2,
 (-I)*E^(c + d*x)])/(a*d^3) - ((6*I)*b^2*f^2*(e + f*x)*PolyLog[2, (-I)*E^(c
 + d*x)])/(a*(a^2 + b^2)*d^3) - ((6*I)*f^2*(e + f*x)*PolyLog[2, I*E^(c + d*
x)])/(a*d^3) + ((6*I)*b^2*f^2*(e + f*x)*PolyLog[2, I*E^(c + d*x)])/(a*(a^2
+ b^2)*d^3) + (3*f*(e + f*x)^2*PolyLog[2, E^(c + d*x)])/(a*d^2) - (3*b^3*f*
(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*(a^2 +
 b^2)^(3/2)*d^2) + (3*b^3*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + S
qrt[a^2 + b^2]))])/(a*(a^2 + b^2)^(3/2)*d^2) + (3*b*f^2*(e + f*x)*PolyLog[2
, -E^(2*(c + d*x))])/((a^2 + b^2)*d^3) + (6*f^2*(e + f*x)*PolyLog[3, -E^(c
+ d*x)])/(a*d^3) - ((6*I)*f^3*PolyLog[3, (-I)*E^(c + d*x)])/(a*d^4) + ((6*I
)*b^2*f^3*PolyLog[3, (-I)*E^(c + d*x)])/(a*(a^2 + b^2)*d^4) + ((6*I)*f^3*Po
lyLog[3, I*E^(c + d*x)])/(a*d^4) - ((6*I)*b^2*f^3*PolyLog[3, I*E^(c + d*x)]
)/(a*(a^2 + b^2)*d^4) - (6*f^2*(e + f*x)*PolyLog[3, E^(c + d*x)])/(a*d^3) +
 (6*b^3*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])
/(a*(a^2 + b^2)^(3/2)*d^3) - (6*b^3*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^(3/2)*d^3) - (3*b*f^3*PolyLog[3
, -E^(2*(c + d*x))])/(2*(a^2 + b^2)*d^4) - (6*f^3*PolyLog[4, -E^(c + d*x)])
/(a*d^4) + (6*f^3*PolyLog[4, E^(c + d*x)])/(a*d^4) - (6*b^3*f^3*PolyLog[4,
-((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^(3/2)*d^4) + (6*b
^3*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)
^(3/2)*d^4) + ((e + f*x)^3*Sech[c + d*x])/(a*d) - (b^2*(e + f*x)^3*Sech[c +
 d*x])/(a*(a^2 + b^2)*d) - (b*(e + f*x)^3*Tanh[c + d*x])/((a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
```

```
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6273

```
Int[((a_.) + ArcTanh[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*(a + b*ArcTanh[u]))/(d*(m + 1)), x] - Dist[b/(d*(m +
1)), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/(1 - u^2), x], x], x
] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x]
&&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] && FalseQ[PowerVariableExpn[u, m
+ 1, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
```

```
d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{csch}(c+dx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\text{csch}(c+dx)\text{sech}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^3\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{(e+fx)^3\text{sech}(c+dx)}{ad} - \frac{b\int (e}{}$$

$$= -\frac{(e+fx)^3\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{(e+fx)^3\text{sech}(c+dx)}{ad} - \frac{b\int \left(a\right.}{}$$

$$= -\frac{(e+fx)^3\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{(e+fx)^3\text{sech}(c+dx)}{ad} - \frac{\left(2b^4\right)}{}$$

$$= -\frac{(e+fx)^3\tanh^{-1}(\cosh(c+dx))}{ad} - \frac{b^3(e+fx)^3\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\left(a^2+b^2\right)^{3/2}d}$$

$$= -\frac{b(e+fx)^3}{\left(a^2+b^2\right)d} + \frac{6b^2f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d^2} - \frac{(e+fx)^3\tanh^{-1}(\cos}{ad}$$

$$= -\frac{b(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{6b^2f(e+fx)^2\tan^{-1}\left(e\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{6b^2f(e+fx)^2\tan^{-1}\left(e\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{6b^2f(e+fx)^2\tan^{-1}\left(e\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{6b^2f(e+fx)^2\tan^{-1}\left(e\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{6b^2f(e+fx)^2\tan^{-1}\left(e\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{6b^2f(e+fx)^2\tan^{-1}\left(e\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^3}{\left(a^2+b^2\right)d} - \frac{6f(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{6b^2f(e+fx)^2\tan^{-1}\left(e\right.}{a\left(a^2+b^2\right)d^2}$$

Mathematica [A] time = 17.26, size = 1467, normalized size = 1.26

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csch[c + d*x]*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] 4*(-1/8*(f*Csch[c + d*x]*(12*b*d^3*e^2*E^(2*c)*x - 12*b*d^3*e^2*(1 + E^(2*c
))*x - 12*b*d^3*e*f*x^2 - 4*b*d^3*f^2*x^3 + 12*a*d^2*e^2*(1 + E^(2*c))*ArcT
an[E^(c + d*x)] + 6*b*d^2*e^2*(1 + E^(2*c))*(2*d*x - Log[1 + E^(2*(c + d*x)
)]) + (12*I)*a*d*e*(1 + E^(2*c))*f*(d*x*(Log[1 - I*E^(c + d*x)] - Log[1 + I
*E^(c + d*x)]) - PolyLog[2, (-I)*E^(c + d*x)] + PolyLog[2, I*E^(c + d*x)])
+ 6*b*d*e*(1 + E^(2*c))*f*(2*d*x*(d*x - Log[1 + E^(2*(c + d*x))]) - PolyLog
[2, -E^(2*(c + d*x))]) + (6*I)*a*(1 + E^(2*c))*f^2*(d^2*x^2*Log[1 - I*E^(c
+ d*x)] - d^2*x^2*Log[1 + I*E^(c + d*x)] - 2*d*x*PolyLog[2, (-I)*E^(c + d*x
)] + 2*d*x*PolyLog[2, I*E^(c + d*x)] + 2*PolyLog[3, (-I)*E^(c + d*x)] - 2*P
olyLog[3, I*E^(c + d*x)]) + b*(1 + E^(2*c))*f^2*(2*d^2*x^2*(2*d*x - 3*Log[1
 + E^(2*(c + d*x))]) - 6*d*x*PolyLog[2, -E^(2*(c + d*x))] + 3*PolyLog[3, -E
^(2*(c + d*x))]))*(a + b*Sinh[c + d*x]))/((a^2 + b^2)*d^4*(1 + E^(2*c))*(b
+ a*Csch[c + d*x])) + (b^3*Csch[c + d*x]*(2*d^3*e^3*ArcTanh[(a + b*E^(c + d
*x))/Sqrt[a^2 + b^2]] - 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2
 + b^2])] - 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])]
- d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 3*d^3*e^2*f*
x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 3*d^3*e*f^2*x^2*Log[1 +
(b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^3*f^3*x^3*Log[1 + (b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2])] - 3*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))/(
-a + Sqrt[a^2 + b^2])] + 3*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2]))] + 6*d*e*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^
2 + b^2])] + 6*d*f^3*x*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] -
 6*d*e*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 6*d*f^3*x
*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 6*f^3*PolyLog[4, (b
*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*f^3*PolyLog[4, -((b*E^(c + d*x))/
(a + Sqrt[a^2 + b^2]))])*(a + b*Sinh[c + d*x]))/(4*a*(a^2 + b^2)^(3/2)*d^4*
(b + a*Csch[c + d*x])) + (Csch[c + d*x]*(-2*(e + f*x)^3*ArcTanh[Cosh[c + d*
x] + Sinh[c + d*x]] - (3*f*(d^2*(e + f*x)^2*PolyLog[2, -Cosh[c + d*x] - Sin
h[c + d*x]] - 2*d*f*(e + f*x)*PolyLog[3, -Cosh[c + d*x] - Sinh[c + d*x]] +
2*f^2*PolyLog[4, -Cosh[c + d*x] - Sinh[c + d*x]]))/d^3 + (3*f*(d^2*(e + f*x
)^2*PolyLog[2, Cosh[c + d*x] + Sinh[c + d*x]] - 2*d*f*(e + f*x)*PolyLog[3,
Cosh[c + d*x] + Sinh[c + d*x]] + 2*f^2*PolyLog[4, Cosh[c + d*x] + Sinh[c +
d*x]]))/d^3)*(a + b*Sinh[c + d*x]))/(4*a*d*(b + a*Csch[c + d*x])) + (Csch[c
 + d*x]*Sech[c]*Sech[c + d*x]*(a*e^3*Cosh[c] + 3*a*e^2*f*x*Cosh[c] + 3*a*e*
f^2*x^2*Cosh[c] + a*f^3*x^3*Cosh[c] - b*e^3*Sinh[d*x] - 3*b*e^2*f*x*Sinh[d*
x] - 3*b*e*f^2*x^2*Sinh[d*x] - b*f^3*x^3*Sinh[d*x])*(a + b*Sinh[c + d*x]))/
(4*(a^2 + b^2)*d*(b + a*Csch[c + d*x])))
```

fricas [C] time = 1.08, size = 9712, normalized size = 8.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/2*(4*(a^3*b + a*b^3)*d^3*e^3 - 12*(a^3*b + a*b^3)*c*d^2*e^2*f + 12*(a^3*b
 + a*b^3)*c^2*d*e*f^2 - 4*(a^3*b + a*b^3)*c^3*f^3 - 4*((a^3*b + a*b^3)*d^3*
f^3*x^3 + 3*(a^3*b + a*b^3)*d^3*e*f^2*x^2 + 3*(a^3*b + a*b^3)*d^3*e^2*f*x +
 3*(a^3*b + a*b^3)*c*d^2*e^2*f - 3*(a^3*b + a*b^3)*c^2*d*e*f^2 + (a^3*b + a
*b^3)*c^3*f^3)*cosh(d*x + c)^2 - 4*((a^3*b + a*b^3)*d^3*f^3*x^3 + 3*(a^3*b
+ a*b^3)*d^3*e*f^2*x^2 + 3*(a^3*b + a*b^3)*d^3*e^2*f*x + 3*(a^3*b + a*b^3)*
c*d^2*e^2*f - 3*(a^3*b + a*b^3)*c^2*d*e*f^2 + (a^3*b + a*b^3)*c^3*f^3)*sinh
(d*x + c)^2 - 6*(b^4*d^2*f^3*x^2 + 2*b^4*d^2*e*f^2*x + b^4*d^2*e^2*f + (b^4
*d^2*f^3*x^2 + 2*b^4*d^2*e*f^2*x + b^4*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(b^4*
d^2*f^3*x^2 + 2*b^4*d^2*e*f^2*x + b^4*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c
) + (b^4*d^2*f^3*x^2 + 2*b^4*d^2*e*f^2*x + b^4*d^2*e^2*f)*sinh(d*x + c)^2)*
sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*
x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 6*(b^4*d^2*f^
3*x^2 + 2*b^4*d^2*e*f^2*x + b^4*d^2*e^2*f + (b^4*d^2*f^3*x^2 + 2*b^4*d^2*e*
f^2*x + b^4*d^2*e^2*f)*cosh(d*x + c)^2 + 2*(b^4*d^2*f^3*x^2 + 2*b^4*d^2*e*f
^2*x + b^4*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d^2*f^3*x^2 + 2*b^
4*d^2*e*f^2*x + b^4*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog
((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*s
qrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(b^4*d^3*e^3 - 3*b^4*c*d^2*e^2*f + 3*b
^4*c^2*d*e*f^2 - b^4*c^3*f^3 + (b^4*d^3*e^3 - 3*b^4*c*d^2*e^2*f + 3*b^4*c^2
*d*e*f^2 - b^4*c^3*f^3)*cosh(d*x + c)^2 + 2*(b^4*d^3*e^3 - 3*b^4*c*d^2*e^2*
f + 3*b^4*c^2*d*e*f^2 - b^4*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d^3
*e^3 - 3*b^4*c*d^2*e^2*f + 3*b^4*c^2*d*e*f^2 - b^4*c^3*f^3)*sinh(d*x + c)^2
)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqr
t((a^2 + b^2)/b^2) + 2*a) - 2*(b^4*d^3*e^3 - 3*b^4*c*d^2*e^2*f + 3*b^4*c^2*
d*e*f^2 - b^4*c^3*f^3 + (b^4*d^3*e^3 - 3*b^4*c*d^2*e^2*f + 3*b^4*c^2*d*e*f^
2 - b^4*c^3*f^3)*cosh(d*x + c)^2 + 2*(b^4*d^3*e^3 - 3*b^4*c*d^2*e^2*f + 3*b
^4*c^2*d*e*f^2 - b^4*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d^3*e^3 -
3*b^4*c*d^2*e^2*f + 3*b^4*c^2*d*e*f^2 - b^4*c^3*f^3)*sinh(d*x + c)^2)*sqrt(
(a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2
+ b^2)/b^2) + 2*a) - 2*(b^4*d^3*f^3*x^3 + 3*b^4*d^3*e*f^2*x^2 + 3*b^4*d^3*e
^2*f*x + 3*b^4*c*d^2*e^2*f - 3*b^4*c^2*d*e*f^2 + b^4*c^3*f^3 + (b^4*d^3*f^3
*x^3 + 3*b^4*d^3*e*f^2*x^2 + 3*b^4*d^3*e^2*f*x + 3*b^4*c*d^2*e^2*f - 3*b^4*
c^2*d*e*f^2 + b^4*c^3*f^3)*cosh(d*x + c)^2 + 2*(b^4*d^3*f^3*x^3 + 3*b^4*d^3
*e*f^2*x^2 + 3*b^4*d^3*e^2*f*x + 3*b^4*c*d^2*e^2*f - 3*b^4*c^2*d*e*f^2 + b^
4*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d^3*f^3*x^3 + 3*b^4*d^3*e*f^2
```

```
*x^2 + 3*b^4*d^3*e^2*f*x + 3*b^4*c*d^2*e^2*f - 3*b^4*c^2*d*e*f^2 + b^4*c^3*
f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(
d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b
) + 2*(b^4*d^3*f^3*x^3 + 3*b^4*d^3*e*f^2*x^2 + 3*b^4*d^3*e^2*f*x + 3*b^4*c*
d^2*e^2*f - 3*b^4*c^2*d*e*f^2 + b^4*c^3*f^3 + (b^4*d^3*f^3*x^3 + 3*b^4*d^3*
e*f^2*x^2 + 3*b^4*d^3*e^2*f*x + 3*b^4*c*d^2*e^2*f - 3*b^4*c^2*d*e*f^2 + b^4
*c^3*f^3)*cosh(d*x + c)^2 + 2*(b^4*d^3*f^3*x^3 + 3*b^4*d^3*e*f^2*x^2 + 3*b^
4*d^3*e^2*f*x + 3*b^4*c*d^2*e^2*f - 3*b^4*c^2*d*e*f^2 + b^4*c^3*f^3)*cosh(d
*x + c)*sinh(d*x + c) + (b^4*d^3*f^3*x^3 + 3*b^4*d^3*e*f^2*x^2 + 3*b^4*d^3*
e^2*f*x + 3*b^4*c*d^2*e^2*f - 3*b^4*c^2*d*e*f^2 + b^4*c^3*f^3)*sinh(d*x + c
)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cos
h(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 12*(b^4*f^3*c
osh(d*x + c)^2 + 2*b^4*f^3*cosh(d*x + c)*sinh(d*x + c) + b^4*f^3*sinh(d*x +
 c)^2 + b^4*f^3)*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh
(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) +
 12*(b^4*f^3*cosh(d*x + c)^2 + 2*b^4*f^3*cosh(d*x + c)*sinh(d*x + c) + b^4*
f^3*sinh(d*x + c)^2 + b^4*f^3)*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x
 + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2))/b) + 12*(b^4*d*f^3*x + b^4*d*e*f^2 + (b^4*d*f^3*x + b^4*d*e*f^2)*
cosh(d*x + c)^2 + 2*(b^4*d*f^3*x + b^4*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)
 + (b^4*d*f^3*x + b^4*d*e*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*polyl
og(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(b^4*d*f^3*x + b^4*d*e*f^2 + (b^4*d*f^3*
x + b^4*d*e*f^2)*cosh(d*x + c)^2 + 2*(b^4*d*f^3*x + b^4*d*e*f^2)*cosh(d*x +
 c)*sinh(d*x + c) + (b^4*d*f^3*x + b^4*d*e*f^2)*sinh(d*x + c)^2)*sqrt((a^2
+ b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c
) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 4*((a^4 + a^2*b^2)*d^3*f^3
*x^3 + 3*(a^4 + a^2*b^2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*f*x + (a
^4 + a^2*b^2)*d^3*e^3)*cosh(d*x + c) + 6*((a^4 + 2*a^2*b^2 + b^4)*d^2*f^3*x
^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f^2*x + (a^4 + 2*a^2*b^2 + b^4)*d^2*e^
2*f + ((a^4 + 2*a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*
e*f^2*x + (a^4 + 2*a^2*b^2 + b^4)*d^2*e^2*f)*cosh(d*x + c)^2 + 2*((a^4 + 2*
a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f^2*x + (a^4 +
 2*a^2*b^2 + b^4)*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + ((a^4 + 2*a^2*b^
2 + b^4)*d^2*f^3*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f^2*x + (a^4 + 2*a^2
*b^2 + b^4)*d^2*e^2*f)*sinh(d*x + c)^2)*dilog(cosh(d*x + c) + sinh(d*x + c)
) + (-12*I*(a^4 + a^2*b^2)*d*f^3*x + 12*(a^3*b + a*b^3)*d*f^3*x - 12*I*(a^4
 + a^2*b^2)*d*e*f^2 + 12*(a^3*b + a*b^3)*d*e*f^2 + (-12*I*(a^4 + a^2*b^2)*d
*f^3*x + 12*(a^3*b + a*b^3)*d*f^3*x - 12*I*(a^4 + a^2*b^2)*d*e*f^2 + 12*(a^
3*b + a*b^3)*d*e*f^2)*cosh(d*x + c)^2 + (-24*I*(a^4 + a^2*b^2)*d*f^3*x + 24
*(a^3*b + a*b^3)*d*f^3*x - 24*I*(a^4 + a^2*b^2)*d*e*f^2 + 24*(a^3*b + a*b^3
)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (-12*I*(a^4 + a^2*b^2)*d*f^3*x + 1
2*(a^3*b + a*b^3)*d*f^3*x - 12*I*(a^4 + a^2*b^2)*d*e*f^2 + 12*(a^3*b + a*b^
3)*d*e*f^2)*sinh(d*x + c)^2)*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + (12
*I*(a^4 + a^2*b^2)*d*f^3*x + 12*(a^3*b + a*b^3)*d*f^3*x + 12*I*(a^4 + a^2*b
```

^2)*d*e*f^2 + 12*(a^3*b + a*b^3)*d*e*f^2 + (12*I*(a^4 + a^2*b^2)*d*f^3*x +
12*(a^3*b + a*b^3)*d*f^3*x + 12*I*(a^4 + a^2*b^2)*d*e*f^2 + 12*(a^3*b + a*b
^3)*d*e*f^2)*cosh(d*x + c)^2 + (24*I*(a^4 + a^2*b^2)*d*f^3*x + 24*(a^3*b +
a*b^3)*d*f^3*x + 24*I*(a^4 + a^2*b^2)*d*e*f^2 + 24*(a^3*b + a*b^3)*d*e*f^2)
*cosh(d*x + c)*sinh(d*x + c) + (12*I*(a^4 + a^2*b^2)*d*f^3*x + 12*(a^3*b +
a*b^3)*d*f^3*x + 12*I*(a^4 + a^2*b^2)*d*e*f^2 + 12*(a^3*b + a*b^3)*d*e*f^2)
*sinh(d*x + c)^2)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) - 6*((a^4 + 2*a
^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f^2*x + (a^4 +
2*a^2*b^2 + b^4)*d^2*e^2*f + ((a^4 + 2*a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^4
+ 2*a^2*b^2 + b^4)*d^2*e*f^2*x + (a^4 + 2*a^2*b^2 + b^4)*d^2*e^2*f)*cosh(d*
x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^4 + 2*a^2*b^2 + b^
4)*d^2*e*f^2*x + (a^4 + 2*a^2*b^2 + b^4)*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x
+ c) + ((a^4 + 2*a^2*b^2 + b^4)*d^2*f^3*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2
*e*f^2*x + (a^4 + 2*a^2*b^2 + b^4)*d^2*e^2*f)*sinh(d*x + c)^2)*dilog(-cosh(
d*x + c) - sinh(d*x + c)) - 2*((a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 3*(a^4
 + 2*a^2*b^2 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*f*x +
 (a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 + ((a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 3
*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*
f*x + (a^4 + 2*a^2*b^2 + b^4)*d^3*e^3)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^
2 + b^4)*d^3*f^3*x^3 + 3*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 + 2
*a^2*b^2 + b^4)*d^3*e^2*f*x + (a^4 + 2*a^2*b^2 + b^4)*d^3*e^3)*cosh(d*x + c
)*sinh(d*x + c) + ((a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 3*(a^4 + 2*a^2*b^2
 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*f*x + (a^4 + 2*a^
2*b^2 + b^4)*d^3*e^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) +
1) + (-6*I*(a^4 + a^2*b^2)*d^2*e^2*f + 6*(a^3*b + a*b^3)*d^2*e^2*f + 12*I*(
a^4 + a^2*b^2)*c*d*e*f^2 - 12*(a^3*b + a*b^3)*c*d*e*f^2 - 6*I*(a^4 + a^2*b^
2)*c^2*f^3 + 6*(a^3*b + a*b^3)*c^2*f^3 + (-6*I*(a^4 + a^2*b^2)*d^2*e^2*f +
6*(a^3*b + a*b^3)*d^2*e^2*f + 12*I*(a^4 + a^2*b^2)*c*d*e*f^2 - 12*(a^3*b +
a*b^3)*c*d*e*f^2 - 6*I*(a^4 + a^2*b^2)*c^2*f^3 + 6*(a^3*b + a*b^3)*c^2*f^3)
*cosh(d*x + c)^2 + (-12*I*(a^4 + a^2*b^2)*d^2*e^2*f + 12*(a^3*b + a*b^3)*d^
2*e^2*f + 24*I*(a^4 + a^2*b^2)*c*d*e*f^2 - 24*(a^3*b + a*b^3)*c*d*e*f^2 - 1
2*I*(a^4 + a^2*b^2)*c^2*f^3 + 12*(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c)*sin
h(d*x + c) + (-6*I*(a^4 + a^2*b^2)*d^2*e^2*f + 6*(a^3*b + a*b^3)*d^2*e^2*f
+ 12*I*(a^4 + a^2*b^2)*c*d*e*f^2 - 12*(a^3*b + a*b^3)*c*d*e*f^2 - 6*I*(a^4
+ a^2*b^2)*c^2*f^3 + 6*(a^3*b + a*b^3)*c^2*f^3)*sinh(d*x + c)^2)*log(cosh(d
*x + c) + sinh(d*x + c) + I) + (6*I*(a^4 + a^2*b^2)*d^2*e^2*f + 6*(a^3*b +
a*b^3)*d^2*e^2*f - 12*I*(a^4 + a^2*b^2)*c*d*e*f^2 - 12*(a^3*b + a*b^3)*c*d*
e*f^2 + 6*I*(a^4 + a^2*b^2)*c^2*f^3 + 6*(a^3*b + a*b^3)*c^2*f^3 + (6*I*(a^4
 + a^2*b^2)*d^2*e^2*f + 6*(a^3*b + a*b^3)*d^2*e^2*f - 12*I*(a^4 + a^2*b^2)*
c*d*e*f^2 - 12*(a^3*b + a*b^3)*c*d*e*f^2 + 6*I*(a^4 + a^2*b^2)*c^2*f^3 + 6*
(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c)^2 + (12*I*(a^4 + a^2*b^2)*d^2*e^2*f
+ 12*(a^3*b + a*b^3)*d^2*e^2*f - 24*I*(a^4 + a^2*b^2)*c*d*e*f^2 - 24*(a^3*b
 + a*b^3)*c*d*e*f^2 + 12*I*(a^4 + a^2*b^2)*c^2*f^3 + 12*(a^3*b + a*b^3)*c^2
*f^3)*cosh(d*x + c)*sinh(d*x + c) + (6*I*(a^4 + a^2*b^2)*d^2*e^2*f + 6*(a^3
*b + a*b^3)*d^2*e^2*f - 12*I*(a^4 + a^2*b^2)*c*d*e*f^2 - 12*(a^3*b + a*b^3)

*c*d*e*f^2 + 6*I*(a^4 + a^2*b^2)*c^2*f^3 + 6*(a^3*b + a*b^3)*c^2*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - I) + 2*((a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(a^4 + 2*a^2*b^2 + b^4)*c*d^2*e^2*f + 3*(a^4 + 2*a^2*b^2 + b^4)*c^2*d*e*f^2 - (a^4 + 2*a^2*b^2 + b^4)*c^3*f^3 + ((a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(a^4 + 2*a^2*b^2 + b^4)*c*d^2*e^2*f + 3*(a^4 + 2*a^2*b^2 + b^4)*c^2*d*e*f^2 - (a^4 + 2*a^2*b^2 + b^4)*c^3*f^3)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(a^4 + 2*a^2*b^2 + b^4)*c*d^2*e^2*f + 3*(a^4 + 2*a^2*b^2 + b^4)*c^2*d*e*f^2 - (a^4 + 2*a^2*b^2 + b^4)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + ((a^4 + 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(a^4 + 2*a^2*b^2 + b^4)*c*d^2*e^2*f + 3*(a^4 + 2*a^2*b^2 + b^4)*c^2*d*e*f^2 - (a^4 + 2*a^2*b^2 + b^4)*c^3*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1) + (6*I*(a^4 + a^2*b^2)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*f^3*x^2 + 12*I*(a^4 + a^2*b^2)*d^2*e*f^2*x + 12*(a^3*b + a*b^3)*d^2*e*f^2*x + 12*I*(a^4 + a^2*b^2)*c*d*e*f^2 + 12*(a^3*b + a*b^3)*c*d*e*f^2 - 6*I*(a^4 + a^2*b^2)*c^2*f^3 - 6*(a^3*b + a*b^3)*c^2*f^3 + (6*I*(a^4 + a^2*b^2)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*f^3*x^2 + 12*I*(a^4 + a^2*b^2)*d^2*e*f^2*x + 12*(a^3*b + a*b^3)*d^2*e*f^2*x + 12*I*(a^4 + a^2*b^2)*c*d*e*f^2 + 12*(a^3*b + a*b^3)*c*d*e*f^2 - 6*I*(a^4 + a^2*b^2)*c^2*f^3 - 6*(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c)^2 + (12*I*(a^4 + a^2*b^2)*d^2*f^3*x^2 + 12*(a^3*b + a*b^3)*d^2*f^3*x^2 + 24*I*(a^4 + a^2*b^2)*d^2*e*f^2*x + 24*(a^3*b + a*b^3)*d^2*e*f^2*x + 24*I*(a^4 + a^2*b^2)*c*d*e*f^2 + 24*(a^3*b + a*b^3)*c*d*e*f^2 - 12*I*(a^4 + a^2*b^2)*c^2*f^3 - 12*(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c)*sinh(d*x + c) + (6*I*(a^4 + a^2*b^2)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*f^3*x^2 + 12*I*(a^4 + a^2*b^2)*d^2*e*f^2*x + 12*(a^3*b + a*b^3)*d^2*e*f^2*x + 12*I*(a^4 + a^2*b^2)*c*d*e*f^2 + 12*(a^3*b + a*b^3)*c*d*e*f^2 - 6*I*(a^4 + a^2*b^2)*c^2*f^3 - 6*(a^3*b + a*b^3)*c^2*f^3)*sinh(d*x + c)^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) + (-6*I*(a^4 + a^2*b^2)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*f^3*x^2 - 12*I*(a^4 + a^2*b^2)*d^2*e*f^2*x + 12*(a^3*b + a*b^3)*d^2*e*f^2*x - 12*I*(a^4 + a^2*b^2)*c*d*e*f^2 + 12*(a^3*b + a*b^3)*c*d*e*f^2 + 6*I*(a^4 + a^2*b^2)*c^2*f^3 - 6*(a^3*b + a*b^3)*c^2*f^3 + (-6*I*(a^4 + a^2*b^2)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*f^3*x^2 - 12*I*(a^4 + a^2*b^2)*d^2*e*f^2*x + 12*(a^3*b + a*b^3)*d^2*e*f^2*x - 12*I*(a^4 + a^2*b^2)*c*d*e*f^2 + 12*(a^3*b + a*b^3)*c*d*e*f^2 + 6*I*(a^4 + a^2*b^2)*c^2*f^3 - 6*(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c)^2 + (-12*I*(a^4 + a^2*b^2)*d^2*f^3*x^2 + 12*(a^3*b + a*b^3)*d^2*f^3*x^2 - 24*I*(a^4 + a^2*b^2)*d^2*e*f^2*x + 24*(a^3*b + a*b^3)*d^2*e*f^2*x - 24*I*(a^4 + a^2*b^2)*c*d*e*f^2 + 24*(a^3*b + a*b^3)*c*d*e*f^2 + 12*I*(a^4 + a^2*b^2)*c^2*f^3 - 12*(a^3*b + a*b^3)*c^2*f^3)*cosh(d*x + c)*sinh(d*x + c) + (-6*I*(a^4 + a^2*b^2)*d^2*f^3*x^2 + 6*(a^3*b + a*b^3)*d^2*f^3*x^2 - 12*I*(a^4 + a^2*b^2)*d^2*e*f^2*x + 12*(a^3*b + a*b^3)*d^2*e*f^2*x - 12*I*(a^4 + a^2*b^2)*c*d*e*f^2 + 12*(a^3*b + a*b^3)*c*d*e*f^2 + 6*I*(a^4 + a^2*b^2)*c^2*f^3 - 6*(a^3*b + a*b^3)*c^2*f^3)*sinh(d*x + c)^2)*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) + 2*((a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 3*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*f*x + 3*(a^4 + 2*a^2*b^2 + b^4)*c*d^2*e^2*f - 3*(a^4 + 2*a^2*b^2 + b^4)*c^2*d*e*f^2 + (a^4 + 2*a^2*b^2 + b^4)*c^3*f^3 + ((a^4 + 2*a^2*b^2 + b^4)

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*d^3*f^3*x^3 + 3*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 + 2*a^2*b^2
 + b^4)*d^3*e^2*f*x + 3*(a^4 + 2*a^2*b^2 + b^4)*c*d^2*e^2*f - 3*(a^4 + 2*a^
2*b^2 + b^4)*c^2*d*e*f^2 + (a^4 + 2*a^2*b^2 + b^4)*c^3*f^3)*cosh(d*x + c)^2
 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 3*(a^4 + 2*a^2*b^2 + b^4)*d^3*e
*f^2*x^2 + 3*(a^4 + 2*a^2*b^2 + b^4)*d^3*e^2*f*x + 3*(a^4 + 2*a^2*b^2 + b^4
)*c*d^2*e^2*f - 3*(a^4 + 2*a^2*b^2 + b^4)*c^2*d*e*f^2 + (a^4 + 2*a^2*b^2 +
b^4)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) + ((a^4 + 2*a^2*b^2 + b^4)*d^3*f^
3*x^3 + 3*(a^4 + 2*a^2*b^2 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 + 2*a^2*b^2 + b^4)
*d^3*e^2*f*x + 3*(a^4 + 2*a^2*b^2 + b^4)*c*d^2*e^2*f - 3*(a^4 + 2*a^2*b^2 +
 b^4)*c^2*d*e*f^2 + (a^4 + 2*a^2*b^2 + b^4)*c^3*f^3)*sinh(d*x + c)^2)*log(-
cosh(d*x + c) - sinh(d*x + c) + 1) + 12*((a^4 + 2*a^2*b^2 + b^4)*f^3*cosh(d
*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*f^3*cosh(d*x + c)*sinh(d*x + c) + (a^
4 + 2*a^2*b^2 + b^4)*f^3*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*f^3)*pol
ylog(4, cosh(d*x + c) + sinh(d*x + c)) - 12*((a^4 + 2*a^2*b^2 + b^4)*f^3*co
sh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*f^3*cosh(d*x + c)*sinh(d*x + c) +
 (a^4 + 2*a^2*b^2 + b^4)*f^3*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*f^3)
*polylog(4, -cosh(d*x + c) - sinh(d*x + c)) - 12*((a^4 + 2*a^2*b^2 + b^4)*d
*f^3*x + (a^4 + 2*a^2*b^2 + b^4)*d*e*f^2 + ((a^4 + 2*a^2*b^2 + b^4)*d*f^3*x
 + (a^4 + 2*a^2*b^2 + b^4)*d*e*f^2)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 +
 b^4)*d*f^3*x + (a^4 + 2*a^2*b^2 + b^4)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c
) + ((a^4 + 2*a^2*b^2 + b^4)*d*f^3*x + (a^4 + 2*a^2*b^2 + b^4)*d*e*f^2)*sin
h(d*x + c)^2)*polylog(3, cosh(d*x + c) + sinh(d*x + c)) + (12*I*(a^4 + a^2*
b^2)*f^3 - 12*(a^3*b + a*b^3)*f^3 - 12*(-I*(a^4 + a^2*b^2)*f^3 + (a^3*b + a
*b^3)*f^3)*cosh(d*x + c)^2 - 24*(-I*(a^4 + a^2*b^2)*f^3 + (a^3*b + a*b^3)*f
^3)*cosh(d*x + c)*sinh(d*x + c) - 12*(-I*(a^4 + a^2*b^2)*f^3 + (a^3*b + a*b
^3)*f^3)*sinh(d*x + c)^2)*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) + (
-12*I*(a^4 + a^2*b^2)*f^3 - 12*(a^3*b + a*b^3)*f^3 - 12*(I*(a^4 + a^2*b^2)*
f^3 + (a^3*b + a*b^3)*f^3)*cosh(d*x + c)^2 - 24*(I*(a^4 + a^2*b^2)*f^3 + (a
^3*b + a*b^3)*f^3)*cosh(d*x + c)*sinh(d*x + c) - 12*(I*(a^4 + a^2*b^2)*f^3
+ (a^3*b + a*b^3)*f^3)*sinh(d*x + c)^2)*polylog(3, -I*cosh(d*x + c) - I*sin
h(d*x + c)) + 12*((a^4 + 2*a^2*b^2 + b^4)*d*f^3*x + (a^4 + 2*a^2*b^2 + b^4)
*d*e*f^2 + ((a^4 + 2*a^2*b^2 + b^4)*d*f^3*x + (a^4 + 2*a^2*b^2 + b^4)*d*e*f
^2)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d*f^3*x + (a^4 + 2*a^2*b^2
 + b^4)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + ((a^4 + 2*a^2*b^2 + b^4)*d*f
^3*x + (a^4 + 2*a^2*b^2 + b^4)*d*e*f^2)*sinh(d*x + c)^2)*polylog(3, -cosh(d
*x + c) - sinh(d*x + c)) + 4*((a^4 + a^2*b^2)*d^3*f^3*x^3 + 3*(a^4 + a^2*b^
2)*d^3*e*f^2*x^2 + 3*(a^4 + a^2*b^2)*d^3*e^2*f*x + (a^4 + a^2*b^2)*d^3*e^3
- 2*((a^3*b + a*b^3)*d^3*f^3*x^3 + 3*(a^3*b + a*b^3)*d^3*e*f^2*x^2 + 3*(a^3
*b + a*b^3)*d^3*e^2*f*x + 3*(a^3*b + a*b^3)*c*d^2*e^2*f - 3*(a^3*b + a*b^3)
*c^2*d*e*f^2 + (a^3*b + a*b^3)*c^3*f^3)*cosh(d*x + c))*sinh(d*x + c))/((a^5
 + 2*a^3*b^2 + a*b^4)*d^4*cosh(d*x + c)^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d^4
*cosh(d*x + c)*sinh(d*x + c) + (a^5 + 2*a^3*b^2 + a*b^4)*d^4*sinh(d*x + c)^
2 + (a^5 + 2*a^3*b^2 + a*b^4)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 6.47, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{csch}\left(dx+c\right) \operatorname{sech}\left(dx+c\right)^{2}}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -3*b*e^2*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2
+ b^2)*d^2)) - 6*a*f^3*integrate(x^2*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b
^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 6*b*f^3*integrate(x^2/(a^2*d*e^
(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 12*a*e*f^2*int
egrate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d
 + b^2*d), x) - 12*b*e*f^2*integrate(x/(a^2*d*e^(2*d*x + 2*c) + b^2*d*e^(2*
d*x + 2*c) + a^2*d + b^2*d), x) - (b^3*log((b*e^(-d*x - c) - a - sqrt(a^2 +
 b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^3 + a*b^2)*sqrt(a^2 + b^
2)*d) - 2*(a*e^(-d*x - c) - b)/((a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*
d) + log(e^(-d*x - c) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d))*e^3 - 6*a*e
^2*f*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) - 3*(d*x*log(e^(d*x + c) + 1) +
dilog(-e^(d*x + c)))*e^2*f/(a*d^2) + 3*(d*x*log(-e^(d*x + c) + 1) + dilog(e
^(d*x + c)))*e^2*f/(a*d^2) + 2*(b*f^3*x^3 + 3*b*e*f^2*x^2 + 3*b*e^2*f*x + (
a*f^3*x^3*e^c + 3*a*e*f^2*x^2*e^c + 3*a*e^2*f*x*e^c)*e^(d*x))/(a^2*d + b^2*
d + (a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) - 3*(d^2*x^2*log(e^(d*x + c)
```

```
 + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*e*f^2/(a*d^
3) + 3*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylo
g(3, e^(d*x + c)))*e*f^2/(a*d^3) - (d^3*x^3*log(e^(d*x + c) + 1) + 3*d^2*x^
2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x + c)) + 6*polylog(4, -e^(d
*x + c)))*f^3/(a*d^4) + (d^3*x^3*log(-e^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^
(d*x + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*polylog(4, e^(d*x + c)))*f^3
/(a*d^4) - integrate(-2*(b^3*f^3*x^3*e^c + 3*b^3*e*f^2*x^2*e^c + 3*b^3*e^2*
f*x*e^c)*e^(d*x)/(a^3*b + a*b^3 - (a^3*b*e^(2*c) + a*b^3*e^(2*c))*e^(2*d*x)
 - 2*(a^4*e^c + a^2*b^2*e^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{{\cosh\left(c+d\,x\right)}^2\,\sinh\left(c+d\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cosh(c + d*x)^2*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^3/(cosh(c + d*x)^2*sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csch(d*x+c)*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.441 $\int \frac{(e+fx)^2\textbf{csch}(c+dx)\textbf{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=795

$$-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{a\left(a^2+b^2\right)^{3/2}d}+\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{a\left(a^2+b^2\right)^{3/2}d}-\frac{2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b^3}{a\left(a^2+b^2\right)^{3/2}d^2}+\frac{2f(e+fx)\text{Li}_2}{a\left(a^2+\right.}$$

```
[Out] -b*(f*x+e)^2/(a^2+b^2)/d-4*f*(f*x+e)*arctan(exp(d*x+c))/a/d^2+4*b^2*f*(f*x+
e)*arctan(exp(d*x+c))/a/(a^2+b^2)/d^2-2*(f*x+e)^2*arctanh(exp(d*x+c))/a/d+2
*b*f*(f*x+e)*ln(1+exp(2*d*x+2*c))/(a^2+b^2)/d^2-b^3*(f*x+e)^2*ln(1+b*exp(d*
x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d+b^3*(f*x+e)^2*ln(1+b*exp(d*x+
c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d-2*f*(f*x+e)*polylog(2,-exp(d*x+
c))/a/d^2-2*I*b^2*f^2*polylog(2,-I*exp(d*x+c))/a/(a^2+b^2)/d^3+2*I*f^2*poly
log(2,-I*exp(d*x+c))/a/d^3+2*I*b^2*f^2*polylog(2,I*exp(d*x+c))/a/(a^2+b^2)/
d^3-2*I*f^2*polylog(2,I*exp(d*x+c))/a/d^3+2*f*(f*x+e)*polylog(2,exp(d*x+c))
/a/d^2+b*f^2*polylog(2,-exp(2*d*x+2*c))/(a^2+b^2)/d^3-2*b^3*f*(f*x+e)*polyl
og(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d^2+2*b^3*f*(f*x+
e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d^2+2*f^2
*polylog(3,-exp(d*x+c))/a/d^3-2*f^2*polylog(3,exp(d*x+c))/a/d^3+2*b^3*f^2*p
olylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d^3-2*b^3*f^2
*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d^3+(f*x+e)
^2*sech(d*x+c)/a/d-b^2*(f*x+e)^2*sech(d*x+c)/a/(a^2+b^2)/d-b*(f*x+e)^2*tanh
(d*x+c)/(a^2+b^2)/d
```

Rubi [A] time = 1.61, antiderivative size = 795, normalized size of antiderivative = 1.00, number of steps used = 44, number of rules used = 23, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.676, Rules used = {5589, 2622, 321, 207, 5462, 6741, 12, 6742, 6273, 4182, 2531, 2282, 6589, 4180, 2279, 2391, 5573, 3322, 2264, 2190, 4184, 3718, 5451}

$$-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{a\left(a^2+b^2\right)^{3/2}d}+\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{a\left(a^2+b^2\right)^{3/2}d}-\frac{2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b^3}{a\left(a^2+b^2\right)^{3/2}d^2}+\frac{2f(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((b*(e + f*x)^2)/((a^2 + b^2)*d)) - (4*f*(e + f*x)*ArcTan[E^(c + d*x)])/(a
*d^2) + (4*b^2*f*(e + f*x)*ArcTan[E^(c + d*x)])/(a*(a^2 + b^2)*d^2) - (2*(e
 + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d) - (b^3*(e + f*x)^2*Log[1 + (b*E^(c +
d*x))/(a - Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)^(3/2)*d) + (b^3*(e + f*x)^2*Lo
g[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)^(3/2)*d) + (2*
```

```
b*f*(e + f*x)*Log[1 + E^(2*(c + d*x))])/((a^2 + b^2)*d^2) - (2*f*(e + f*x)*
PolyLog[2, -E^(c + d*x)])/(a*d^2) + ((2*I)*f^2*PolyLog[2, (-I)*E^(c + d*x)]
)/(a*d^3) - ((2*I)*b^2*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*(a^2 + b^2)*d^3
) - ((2*I)*f^2*PolyLog[2, I*E^(c + d*x)])/(a*d^3) + ((2*I)*b^2*f^2*PolyLog[
2, I*E^(c + d*x)])/(a*(a^2 + b^2)*d^3) + (2*f*(e + f*x)*PolyLog[2, E^(c + d
*x)])/(a*d^2) - (2*b^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a
^2 + b^2]))])/(a*(a^2 + b^2)^(3/2)*d^2) + (2*b^3*f*(e + f*x)*PolyLog[2, -((
b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^(3/2)*d^2) + (b*f^2*
PolyLog[2, -E^(2*(c + d*x))])/((a^2 + b^2)*d^3) + (2*f^2*PolyLog[3, -E^(c +
 d*x)])/(a*d^3) - (2*f^2*PolyLog[3, E^(c + d*x)])/(a*d^3) + (2*b^3*f^2*Poly
Log[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^(3/2)*d^3)
 - (2*b^3*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2
 + b^2)^(3/2)*d^3) + ((e + f*x)^2*Sech[c + d*x])/(a*d) - (b^2*(e + f*x)^2*S
ech[c + d*x])/(a*(a^2 + b^2)*d) - (b*(e + f*x)^2*Tanh[c + d*x])/((a^2 + b^2
)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
```

```
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
```

```
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
```

```
p]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6273

```
Int[((a_.) + ArcTanh[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*(a + b*ArcTanh[u]))/(d*(m + 1)), x] - Dist[b/(d*(m +
1)), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/(1 - u^2), x], x], x
] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x]
&&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] && FalseQ[PowerVariableExpn[u, m
+ 1, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{(e+fx)^2\operatorname{sech}(c+dx)}{ad} - \frac{b\int (e+$$

$$= -\frac{(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{(e+fx)^2\operatorname{sech}(c+dx)}{ad} - \frac{b\int \Big(a($$

$$= -\frac{(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{(e+fx)^2\operatorname{sech}(c+dx)}{ad} - \frac{(2b^4)\int$$

$$= -\frac{(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{ad} - \frac{b^3(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\left(a^2+b^2\right)^{3/2}d}$$

$$= -\frac{b(e+fx)^2}{\left(a^2+b^2\right)d} + \frac{4b^2f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d^2} - \frac{(e+fx)^2\tanh^{-1}(\cosh($$

$$= -\frac{b(e+fx)^2}{\left(a^2+b^2\right)d} - \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{4b^2f(e+fx)\tan^{-1}\left(e^{c+dx}\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^2}{\left(a^2+b^2\right)d} - \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{4b^2f(e+fx)\tan^{-1}\left(e^{c+dx}\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^2}{\left(a^2+b^2\right)d} - \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{4b^2f(e+fx)\tan^{-1}\left(e^{c+dx}\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^2}{\left(a^2+b^2\right)d} - \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{4b^2f(e+fx)\tan^{-1}\left(e^{c+dx}\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^2}{\left(a^2+b^2\right)d} - \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{4b^2f(e+fx)\tan^{-1}\left(e^{c+dx}\right.}{a\left(a^2+b^2\right)d^2}$$

$$= -\frac{b(e+fx)^2}{\left(a^2+b^2\right)d} - \frac{4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{4b^2f(e+fx)\tan^{-1}\left(e^{c+dx}\right.}{a\left(a^2+b^2\right)d^2}$$

Mathematica [A] time = 11.81, size = 1244, normalized size = 1.56

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] 4*((Csch[c + d*x]*((e + f*x)^2*Log[1 - E^(c + d*x)] - (e + f*x)^2*Log[1 + E
^(c + d*x)] - (2*f*(d*(e + f*x)*PolyLog[2, -E^(c + d*x)] - f*PolyLog[3, -E^
(c + d*x)]))/d^2 + (2*f*(d*(e + f*x)*PolyLog[2, E^(c + d*x)] - f*PolyLog[3,
 E^(c + d*x)]))/d^2)*(a + b*Sinh[c + d*x]))/(4*a*d*(b + a*Csch[c + d*x])) +
 (b^3*Csch[c + d*x]*(2*d^2*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]]
 - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d^2*f^2*x^2
*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*d^2*e*f*x*Log[1 + (b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2])] - 2*d*f*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt
[a^2 + b^2])] + 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2
+ b^2]))] + 2*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*f^
2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])*(a + b*Sinh[c + d*x
]))/(4*a*(a^2 + b^2)^(3/2)*d^3*(b + a*Csch[c + d*x])) + (b*e*f*Csch[c + d*x
]*Sech[c]*(Cosh[c]*Log[Cosh[c]*Cosh[d*x] + Sinh[c]*Sinh[d*x]] - d*x*Sinh[c]
)*(a + b*Sinh[c + d*x]))/(2*(a^2 + b^2)*d^2*(b + a*Csch[c + d*x])*(Cosh[c]^
2 - Sinh[c]^2)) - (a*e*f*ArcTan[(Sinh[c] + Cosh[c]*Tanh[(d*x)/2])/Sqrt[Cosh
[c]^2 - Sinh[c]^2]]*Csch[c + d*x]*(a + b*Sinh[c + d*x]))/((a^2 + b^2)*d^2*(
b + a*Csch[c + d*x])*Sqrt[Cosh[c]^2 - Sinh[c]^2]) + (b*f^2*Csch[c]*Csch[c +
 d*x]*((d^2*x^2)/E^ArcTanh[Coth[c]] - (I*Coth[c]*(-(d*x*(-Pi + (2*I)*ArcTan
h[Coth[c]])) - Pi*Log[1 + E^(2*d*x)] - 2*(I*d*x + I*ArcTanh[Coth[c]])*Log[1
 - E^((2*I)*(I*d*x + I*ArcTanh[Coth[c]]))] + Pi*Log[Cosh[d*x]] + (2*I)*ArcT
anh[Coth[c]]*Log[I*Sinh[d*x + ArcTanh[Coth[c]]]] + I*PolyLog[2, E^((2*I)*(I
*d*x + I*ArcTanh[Coth[c]]))]))/Sqrt[1 - Coth[c]^2])*Sech[c]*(a + b*Sinh[c +
 d*x]))/(4*(a^2 + b^2)*d^3*(b + a*Csch[c + d*x])*Sqrt[Csch[c]^2*(-Cosh[c]^2
 + Sinh[c]^2)]) - (a*f^2*Csch[c + d*x]*(((-I)*Csch[c]*(I*(d*x + ArcTanh[Cot
h[c]])*(Log[1 - E^(-(d*x) - ArcTanh[Coth[c]])] - Log[1 + E^(-(d*x) - ArcTan
h[Coth[c]])]) + I*(PolyLog[2, -E^(-(d*x) - ArcTanh[Coth[c]])] - PolyLog[2,
E^(-(d*x) - ArcTanh[Coth[c]])])))/Sqrt[1 - Coth[c]^2] - (2*ArcTan[(Sinh[c]
+ Cosh[c]*Tanh[(d*x)/2])/Sqrt[Cosh[c]^2 - Sinh[c]^2]]*ArcTanh[Coth[c]])/Sqr
t[Cosh[c]^2 - Sinh[c]^2])*(a + b*Sinh[c + d*x]))/(2*(a^2 + b^2)*d^3*(b + a*
Csch[c + d*x])) + (Csch[c + d*x]*Sech[c]*Sech[c + d*x]*(a*e^2*Cosh[c] + 2*a
*e*f*x*Cosh[c] + a*f^2*x^2*Cosh[c] - b*e^2*Sinh[d*x] - 2*b*e*f*x*Sinh[d*x]
- b*f^2*x^2*Sinh[d*x])*(a + b*Sinh[c + d*x]))/(4*(a^2 + b^2)*d*(b + a*Csch[
c + d*x])))
```

fricas [C] time = 0.77, size = 5569, normalized size = 7.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/2*(4*(a^3*b + a*b^3)*d^2*e^2 - 8*(a^3*b + a*b^3)*c*d*e*f + 4*(a^3*b + a*b
^3)*c^2*f^2 - 4*((a^3*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x
+ 2*(a^3*b + a*b^3)*c*d*e*f - (a^3*b + a*b^3)*c^2*f^2)*cosh(d*x + c)^2 - 4*
((a^3*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + 2*(a^3*b + a*b
^3)*c*d*e*f - (a^3*b + a*b^3)*c^2*f^2)*sinh(d*x + c)^2 - 4*(b^4*d*f^2*x + b
^4*d*e*f + (b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^2 + 2*(b^4*d*f^2*x + b^4
*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d*f^2*x + b^4*d*e*f)*sinh(d*x +
c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*c
osh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 4*(b^4*
d*f^2*x + b^4*d*e*f + (b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^2 + 2*(b^4*d*
f^2*x + b^4*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d*f^2*x + b^4*d*e*f)*
sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x
+ c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1
) + 2*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2 + (b^4*d^2*e^2 - 2*b^4*c*d
*e*f + b^4*c^2*f^2)*cosh(d*x + c)^2 + 2*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*
c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c
^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*
sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(b^4*d^2*e^2 - 2*b^4*c
*d*e*f + b^4*c^2*f^2 + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x
 + c)^2 + 2*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)*sinh(
d*x + c) + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*sinh(d*x + c)^2)*sqr
t((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^
2 + b^2)/b^2) + 2*a) - 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f
 - b^4*c^2*f^2 + (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c
^2*f^2)*cosh(d*x + c)^2 + 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*
e*f - b^4*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d^2*f^2*x^2 + 2*b^4*d
^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b
^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
 + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x
 + 2*b^4*c*d*e*f - b^4*c^2*f^2 + (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4
*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^2 + 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*
f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d^2*f
^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*sinh(d*x + c)^2)*sq
rt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 4*(b^4*f^2*cosh(d*x
+ c)^2 + 2*b^4*f^2*cosh(d*x + c)*sinh(d*x + c) + b^4*f^2*sinh(d*x + c)^2 +
b^4*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c
) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 4*(b^4*
f^2*cosh(d*x + c)^2 + 2*b^4*f^2*cosh(d*x + c)*sinh(d*x + c) + b^4*f^2*sinh(
d*x + c)^2 + b^4*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a
```

```
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))
/b) + 4*((a^4 + a^2*b^2)*d^2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + (a^4 +
 a^2*b^2)*d^2*e^2)*cosh(d*x + c) + 4*((a^4 + 2*a^2*b^2 + b^4)*d*f^2*x + (a^
4 + 2*a^2*b^2 + b^4)*d*e*f + ((a^4 + 2*a^2*b^2 + b^4)*d*f^2*x + (a^4 + 2*a^
2*b^2 + b^4)*d*e*f)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d*f^2*x +
(a^4 + 2*a^2*b^2 + b^4)*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + ((a^4 + 2*a^2*
b^2 + b^4)*d*f^2*x + (a^4 + 2*a^2*b^2 + b^4)*d*e*f)*sinh(d*x + c)^2)*dilog(
cosh(d*x + c) + sinh(d*x + c)) + (-4*I*(a^4 + a^2*b^2)*f^2 + 4*(a^3*b + a*b
^3)*f^2 - 4*(I*(a^4 + a^2*b^2)*f^2 - (a^3*b + a*b^3)*f^2)*cosh(d*x + c)^2 -
 8*(I*(a^4 + a^2*b^2)*f^2 - (a^3*b + a*b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c
) - 4*(I*(a^4 + a^2*b^2)*f^2 - (a^3*b + a*b^3)*f^2)*sinh(d*x + c)^2)*dilog(
I*cosh(d*x + c) + I*sinh(d*x + c)) + (4*I*(a^4 + a^2*b^2)*f^2 + 4*(a^3*b +
a*b^3)*f^2 - 4*(-I*(a^4 + a^2*b^2)*f^2 - (a^3*b + a*b^3)*f^2)*cosh(d*x + c)
^2 - 8*(-I*(a^4 + a^2*b^2)*f^2 - (a^3*b + a*b^3)*f^2)*cosh(d*x + c)*sinh(d*
x + c) - 4*(-I*(a^4 + a^2*b^2)*f^2 - (a^3*b + a*b^3)*f^2)*sinh(d*x + c)^2)*
dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) - 4*((a^4 + 2*a^2*b^2 + b^4)*d*f^
2*x + (a^4 + 2*a^2*b^2 + b^4)*d*e*f + ((a^4 + 2*a^2*b^2 + b^4)*d*f^2*x + (a
^4 + 2*a^2*b^2 + b^4)*d*e*f)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d
*f^2*x + (a^4 + 2*a^2*b^2 + b^4)*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + ((a^4
 + 2*a^2*b^2 + b^4)*d*f^2*x + (a^4 + 2*a^2*b^2 + b^4)*d*e*f)*sinh(d*x + c)^
2)*dilog(-cosh(d*x + c) - sinh(d*x + c)) - 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f
^2*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f*x + (a^4 + 2*a^2*b^2 + b^4)*d^2*
e^2 + ((a^4 + 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*
e*f*x + (a^4 + 2*a^2*b^2 + b^4)*d^2*e^2)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*
b^2 + b^4)*d^2*f^2*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f*x + (a^4 + 2*a^2
*b^2 + b^4)*d^2*e^2)*cosh(d*x + c)*sinh(d*x + c) + ((a^4 + 2*a^2*b^2 + b^4)
*d^2*f^2*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f*x + (a^4 + 2*a^2*b^2 + b^4
)*d^2*e^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) + 1) + (-4*I*
(a^4 + a^2*b^2)*d*e*f + 4*(a^3*b + a*b^3)*d*e*f + 4*I*(a^4 + a^2*b^2)*c*f^2
 - 4*(a^3*b + a*b^3)*c*f^2 + (-4*I*(a^4 + a^2*b^2)*d*e*f + 4*(a^3*b + a*b^3
)*d*e*f + 4*I*(a^4 + a^2*b^2)*c*f^2 - 4*(a^3*b + a*b^3)*c*f^2)*cosh(d*x + c
)^2 + (-8*I*(a^4 + a^2*b^2)*d*e*f + 8*(a^3*b + a*b^3)*d*e*f + 8*I*(a^4 + a^
2*b^2)*c*f^2 - 8*(a^3*b + a*b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (-4*I
*(a^4 + a^2*b^2)*d*e*f + 4*(a^3*b + a*b^3)*d*e*f + 4*I*(a^4 + a^2*b^2)*c*f^
2 - 4*(a^3*b + a*b^3)*c*f^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x
+ c) + I) + (4*I*(a^4 + a^2*b^2)*d*e*f + 4*(a^3*b + a*b^3)*d*e*f - 4*I*(a^4
 + a^2*b^2)*c*f^2 - 4*(a^3*b + a*b^3)*c*f^2 + (4*I*(a^4 + a^2*b^2)*d*e*f +
4*(a^3*b + a*b^3)*d*e*f - 4*I*(a^4 + a^2*b^2)*c*f^2 - 4*(a^3*b + a*b^3)*c*f
^2)*cosh(d*x + c)^2 + (8*I*(a^4 + a^2*b^2)*d*e*f + 8*(a^3*b + a*b^3)*d*e*f
- 8*I*(a^4 + a^2*b^2)*c*f^2 - 8*(a^3*b + a*b^3)*c*f^2)*cosh(d*x + c)*sinh(d
*x + c) + (4*I*(a^4 + a^2*b^2)*d*e*f + 4*(a^3*b + a*b^3)*d*e*f - 4*I*(a^4 +
 a^2*b^2)*c*f^2 - 4*(a^3*b + a*b^3)*c*f^2)*sinh(d*x + c)^2)*log(cosh(d*x +
c) + sinh(d*x + c) - I) + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*e^2 - 2*(a^4 + 2*a
^2*b^2 + b^4)*c*d*e*f + (a^4 + 2*a^2*b^2 + b^4)*c^2*f^2 + ((a^4 + 2*a^2*b^2
 + b^4)*d^2*e^2 - 2*(a^4 + 2*a^2*b^2 + b^4)*c*d*e*f + (a^4 + 2*a^2*b^2 + b^
```

```
4)*c^2*f^2)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*e^2 - 2*(a^4 +
 2*a^2*b^2 + b^4)*c*d*e*f + (a^4 + 2*a^2*b^2 + b^4)*c^2*f^2)*cosh(d*x + c)*
sinh(d*x + c) + ((a^4 + 2*a^2*b^2 + b^4)*d^2*e^2 - 2*(a^4 + 2*a^2*b^2 + b^4
)*c*d*e*f + (a^4 + 2*a^2*b^2 + b^4)*c^2*f^2)*sinh(d*x + c)^2)*log(cosh(d*x
+ c) + sinh(d*x + c) - 1) + (4*I*(a^4 + a^2*b^2)*d*f^2*x + 4*(a^3*b + a*b^3
)*d*f^2*x + 4*I*(a^4 + a^2*b^2)*c*f^2 + 4*(a^3*b + a*b^3)*c*f^2 + (4*I*(a^4
 + a^2*b^2)*d*f^2*x + 4*(a^3*b + a*b^3)*d*f^2*x + 4*I*(a^4 + a^2*b^2)*c*f^2
 + 4*(a^3*b + a*b^3)*c*f^2)*cosh(d*x + c)^2 + (8*I*(a^4 + a^2*b^2)*d*f^2*x
+ 8*(a^3*b + a*b^3)*d*f^2*x + 8*I*(a^4 + a^2*b^2)*c*f^2 + 8*(a^3*b + a*b^3)
*c*f^2)*cosh(d*x + c)*sinh(d*x + c) + (4*I*(a^4 + a^2*b^2)*d*f^2*x + 4*(a^3
*b + a*b^3)*d*f^2*x + 4*I*(a^4 + a^2*b^2)*c*f^2 + 4*(a^3*b + a*b^3)*c*f^2)*
sinh(d*x + c)^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) + (-4*I*(a^4 +
a^2*b^2)*d*f^2*x + 4*(a^3*b + a*b^3)*d*f^2*x - 4*I*(a^4 + a^2*b^2)*c*f^2 +
4*(a^3*b + a*b^3)*c*f^2 + (-4*I*(a^4 + a^2*b^2)*d*f^2*x + 4*(a^3*b + a*b^3)
*d*f^2*x - 4*I*(a^4 + a^2*b^2)*c*f^2 + 4*(a^3*b + a*b^3)*c*f^2)*cosh(d*x +
c)^2 + (-8*I*(a^4 + a^2*b^2)*d*f^2*x + 8*(a^3*b + a*b^3)*d*f^2*x - 8*I*(a^4
 + a^2*b^2)*c*f^2 + 8*(a^3*b + a*b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c) +
(-4*I*(a^4 + a^2*b^2)*d*f^2*x + 4*(a^3*b + a*b^3)*d*f^2*x - 4*I*(a^4 + a^2*
b^2)*c*f^2 + 4*(a^3*b + a*b^3)*c*f^2)*sinh(d*x + c)^2)*log(-I*cosh(d*x + c)
 - I*sinh(d*x + c) + 1) + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^4 +
 2*a^2*b^2 + b^4)*d^2*e*f*x + 2*(a^4 + 2*a^2*b^2 + b^4)*c*d*e*f - (a^4 + 2*
a^2*b^2 + b^4)*c^2*f^2 + ((a^4 + 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^4 + 2*
a^2*b^2 + b^4)*d^2*e*f*x + 2*(a^4 + 2*a^2*b^2 + b^4)*c*d*e*f - (a^4 + 2*a^2
*b^2 + b^4)*c^2*f^2)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d^2*f^2*x
^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f*x + 2*(a^4 + 2*a^2*b^2 + b^4)*c*d*e*
f - (a^4 + 2*a^2*b^2 + b^4)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + ((a^4 +
2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*d^2*e*f*x + 2*(a^4
 + 2*a^2*b^2 + b^4)*c*d*e*f - (a^4 + 2*a^2*b^2 + b^4)*c^2*f^2)*sinh(d*x + c
)^2)*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 4*((a^4 + 2*a^2*b^2 + b^4)*f
^2*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*f^2*cosh(d*x + c)*sinh(d*x +
 c) + (a^4 + 2*a^2*b^2 + b^4)*f^2*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)
*f^2)*polylog(3, cosh(d*x + c) + sinh(d*x + c)) + 4*((a^4 + 2*a^2*b^2 + b^4
)*f^2*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*f^2*cosh(d*x + c)*sinh(d*
x + c) + (a^4 + 2*a^2*b^2 + b^4)*f^2*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b
^4)*f^2)*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) + 4*((a^4 + a^2*b^2)*d^
2*f^2*x^2 + 2*(a^4 + a^2*b^2)*d^2*e*f*x + (a^4 + a^2*b^2)*d^2*e^2 - 2*((a^3
*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + 2*(a^3*b + a*b^3)*c
*d*e*f - (a^3*b + a*b^3)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))/((a^5 + 2*a
^3*b^2 + a*b^4)*d^3*cosh(d*x + c)^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d^3*cosh(
d*x + c)*sinh(d*x + c) + (a^5 + 2*a^3*b^2 + a*b^4)*d^3*sinh(d*x + c)^2 + (a
^5 + 2*a^3*b^2 + a*b^4)*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 3.99, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{csch}\left(dx+c\right) \operatorname{sech}\left(dx+c\right)^{2}}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-2\,bef\left(\frac{2\,(dx+c)}{\left(a^2+b^2\right)d^2}-\frac{\log\left(e^{(2\,dx+2\,c)}+1\right)}{\left(a^2+b^2\right)d^2}\right)-4\,af^2\int \frac{xe^{(dx+c)}}{a^2de^{(2\,dx+2\,c)}+b^2de^{(2\,dx+2\,c)}+a^2d+b^2d}\,dx-4\,bf^2\int \frac{}{a^2de^{(2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -2*b*e*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2 +
b^2)*d^2)) - 4*a*f^2*integrate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d
*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 4*b*f^2*integrate(x/(a^2*d*e^(2*d*x
 + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - (b^3*log((b*e^(-d*x
- c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^3 +
 a*b^2)*sqrt(a^2 + b^2)*d) - 2*(a*e^(-d*x - c) - b)/((a^2 + b^2 + (a^2 + b^
2)*e^(-2*d*x - 2*c))*d) + log(e^(-d*x - c) + 1)/(a*d) - log(e^(-d*x - c) -
1)/(a*d))*e^2 - 4*a*e*f*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) + 2*(b*f^2*x^
2 + 2*b*e*f*x + (a*f^2*x^2*e^c + 2*a*e*f*x*e^c)*e^(d*x))/(a^2*d + b^2*d + (
a^2*d*e^(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) - 2*(d*x*log(e^(d*x + c) + 1) + d
ilog(-e^(d*x + c)))*e*f/(a*d^2) + 2*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d
*x + c)))*e*f/(a*d^2) - (d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x
 + c)) - 2*polylog(3, -e^(d*x + c)))*f^2/(a*d^3) + (d^2*x^2*log(-e^(d*x + c
) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*f^2/(a*d^3)
- integrate(-2*(b^3*f^2*x^2*e^c + 2*b^3*e*f*x*e^c)*e^(d*x)/(a^3*b + a*b^3 -
 (a^3*b*e^(2*c) + a*b^3*e^(2*c))*e^(2*d*x) - 2*(a^4*e^c + a^2*b^2*e^c)*e^(d
*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e+fx)^2}{\cosh(c+dx)^2 \sinh(c+dx) (a+b\sinh(c+dx))} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cosh(c + d*x)^2*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^2/(cosh(c + d*x)^2*sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.442 $\int \frac{(e+fx)\text{csch}(c+dx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=442

$$\frac{b^2 f \tan^{-1}(\sinh(c+dx))}{ad^2\left(a^2+b^2\right)}+\frac{bf\log(\cosh(c+dx))}{d^2\left(a^2+b^2\right)}-\frac{b(e+fx)\tanh(c+dx)}{d\left(a^2+b^2\right)}-\frac{b^2(e+fx)\text{sech}(c+dx)}{ad\left(a^2+b^2\right)}-\frac{b^3 f\text{Li}_2\left(-\frac{b}{a-}\right.}{ad^2\left(a^2+\right.}$$

```
[Out] -f*arctan(sinh(d*x+c))/a/d^2+b^2*f*arctan(sinh(d*x+c))/a/(a^2+b^2)/d^2-2*f*
x*arctanh(exp(d*x+c))/a/d+f*x*arctanh(cosh(d*x+c))/a/d-(f*x+e)*arctanh(cosh
(d*x+c))/a/d+b*f*ln(cosh(d*x+c))/(a^2+b^2)/d^2-b^3*(f*x+e)*ln(1+b*exp(d*x+c
)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d+b^3*(f*x+e)*ln(1+b*exp(d*x+c)/(a
+(a^2+b^2)^(1/2)))/a/(a^2+b^2)^(3/2)/d-f*polylog(2,-exp(d*x+c))/a/d^2+f*pol
ylog(2,exp(d*x+c))/a/d^2-b^3*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))
/a/(a^2+b^2)^(3/2)/d^2+b^3*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a
/(a^2+b^2)^(3/2)/d^2+(f*x+e)*sech(d*x+c)/a/d-b^2*(f*x+e)*sech(d*x+c)/a/(a^2
+b^2)/d-b*(f*x+e)*tanh(d*x+c)/(a^2+b^2)/d
```

Rubi [A] time = 0.81, antiderivative size = 442, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 19, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.594, Rules used = {5589, 2622, 321, 207, 5462, 6271, 12, 4182, 2279, 2391, 3770, 5573, 3322, 2264, 2190, 6742, 4184, 3475, 5451}

$$-\frac{b^3 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2\left(a^2+b^2\right)^{3/2}}+\frac{b^3 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ad^2\left(a^2+b^2\right)^{3/2}}-\frac{f\text{PolyLog}\left(2,-e^{c+dx}\right)}{ad^2}+\frac{f\text{PolyLog}\left(2,e^{c+dx}\right)}{ad^2}+\frac{b^2 f}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((f*ArcTan[Sinh[c + d*x]])/(a*d^2)) + (b^2*f*ArcTan[Sinh[c + d*x]])/(a*(a^
2 + b^2)*d^2) - (2*f*x*ArcTanh[E^(c + d*x)])/(a*d) + (f*x*ArcTanh[Cosh[c +
d*x]])/(a*d) - ((e + f*x)*ArcTanh[Cosh[c + d*x]])/(a*d) - (b^3*(e + f*x)*Lo
g[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)^(3/2)*d) + (b^
3*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)^
(3/2)*d) + (b*f*Log[Cosh[c + d*x]])/((a^2 + b^2)*d^2) - (f*PolyLog[2, -E^(c
 + d*x)])/(a*d^2) + (f*PolyLog[2, E^(c + d*x)])/(a*d^2) - (b^3*f*PolyLog[2,
 -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^(3/2)*d^2) + (b^
3*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^(3
/2)*d^2) + ((e + f*x)*Sech[c + d*x])/(a*d) - (b^2*(e + f*x)*Sech[c + d*x])/
(a*(a^2 + b^2)*d) - (b*(e + f*x)*Tanh[c + d*x])/((a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6271

```
Int[ArcTanh[u_], x_Symbol] :> Simp[x*ArcTanh[u], x] - Int[SimplifyIntegrand
[(x*D[u, x])/(1 - u^2), x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\text{csch}(c+dx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{csch}(c+dx)\text{sech}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{(e+fx)\text{sech}(c+dx)}{ad} - \frac{b\int (e+ \cdots}{\cdots}$$

$$= -\frac{(e+fx)\tanh^{-1}(\cosh(c+dx))}{ad} + \frac{(e+fx)\text{sech}(c+dx)}{ad} - \frac{b\int \Big(a(e \cdots}{\cdots}$$

$$= -\frac{f\tan^{-1}(\sinh(c+dx))}{ad^2} + \frac{fx\tanh^{-1}(\cosh(c+dx))}{ad} - \frac{(e+fx)\tanh \cdots}{\cdots}$$

$$= -\frac{f\tan^{-1}(\sinh(c+dx))}{ad^2} + \frac{fx\tanh^{-1}(\cosh(c+dx))}{ad} - \frac{(e+fx)\tanh \cdots}{\cdots}$$

$$= -\frac{f\tan^{-1}(\sinh(c+dx))}{ad^2} + \frac{b^2 f\tan^{-1}(\sinh(c+dx))}{a\left(a^2+b^2\right)d^2} - \frac{2fx\tanh^{-1}\left(e \cdots\right.}{ad}$$

$$= -\frac{f\tan^{-1}(\sinh(c+dx))}{ad^2} + \frac{b^2 f\tan^{-1}(\sinh(c+dx))}{a\left(a^2+b^2\right)d^2} - \frac{2fx\tanh^{-1}\left(e \cdots\right.}{ad}$$

$$= -\frac{f\tan^{-1}(\sinh(c+dx))}{ad^2} + \frac{b^2 f\tan^{-1}(\sinh(c+dx))}{a\left(a^2+b^2\right)d^2} - \frac{2fx\tanh^{-1}\left(e \cdots\right.}{ad}$$

Mathematica [A] time = 6.50, size = 459, normalized size = 1.04

$$\frac{\text{csch}(c+dx)(a+b\sinh(c+dx))\left(\frac{d(e+fx)\text{sech}(c+dx)(a-b\sinh(c+dx))}{a^2+b^2} - \frac{2af\tan^{-1}\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)}{a^2+b^2} + \frac{bf\log(\cosh(c+dx))}{a^2+b^2} + \frac{b^3\left(2de \cdots\right.}{\cdots}\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (Csch[c + d*x]*(a + b*Sinh[c + d*x])*((-2*a*f*ArcTan[Tanh[(c + d*x)/2]])/(a
^2 + b^2) + (b*f*Log[Cosh[c + d*x]])/(a^2 + b^2) + (d*e*Log[Tanh[(c + d*x)/
2]])/a - (c*f*Log[Tanh[(c + d*x)/2]])/a + (f*((c + d*x)*(Log[1 - E^(-c - d*
x)] - Log[1 + E^(-c - d*x)]) + PolyLog[2, -E^(-c - d*x)] - PolyLog[2, E^(-c
 - d*x)]))/a + (b^3*(2*d*e*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/
Sqrt[a^2 + b^2]] - 2*c*f*ArcTanh[(a + b*Cosh[c + d*x] + b*Sinh[c + d*x])/Sq
rt[a^2 + b^2]] - f*(c + d*x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a
 - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*(Cosh[c + d*x] + Sinh[c + d*x
]))/(a + Sqrt[a^2 + b^2])] - f*PolyLog[2, (b*(Cosh[c + d*x] + Sinh[c + d*x]
))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*(Cosh[c + d*x] + Sinh[c + d*
x]))/(a + Sqrt[a^2 + b^2]))]))/(a*(a^2 + b^2)^(3/2)) + (d*(e + f*x)*Sech[c
+ d*x]*(a - b*Sinh[c + d*x]))/(a^2 + b^2)))/(d^2*(b + a*Csch[c + d*x]))
```

fricas [B] time = 0.60, size = 2176, normalized size = 4.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -(2*(a^3*b + a*b^3)*d*f*x*cosh(d*x + c)^2 + 2*(a^3*b + a*b^3)*d*f*x*sinh(d*
x + c)^2 - 2*(a^3*b + a*b^3)*d*e + (b^4*f*cosh(d*x + c)^2 + 2*b^4*f*cosh(d*
x + c)*sinh(d*x + c) + b^4*f*sinh(d*x + c)^2 + b^4*f)*sqrt((a^2 + b^2)/b^2)
*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x +
 c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^4*f*cosh(d*x + c)^2 + 2*b^4*f*c
osh(d*x + c)*sinh(d*x + c) + b^4*f*sinh(d*x + c)^2 + b^4*f)*sqrt((a^2 + b^2
)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^4*d*e - b^4*c*f + (b^4*d*
e - b^4*c*f)*cosh(d*x + c)^2 + 2*(b^4*d*e - b^4*c*f)*cosh(d*x + c)*sinh(d*x
 + c) + (b^4*d*e - b^4*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*
cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^4
*d*e - b^4*c*f + (b^4*d*e - b^4*c*f)*cosh(d*x + c)^2 + 2*(b^4*d*e - b^4*c*f
)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d*e - b^4*c*f)*sinh(d*x + c)^2)*sqrt((
a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 +
 b^2)/b^2) + 2*a) + (b^4*d*f*x + b^4*c*f + (b^4*d*f*x + b^4*c*f)*cosh(d*x +
 c)^2 + 2*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d*f*x +
b^4*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*s
inh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) -
b)/b) - (b^4*d*f*x + b^4*c*f + (b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^2 + 2*(b
^4*d*f*x + b^4*c*f)*cosh(d*x + c)*sinh(d*x + c) + (b^4*d*f*x + b^4*c*f)*sin
h(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c)
 - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*((
a^4 + a^2*b^2)*f*cosh(d*x + c)^2 + 2*(a^4 + a^2*b^2)*f*cosh(d*x + c)*sinh(d
*x + c) + (a^4 + a^2*b^2)*f*sinh(d*x + c)^2 + (a^4 + a^2*b^2)*f)*arctan(cos
```

```
h(d*x + c) + sinh(d*x + c)) - 2*((a^4 + a^2*b^2)*d*f*x + (a^4 + a^2*b^2)*d*
e)*cosh(d*x + c) - ((a^4 + 2*a^2*b^2 + b^4)*f*cosh(d*x + c)^2 + 2*(a^4 + 2*
a^2*b^2 + b^4)*f*cosh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*f*si
nh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*f)*dilog(cosh(d*x + c) + sinh(d*x +
 c)) + ((a^4 + 2*a^2*b^2 + b^4)*f*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^
4)*f*cosh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*f*sinh(d*x + c)^
2 + (a^4 + 2*a^2*b^2 + b^4)*f)*dilog(-cosh(d*x + c) - sinh(d*x + c)) - ((a^
3*b + a*b^3)*f*cosh(d*x + c)^2 + 2*(a^3*b + a*b^3)*f*cosh(d*x + c)*sinh(d*x
 + c) + (a^3*b + a*b^3)*f*sinh(d*x + c)^2 + (a^3*b + a*b^3)*f)*log(2*cosh(d
*x + c)/(cosh(d*x + c) - sinh(d*x + c))) + ((a^4 + 2*a^2*b^2 + b^4)*d*f*x +
 (a^4 + 2*a^2*b^2 + b^4)*d*e + ((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^
2*b^2 + b^4)*d*e)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4
 + 2*a^2*b^2 + b^4)*d*e)*cosh(d*x + c)*sinh(d*x + c) + ((a^4 + 2*a^2*b^2 +
b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*d*e)*sinh(d*x + c)^2)*log(cosh(d*x + c
) + sinh(d*x + c) + 1) - ((a^4 + 2*a^2*b^2 + b^4)*d*e - (a^4 + 2*a^2*b^2 +
b^4)*c*f + ((a^4 + 2*a^2*b^2 + b^4)*d*e - (a^4 + 2*a^2*b^2 + b^4)*c*f)*cosh
(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d*e - (a^4 + 2*a^2*b^2 + b^4)*c*f)
*cosh(d*x + c)*sinh(d*x + c) + ((a^4 + 2*a^2*b^2 + b^4)*d*e - (a^4 + 2*a^2*
b^2 + b^4)*c*f)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1) - (
(a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*c*f + ((a^4 + 2*a^2
*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(d*x + c)^2 + 2*((a^4
+ 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(d*x + c)*sinh(
d*x + c) + ((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*c*f)*si
nh(d*x + c)^2)*log(-cosh(d*x + c) - sinh(d*x + c) + 1) + 2*(2*(a^3*b + a*b^
3)*d*f*x*cosh(d*x + c) - (a^4 + a^2*b^2)*d*f*x - (a^4 + a^2*b^2)*d*e)*sinh(
d*x + c))/((a^5 + 2*a^3*b^2 + a*b^4)*d^2*cosh(d*x + c)^2 + 2*(a^5 + 2*a^3*b
^2 + a*b^4)*d^2*cosh(d*x + c)*sinh(d*x + c) + (a^5 + 2*a^3*b^2 + a*b^4)*d^2
*sinh(d*x + c)^2 + (a^5 + 2*a^3*b^2 + a*b^4)*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [B] time = 0.38, size = 1815, normalized size = 4.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/(a^2+b^2)^(5/2)/d^2*f*b*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2)
)*a^3-2/(a^2+b^2)^(5/2)/d^2*f*b^3*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2
)^(1/2))*a+1/d^2/(a^2+b^2)^(5/2)*a*b^3*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2
)+a)/(a+(a^2+b^2)^(1/2)))-1/d^2/(a^2+b^2)^(5/2)*a*b^3*f*dilog((-b*exp(d*x+c
)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d^2/(a^2+b^2)^(3/2)*f*b^3/a*ar
ctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+b/d*e/(a^2+b^2)^(3/2)*arcta
nh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a+1/d^2/(a^2+b^2)^(5/2)*a*b^3*
f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d^2/(a^2+b^2
)^(5/2)*b^5*f*c/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d^2/(
a^2+b^2)^(5/2)*a^3*f*b*c*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-
1/d^2/(a^2+b^2)^(3/2)*b^3*f*c/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^
(1/2))+1/d/(a^2+b^2)^(5/2)*f*b^5/a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(
a^2+b^2)^(1/2)))*x-1/d/(a^2+b^2)^(5/2)*a*b^3*f*ln((-b*exp(d*x+c)+(a^2+b^2)^
(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d/(a^2+b^2)^(5/2)*a*b^3*f*ln((b*exp(d*x+
c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2/(a^2+b^2)^(5/2)*f*b^5/a*
ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d^2/(a^2+b^2
)^(5/2)*f*b^5/a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-
1/d^2/(a^2+b^2)^(5/2)*a*b^3*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2
+b^2)^(1/2)))*c-1/d/(a^2+b^2)^(5/2)*f*b^5/a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/
2)-a)/(-a+(a^2+b^2)^(1/2)))*x+2*(f*x+e)*(a*exp(d*x+c)+b)/d/(a^2+b^2)/(1+exp
(2*d*x+2*c))-2/(a^2+b^2)/d^2*b*f*ln(exp(d*x+c))-1/d^2/(a^2+b^2)*a*f*dilog(e
xp(d*x+c)+1)-1/d^2/(a^2+b^2)*a*f*dilog(exp(d*x+c))-1/d/(a^2+b^2)*a*e*ln(exp
(d*x+c)+1)+1/d/(a^2+b^2)*a*e*ln(exp(d*x+c)-1)-b/d^2*f*c/(a^2+b^2)^(3/2)*arc
tanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a+1/d^2/(a^2+b^2)^(5/2)*f*b^
5/a*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/d^2/(a^2+
b^2)^(5/2)*f*b^5/a*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1
/2)))+1/d^2/(a^2+b^2)^(3/2)*a*f*b*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2
)^(1/2))-1/d^2/(a^2+b^2)^(5/2)*f*b^5/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^
2+b^2)^(1/2))-8/d^2/(a^2+b^2)*a*b^2*f/(4*a^2+4*b^2)*arctan(exp(d*x+c))-1/d^
2/(a^2+b^2)*b^2*f*c/a*ln(exp(d*x+c)-1)-1/d/(a^2+b^2)*b^2*f/a*ln(exp(d*x+c)+
1)*x-1/d/(a^2+b^2)^(5/2)*a^3*b*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)
^(1/2))+1/d/(a^2+b^2)^(5/2)*b^5*e/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b
^2)^(1/2))+1/d/(a^2+b^2)^(3/2)*b^3*e/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^
2+b^2)^(1/2))+4/d^2/(a^2+b^2)*a^2*b*f/(4*a^2+4*b^2)*ln(1+exp(2*d*x+2*c))-1/
d/(a^2+b^2)*b^2*e/a*ln(exp(d*x+c)+1)+1/d/(a^2+b^2)*b^2*e/a*ln(exp(d*x+c)-1)
-1/d^2/(a^2+b^2)*b^2*f/a*dilog(exp(d*x+c)+1)-1/d^2/(a^2+b^2)*b^2*f*dilog(ex
p(d*x+c))/a-1/d^2/(a^2+b^2)*a*f*c*ln(exp(d*x+c)-1)-8/d^2/(a^2+b^2)*a^3*f/(4
*a^2+4*b^2)*arctan(exp(d*x+c))+4/d^2/(a^2+b^2)*f*b^3/(4*a^2+4*b^2)*ln(1+exp
(2*d*x+2*c))-1/d/(a^2+b^2)*ln(exp(d*x+c)+1)*a*f*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(\frac{b^3\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\left(a^3+ab^2\right)\sqrt{a^2+b^2}\,d}-\frac{2\left(ae^{(-dx-c)}-b\right)}{\left(a^2+b^2+\left(a^2+b^2\right)e^{(-2\,dx-2\,c)}\right)d}+\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}-\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}\right)e-\left(8\,b^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -(b^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt
(a^2 + b^2)))/((a^3 + a*b^2)*sqrt(a^2 + b^2)*d) - 2*(a*e^(-d*x - c) - b)/((
a^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d) + log(e^(-d*x - c) + 1)/(a*d)
- log(e^(-d*x - c) - 1)/(a*d))*e - (8*b^3*integrate(-1/4*x*e^(d*x + c)/(a^3
*b + a*b^3 - (a^3*b*e^(2*c) + a*b^3*e^(2*c))*e^(2*d*x) - 2*(a^4*e^c + a^2*b
^2*e^c)*e^(d*x)), x) - 2*(a*x*e^(d*x + c) + b*x)/(a^2*d + b^2*d + (a^2*d*e^
(2*c) + b^2*d*e^(2*c))*e^(2*d*x)) + 2*b*x/((a^2 + b^2)*d) + 2*a*arctan(e^(d
*x + c))/((a^2 + b^2)*d^2) - b*log(e^(2*d*x + 2*c) + 1)/((a^2 + b^2)*d^2) -
 8*integrate(1/8*x/(a*e^(d*x + c) + a), x) - 8*integrate(1/8*x/(a*e^(d*x +
c) - a), x))*f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{\cosh\left(c+d\,x\right)^2\,\sinh\left(c+d\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)^2*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)^2*sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.443 $\int \frac{\text{csch}(c+dx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=113

$$-\frac{b\text{sech}(c+dx)(a\sinh(c+dx)+b)}{ad\left(a^2+b^2\right)}+\frac{2b^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{ad\left(a^2+b^2\right)^{3/2}}+\frac{\text{sech}(c+dx)}{ad}-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}$$

```
[Out] -arctanh(cosh(d*x+c))/a/d+2*b^3*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)
^(1/2))/a/(a^2+b^2)^(3/2)/d+sech(d*x+c)/a/d-b*sech(d*x+c)*(b+a*sinh(d*x+c))
/a/(a^2+b^2)/d
```

Rubi [A] time = 0.26, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2898, 2622, 321, 207, 2696, 12, 2660, 618, 204}

$$\frac{2b^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{ad\left(a^2+b^2\right)^{3/2}}-\frac{b\text{sech}(c+dx)(a\sinh(c+dx)+b)}{ad\left(a^2+b^2\right)}+\frac{\text{sech}(c+dx)}{ad}-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Csch[c + d*x]*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(ArcTanh[Cosh[c + d*x]]/(a*d)) + (2*b^3*ArcTanh[(b - a*Tanh[(c + d*x)/2])/
Sqrt[a^2 + b^2]])/(a*(a^2 + b^2)^(3/2)*d) + Sech[c + d*x]/(a*d) - (b*Sech[c
 + d*x]*(b + a*Sinh[c + d*x]))/(a*(a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
```

```
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2696

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_), x_Symbol] :> Simp[((g*Cos[e + f*x])^(p + 1)*(a + b*Sin[e + f*x])
^(m + 1)*(b - a*Sin[e + f*x]))/(f*g*(a^2 - b^2)*(p + 1)), x] + Dist[1/(g^2*
(a^2 - b^2)*(p + 1)), Int[(g*Cos[e + f*x])^(p + 2)*(a + b*Sin[e + f*x])^m*(
a^2*(p + 2) - b^2*(m + p + 2) + a*b*(m + p + 3)*Sin[e + f*x]), x], x] /; Fr
eeQ[{a, b, e, f, g, m}, x] && NeQ[a^2 - b^2, 0] && LtQ[p, -1] && IntegersQ[
2*m, 2*p]
```

Rule 2898

```
Int[((cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*sin[(e_.) + (f_.)*(x_)]^(n_))/((a
_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Symbol] :> Int[ExpandTrig[(g*cos[e +
 f*x])^p, sin[e + f*x]^n/(a + b*sin[e + f*x]), x], x] /; FreeQ[{a, b, e, f,
```

```
g, p}, x] && NeQ[a^2 - b^2, 0] && IntegerQ[n] && (LtQ[n, 0] || IGtQ[p + 1/
2, 0])
```

Rubi steps

$$\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = i\int\left(-\frac{i\operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)}{a}+\frac{ib\operatorname{sech}^2(c+dx)}{a(a+b\sinh(c+dx))}\right)dx$$

$$=\frac{\int \operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)\,dx}{a}-\frac{b\int\frac{\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$=-\frac{b\operatorname{sech}(c+dx)(b+a\sinh(c+dx))}{a\left(a^2+b^2\right)d}-\frac{b\int\frac{b^2}{a+b\sinh(c+dx)}\,dx}{a\left(a^2+b^2\right)}+\frac{\operatorname{Subst}\left(\int\frac{x^2}{-1+x^2}\,d\right.}{}$$

$$=\frac{\operatorname{sech}(c+dx)}{ad}-\frac{b\operatorname{sech}(c+dx)(b+a\sinh(c+dx))}{a\left(a^2+b^2\right)d}-\frac{b^3\int\frac{1}{a+b\sinh(c+dx)}\,dx}{a\left(a^2+b^2\right)}+$$

$$=-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{\operatorname{sech}(c+dx)}{ad}-\frac{b\operatorname{sech}(c+dx)(b+a\sinh(c+dx))}{a\left(a^2+b^2\right)d}$$

$$=-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{\operatorname{sech}(c+dx)}{ad}-\frac{b\operatorname{sech}(c+dx)(b+a\sinh(c+dx))}{a\left(a^2+b^2\right)d}$$

$$=-\frac{\tanh^{-1}(\cosh(c+dx))}{ad}+\frac{2b^3\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a\left(a^2+b^2\right)^{3/2}d}+\frac{\operatorname{sech}(c+dx)}{ad}-$$

Mathematica [A] time = 0.22, size = 171, normalized size = 1.51

$$-\frac{-ab\sqrt{-a^2-b^2}\tanh(c+dx)+a^2\sqrt{-a^2-b^2}\operatorname{sech}(c+dx)+b^2\sqrt{-a^2-b^2}\log\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)+a^2\sqrt{-a^2-b^2}}{ad\left(-a^2-b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Csch[c + d*x]*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((-2*b^3*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]] + a^2*Sqrt[-a^
2 - b^2]*Log[Tanh[(c + d*x)/2]] + b^2*Sqrt[-a^2 - b^2]*Log[Tanh[(c + d*x)/2
```

```
]] + a^2*Sqrt[-a^2 - b^2]*Sech[c + d*x] - a*b*Sqrt[-a^2 - b^2]*Tanh[c + d*x
])/(a*(-a^2 - b^2)^(3/2)*d))
```

fricas [B] time = 0.68, size = 581, normalized size = 5.14

$$\frac{2\,a^3b + 2\,ab^3 + \left(b^3\cosh\left(dx+c\right)^2 + 2\,b^3\cosh\left(dx+c\right)\sinh\left(dx+c\right) + b^3\sinh\left(dx+c\right)^2 + b^3\right)\sqrt{a^2+b^2}\,\log\left(\frac{b^2\,\mathrm{co}}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (2*a^3*b + 2*a*b^3 + (b^3*cosh(d*x + c)^2 + 2*b^3*cosh(d*x + c)*sinh(d*x +
c) + b^3*sinh(d*x + c)^2 + b^3)*sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 +
b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x +
 c) + a*b)*sinh(d*x + c) + 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x
+ c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(
b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) + 2*(a^4 + a^2*b^2)*cosh(d*x + c)
- (a^4 + 2*a^2*b^2 + b^4 + (a^4 + 2*a^2*b^2 + b^4)*cosh(d*x + c)^2 + 2*(a^4
 + 2*a^2*b^2 + b^4)*cosh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*s
inh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) + 1) + (a^4 + 2*a^2*b^2 +
 b^4 + (a^4 + 2*a^2*b^2 + b^4)*cosh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2 + b^4)*
cosh(d*x + c)*sinh(d*x + c) + (a^4 + 2*a^2*b^2 + b^4)*sinh(d*x + c)^2)*log(
cosh(d*x + c) + sinh(d*x + c) - 1) + 2*(a^4 + a^2*b^2)*sinh(d*x + c))/((a^5
 + 2*a^3*b^2 + a*b^4)*d*cosh(d*x + c)^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d*cos
h(d*x + c)*sinh(d*x + c) + (a^5 + 2*a^3*b^2 + a*b^4)*d*sinh(d*x + c)^2 + (a
^5 + 2*a^3*b^2 + a*b^4)*d)
```

giac [A] time = 4.10, size = 146, normalized size = 1.29

$$-\frac{\frac{b^3\log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\,\sqrt{a^2+b^2}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\,\sqrt{a^2+b^2}\right|}\right)}{\left(a^3+ab^2\right)\sqrt{a^2+b^2}} + \frac{\log\left(e^{(dx+c)}+1\right)}{a} - \frac{\log\left(\left|e^{(dx+c)}-1\right|\right)}{a} - \frac{2\left(ae^{(dx+c)}+b\right)}{\left(a^2+b^2\right)\left(e^{(2\,dx+2\,c)}+1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -(b^3*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d*x + c
) + 2*a + 2*sqrt(a^2 + b^2)))/((a^3 + a*b^2)*sqrt(a^2 + b^2)) + log(e^(d*x
+ c) + 1)/a - log(abs(e^(d*x + c) - 1))/a - 2*(a*e^(d*x + c) + b)/((a^2 + b
^2)*(e^(2*d*x + 2*c) + 1)))/d
```

maple [A] time = 0.00, size = 136, normalized size = 1.20

$$-\frac{2b^{3}\operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^{2}+b^{2}}}\right)}{da\left(a^{2}+b^{2}\right)^{\frac{3}{2}}}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{da}-\frac{2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b}{d\left(a^{2}+b^{2}\right)\left(\tanh^{2}\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{2a}{d\left(a^{2}+b^{2}\right)\left(\tanh^{2}\left(\frac{dx}{2}+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -2/d/a*b^3/(a^2+b^2)^(3/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b
^2)^(1/2))+1/d/a*ln(tanh(1/2*d*x+1/2*c))-2/d/(a^2+b^2)/(tanh(1/2*d*x+1/2*c)
^2+1)*tanh(1/2*d*x+1/2*c)*b+2/d/(a^2+b^2)/(tanh(1/2*d*x+1/2*c)^2+1)*a
```

maxima [A] time = 0.40, size = 168, normalized size = 1.49

$$-\frac{b^{3}\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{\left(a^{3}+ab^{2}\right)\sqrt{a^{2}+b^{2}}\,d}+\frac{2\left(ae^{(-dx-c)}-b\right)}{\left(a^{2}+b^{2}+\left(a^{2}+b^{2}\right)e^{(-2\,dx-2\,c)}\right)d}-\frac{\log\left(e^{(-dx-c)}+1\right)}{ad}+\frac{\log\left(e^{(-dx-c)}-1\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -b^3*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(
a^2 + b^2)))/((a^3 + a*b^2)*sqrt(a^2 + b^2)*d) + 2*(a*e^(-d*x - c) - b)/((a
^2 + b^2 + (a^2 + b^2)*e^(-2*d*x - 2*c))*d) - log(e^(-d*x - c) + 1)/(a*d) +
 log(e^(-d*x - c) - 1)/(a*d)
```

mupad [B] time = 4.82, size = 668, normalized size = 5.91

$$\frac{\frac{2\,b}{d\,\left(a^{2}+b^{2}\right)}+\frac{2\,a\,\mathrm{e}^{c+d\,x}}{d\,\left(a^{2}+b^{2}\right)}}{\mathrm{e}^{2\,c+2\,d\,x}+1}+\frac{\ln\left(\mathrm{e}^{c+d\,x}-1\right)}{a\,d}-\frac{\ln\left(\mathrm{e}^{c+d\,x}+1\right)}{a\,d}-\frac{b^{3}\,\ln\left(\frac{32\,\left(-4\,\mathrm{e}^{c+d\,x}\,a^{3}+2\,a^{2}\,b-5\,\mathrm{e}^{c+d\,x}\,a\,b^{2}+2\,b^{3}\right)}{b^{2}\,\left(a^{2}+b^{2}\right)^{2}}-\frac{128\,a^{10}\,\mathrm{e}^{c+d\,x}-64\,a^{9}\,b-96}{\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^2*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] ((2*b)/(d*(a^2 + b^2)) + (2*a*exp(c + d*x))/(d*(a^2 + b^2)))/(exp(2*c + 2*d
*x) + 1) + log(exp(c + d*x) - 1)/(a*d) - log(exp(c + d*x) + 1)/(a*d) - (b^3
*log((32*(2*a^2*b - 4*a^3*exp(c + d*x) + 2*b^3 - 5*a*b^2*exp(c + d*x)))/(b^
```

```
2*(a^2 + b^2)^2) - (128*a^10*exp(c + d*x) - 64*a^9*b - 96*a*b^9 + 64*b^7*((
a^2 + b^2)^3)^(1/2) - 384*a^3*b^7 - 512*a^5*b^5 - 288*a^7*b^3 + 288*a^2*b^8
*exp(c + d*x) + 960*a^4*b^6*exp(c + d*x) + 1152*a^6*b^4*exp(c + d*x) + 608*
a^8*b^2*exp(c + d*x) - 64*a*b^6*exp(c + d*x)*((a^2 + b^2)^3)^(1/2) + 32*a^3
*b^4*exp(c + d*x)*((a^2 + b^2)^3)^(1/2))/(b^2*((a^2 + b^2)^3)^(3/2)*(a^2 +
b^2)))*((a^2 + b^2)^3)^(1/2))/(a^7*d + 3*a^3*b^4*d + 3*a^5*b^2*d + a*b^6*d)
 + (b^3*log((32*(2*a^2*b - 4*a^3*exp(c + d*x) + 2*b^3 - 5*a*b^2*exp(c + d*x
)))/(b^2*(a^2 + b^2)^2) - (96*a*b^9 + 64*a^9*b - 128*a^10*exp(c + d*x) + 64
*b^7*((a^2 + b^2)^3)^(1/2) + 384*a^3*b^7 + 512*a^5*b^5 + 288*a^7*b^3 - 288*
a^2*b^8*exp(c + d*x) - 960*a^4*b^6*exp(c + d*x) - 1152*a^6*b^4*exp(c + d*x)
 - 608*a^8*b^2*exp(c + d*x) - 64*a*b^6*exp(c + d*x)*((a^2 + b^2)^3)^(1/2) +
 32*a^3*b^4*exp(c + d*x)*((a^2 + b^2)^3)^(1/2))/(b^2*((a^2 + b^2)^3)^(3/2)*
(a^2 + b^2)))*((a^2 + b^2)^3)^(1/2))/(a^7*d + 3*a^3*b^4*d + 3*a^5*b^2*d + a
*b^6*d)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.444 $\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\operatorname{Int}\left(\frac{\operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Csch[c + d*x]*Sech[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Csch[c + d*x]*Sech[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Csch[c + d*x]*Sech[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 1.24, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(dx+c)\operatorname{sech}(dx+c)^2}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(csch(d*x + c)*sech(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 2.12, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx+c)\operatorname{sech}(dx+c)^{2}}{\left(fx+e\right)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-8\,b^{3}\int -\frac{e^{(dx+c)}}{4\left(a^{3}be+ab^{3}e+\left(a^{3}bf+ab^{3}f\right)x-\left(a^{3}bee^{(2\,c)}+ab^{3}ee^{(2\,c)}+\left(a^{3}bfe^{(2\,c)}+ab^{3}fe^{(2\,c)}\right)x\right)e^{(2\,dx)}-2\left(a^{4}ee^{c}+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -8*b^3*integrate(-1/4*e^(d*x + c)/(a^3*b*e + a*b^3*e + (a^3*b*f + a*b^3*f)*
x - (a^3*b*e*e^(2*c) + a*b^3*e*e^(2*c) + (a^3*b*f*e^(2*c) + a*b^3*f*e^(2*c)
)*x)*e^(2*d*x) - 2*(a^4*e*e^c + a^2*b^2*e*e^c + (a^4*f*e^c + a^2*b^2*f*e^c)
*x)*e^(d*x)), x) + 2*(a*e^(d*x + c) + b)/(a^2*d*e + b^2*d*e + (a^2*d*f + b^
2*d*f)*x + (a^2*d*e*e^(2*c) + b^2*d*e*e^(2*c) + (a^2*d*f*e^(2*c) + b^2*d*f*
e^(2*c))*x)*e^(2*d*x)) + 8*integrate(1/4*(a*f*e^(d*x + c) + b*f)/(a^2*d*e^2
```

```
 + b^2*d*e^2 + (a^2*d*f^2 + b^2*d*f^2)*x^2 + 2*(a^2*d*e*f + b^2*d*e*f)*x +
(a^2*d*e^2*e^(2*c) + b^2*d*e^2*e^(2*c) + (a^2*d*f^2*e^(2*c) + b^2*d*f^2*e^(
2*c))*x^2 + 2*(a^2*d*e*f*e^(2*c) + b^2*d*e*f*e^(2*c))*x)*e^(2*d*x)), x) + 8
*integrate(1/8/(a*f*x + a*e + (a*f*x*e^c + a*e*e^c)*e^(d*x)), x) + 8*integr
ate(-1/8/(a*f*x + a*e - (a*f*x*e^c + a*e*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh\left(c+d\,x\right)^2\,\sinh\left(c+d\,x\right)\,\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^2*sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)^2*sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.445 $\int \frac{(e+fx)^2 \mathbf{csch}(c+dx)\mathbf{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1185

$$-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^4}{a\left(a^2+b^2\right)^2 d}-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^4}{a\left(a^2+b^2\right)^2 d}+\frac{(e+fx)^2\log\left(1+e^{2(c+dx)}\right)b^4}{a\left(a^2+b^2\right)^2 d}-\frac{2f(e+fx)\mathrm{Li}}{a\left(a^2\right.}$$

```
[Out] b^4*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/a/(a^2+b^2)^2/d-b^2*f^2*ln(cosh(d*x+c))/
a/(a^2+b^2)/d^3-b^4*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2
+b^2)^2/d-b^4*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)^
2/d+2*b^4*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a^2+b^2)^2/d^
3+2*b^4*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2)^2/d^3-
I*b*f^2*polylog(3,-I*exp(d*x+c))/(a^2+b^2)/d^3+I*b*f^2*polylog(3,I*exp(d*x+
c))/(a^2+b^2)/d^3-1/2*b^4*f^2*polylog(3,-exp(2*d*x+2*c))/a/(a^2+b^2)^2/d^3-
b*f*(f*x+e)*sech(d*x+c)/(a^2+b^2)/d^2-1/2*b^2*(f*x+e)^2*sech(d*x+c)^2/a/(a^
2+b^2)/d-1/2*b*(f*x+e)^2*sech(d*x+c)*tanh(d*x+c)/(a^2+b^2)/d-2*I*b^3*f^2*po
lylog(3,-I*exp(d*x+c))/(a^2+b^2)^2/d^3+b^2*f*(f*x+e)*tanh(d*x+c)/a/(a^2+b^2
)/d^2-2*I*b^3*f*(f*x+e)*polylog(2,I*exp(d*x+c))/(a^2+b^2)^2/d^2-I*b*f*(f*x+
e)*polylog(2,I*exp(d*x+c))/(a^2+b^2)/d^2+I*b*f*(f*x+e)*polylog(2,-I*exp(d*x
+c))/(a^2+b^2)/d^2+b^4*f*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/a/(a^2+b^2)^2/d
^2+2*I*b^3*f^2*polylog(3,I*exp(d*x+c))/(a^2+b^2)^2/d^3-2*b^3*(f*x+e)^2*arct
an(exp(d*x+c))/(a^2+b^2)^2/d+b*f^2*arctan(sinh(d*x+c))/(a^2+b^2)/d^3-b*(f*x
+e)^2*arctan(exp(d*x+c))/(a^2+b^2)/d-f*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/a
/d^2+f*(f*x+e)*polylog(2,exp(2*d*x+2*c))/a/d^2+2*I*b^3*f*(f*x+e)*polylog(2,
-I*exp(d*x+c))/(a^2+b^2)^2/d^2+1/2*f^2*polylog(3,-exp(2*d*x+2*c))/a/d^3-1/2
*(f*x+e)^2*tanh(d*x+c)^2/a/d-1/2*f^2*polylog(3,exp(2*d*x+2*c))/a/d^3-2*(f*x
+e)^2*arctanh(exp(2*d*x+2*c))/a/d-f*(f*x+e)*tanh(d*x+c)/a/d^2+e*f*x/a/d+1/2
*f^2*x^2/a/d-2*b^4*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a
/(a^2+b^2)^2/d^2-2*b^4*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)
))/a/(a^2+b^2)^2/d^2+f^2*ln(cosh(d*x+c))/a/d^3
```

Rubi [A] time = 2.22, antiderivative size = 1185, normalized size of antiderivative = 1.00, number of steps used = 57, number of rules used = 23, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.676, Rules used = {5589, 2620, 14, 5462, 6741, 12, 6742, 2551, 4182, 2531, 2282, 6589, 3720, 3475, 5573, 5561, 2190, 4180, 3718, 4186, 3770, 5451, 4184}

$$-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^4}{a\left(a^2+b^2\right)^2 d}-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^4}{a\left(a^2+b^2\right)^2 d}+\frac{(e+fx)^2\log\left(1+e^{2(c+dx)}\right)b^4}{a\left(a^2+b^2\right)^2 d}-\frac{2f(e+fx)\mathrm{Po}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e*f*x)/(a*d) + (f^2*x^2)/(2*a*d) - (2*b^3*(e + f*x)^2*ArcTan[E^(c + d*x)])
/((a^2 + b^2)^2*d) - (b*(e + f*x)^2*ArcTan[E^(c + d*x)])/((a^2 + b^2)*d) +
(b*f^2*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)*d^3) - (2*(e + f*x)^2*ArcTanh[E^
(2*c + 2*d*x)])/(a*d) - (b^4*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[
a^2 + b^2])])/(a*(a^2 + b^2)^2*d) - (b^4*(e + f*x)^2*Log[1 + (b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2])])/(a*(a^2 + b^2)^2*d) + (b^4*(e + f*x)^2*Log[1 + E^
(2*(c + d*x))])/(a*(a^2 + b^2)^2*d) + (f^2*Log[Cosh[c + d*x]])/(a*d^3) - (b
^2*f^2*Log[Cosh[c + d*x]])/(a*(a^2 + b^2)*d^3) + ((2*I)*b^3*f*(e + f*x)*Pol
yLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)^2*d^2) + (I*b*f*(e + f*x)*PolyLog[2
, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^2) - ((2*I)*b^3*f*(e + f*x)*PolyLog[2,
I*E^(c + d*x)])/((a^2 + b^2)^2*d^2) - (I*b*f*(e + f*x)*PolyLog[2, I*E^(c +
d*x)])/((a^2 + b^2)*d^2) - (2*b^4*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/
(a - Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^2*d^2) - (2*b^4*f*(e + f*x)*PolyLog
[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^2*d^2) + (b^4
*f*(e + f*x)*PolyLog[2, -E^(2*(c + d*x))])/(a*(a^2 + b^2)^2*d^2) - (f*(e +
f*x)*PolyLog[2, -E^(2*c + 2*d*x)])/(a*d^2) + (f*(e + f*x)*PolyLog[2, E^(2*c
 + 2*d*x)])/(a*d^2) - ((2*I)*b^3*f^2*PolyLog[3, (-I)*E^(c + d*x)])/((a^2 +
b^2)^2*d^3) - (I*b*f^2*PolyLog[3, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^3) + ((
2*I)*b^3*f^2*PolyLog[3, I*E^(c + d*x)])/((a^2 + b^2)^2*d^3) + (I*b*f^2*Poly
Log[3, I*E^(c + d*x)])/((a^2 + b^2)*d^3) + (2*b^4*f^2*PolyLog[3, -((b*E^(c
+ d*x))/(a - Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^2*d^3) + (2*b^4*f^2*PolyLog
[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^2*d^3) - (b^4
*f^2*PolyLog[3, -E^(2*(c + d*x))])/(2*a*(a^2 + b^2)^2*d^3) + (f^2*PolyLog[3
, -E^(2*c + 2*d*x)])/(2*a*d^3) - (f^2*PolyLog[3, E^(2*c + 2*d*x)])/(2*a*d^3
) - (b*f*(e + f*x)*Sech[c + d*x])/((a^2 + b^2)*d^2) - (b^2*(e + f*x)^2*Sech
[c + d*x]^2)/(2*a*(a^2 + b^2)*d) - (f*(e + f*x)*Tanh[c + d*x])/(a*d^2) + (b
^2*f*(e + f*x)*Tanh[c + d*x])/(a*(a^2 + b^2)*d^2) - (b*(e + f*x)^2*Sech[c +
 d*x]*Tanh[c + d*x])/(2*(a^2 + b^2)*d) - ((e + f*x)^2*Tanh[c + d*x]^2)/(2*a
*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
```

```
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2551

```
Int[Log[u_]*((a_.) + (b_.)*(x_))^(m_.), x_Symbol] :> Simp[((a + b*x)^(m + 1
)*Log[u])/(b*(m + 1)), x] - Dist[1/(b*(m + 1)), Int[SimplifyIntegrand[((a +
 b*x)^(m + 1)*D[u, x])/u, x], x], x] /; FreeQ[{a, b, m}, x] && InverseFunct
ionFreeQ[u, x] && NeQ[m, -1]
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
```

```
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
```

```
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{csch}(c+dx)\text{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{csch}(c+dx)\text{sech}^3(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\text{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{(e+fx)^2\log(\tanh(c+dx))}{ad} - \frac{(e+fx)^2\tanh^2(c+dx)}{2ad} - \frac{b\int (e+f$$

$$= \frac{(e+fx)^2\log(\tanh(c+dx))}{ad} - \frac{(e+fx)^2\tanh^2(c+dx)}{2ad} - \frac{b^3\int (e+$$

$$= \frac{b^4(e+fx)^3}{3a\left(a^2+b^2\right)^2 f} + \frac{(e+fx)^2\log(\tanh(c+dx))}{ad} - \frac{(e+fx)^2\tanh^2(c$$

$$= \frac{b^4(e+fx)^3}{3a\left(a^2+b^2\right)^2 f} - \frac{b^4(e+fx)^2\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\left(a^2+b^2\right)^2 d} - \frac{b^4(e+fx)^2\log}{a\left(a^2-\right.}$$

$$= -\frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{bf^2\tan^{-}}{(a^2}$$

$$= -\frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)d} + \frac{bf^2\tan^{-}}{(a^2}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{\left(a^2+b^2\right)d}$$

Mathematica [B] time = 32.58, size = 3806, normalized size = 3.21

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/3*(E^(2*c)*((2*(e + f*x)^3)/(E^(2*c)*f) - (3*(1 - E^(-2*c))*(e + f*x)^2*
Log[1 - E^(-c - d*x)])/d - (3*(1 - E^(-2*c))*(e + f*x)^2*Log[1 + E^(-c - d*
x)])/d + (6*(-1 + E^(2*c))*f*(d*(e + f*x)*PolyLog[2, -E^(-c - d*x)] + f*Pol
yLog[3, -E^(-c - d*x)]))/(d^3*E^(2*c)) + (6*(-1 + E^(2*c))*f*(d*(e + f*x)*P
olyLog[2, E^(-c - d*x)] + f*PolyLog[3, E^(-c - d*x)]))/(d^3*E^(2*c))))/(a*(
-1 + E^(2*c))) - (-12*a^3*d^3*e^2*E^(2*c)*x - 24*a*b^2*d^3*e^2*E^(2*c)*x +
12*a^3*d*E^(2*c)*f^2*x + 12*a*b^2*d*E^(2*c)*f^2*x - 12*a^3*d^3*e*E^(2*c)*f*
x^2 - 24*a*b^2*d^3*e*E^(2*c)*f*x^2 - 4*a^3*d^3*E^(2*c)*f^2*x^3 - 8*a*b^2*d^
3*E^(2*c)*f^2*x^3 + 6*a^2*b*d^2*e^2*ArcTan[E^(c + d*x)] + 18*b^3*d^2*e^2*Ar
cTan[E^(c + d*x)] + 6*a^2*b*d^2*e^2*E^(2*c)*ArcTan[E^(c + d*x)] + 18*b^3*d^
2*e^2*E^(2*c)*ArcTan[E^(c + d*x)] - 12*a^2*b*f^2*ArcTan[E^(c + d*x)] - 12*b
^3*f^2*ArcTan[E^(c + d*x)] - 12*a^2*b*E^(2*c)*f^2*ArcTan[E^(c + d*x)] - 12*
b^3*E^(2*c)*f^2*ArcTan[E^(c + d*x)] + (6*I)*a^2*b*d^2*e*f*x*Log[1 - I*E^(c
+ d*x)] + (18*I)*b^3*d^2*e*f*x*Log[1 - I*E^(c + d*x)] + (6*I)*a^2*b*d^2*e*E
^(2*c)*f*x*Log[1 - I*E^(c + d*x)] + (18*I)*b^3*d^2*e*E^(2*c)*f*x*Log[1 - I*
E^(c + d*x)] + (3*I)*a^2*b*d^2*f^2*x^2*Log[1 - I*E^(c + d*x)] + (9*I)*b^3*d
^2*f^2*x^2*Log[1 - I*E^(c + d*x)] + (3*I)*a^2*b*d^2*E^(2*c)*f^2*x^2*Log[1 -
 I*E^(c + d*x)] + (9*I)*b^3*d^2*E^(2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] - (6
*I)*a^2*b*d^2*e*f*x*Log[1 + I*E^(c + d*x)] - (18*I)*b^3*d^2*e*f*x*Log[1 + I
*E^(c + d*x)] - (6*I)*a^2*b*d^2*e*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] - (18*
I)*b^3*d^2*e*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] - (3*I)*a^2*b*d^2*f^2*x^2*L
og[1 + I*E^(c + d*x)] - (9*I)*b^3*d^2*f^2*x^2*Log[1 + I*E^(c + d*x)] - (3*I
)*a^2*b*d^2*E^(2*c)*f^2*x^2*Log[1 + I*E^(c + d*x)] - (9*I)*b^3*d^2*E^(2*c)*
f^2*x^2*Log[1 + I*E^(c + d*x)] + 6*a^3*d^2*e^2*Log[1 + E^(2*(c + d*x))] + 1
2*a*b^2*d^2*e^2*Log[1 + E^(2*(c + d*x))] + 6*a^3*d^2*e^2*E^(2*c)*Log[1 + E^
(2*(c + d*x))] + 12*a*b^2*d^2*e^2*E^(2*c)*Log[1 + E^(2*(c + d*x))] - 6*a^3*
f^2*Log[1 + E^(2*(c + d*x))] - 6*a*b^2*f^2*Log[1 + E^(2*(c + d*x))] - 6*a^3
*E^(2*c)*f^2*Log[1 + E^(2*(c + d*x))] - 6*a*b^2*E^(2*c)*f^2*Log[1 + E^(2*(c
 + d*x))] + 12*a^3*d^2*e*f*x*Log[1 + E^(2*(c + d*x))] + 24*a*b^2*d^2*e*f*x*
Log[1 + E^(2*(c + d*x))] + 12*a^3*d^2*e*E^(2*c)*f*x*Log[1 + E^(2*(c + d*x))
] + 24*a*b^2*d^2*e*E^(2*c)*f*x*Log[1 + E^(2*(c + d*x))] + 6*a^3*d^2*f^2*x^2
*Log[1 + E^(2*(c + d*x))] + 12*a*b^2*d^2*f^2*x^2*Log[1 + E^(2*(c + d*x))] +
 6*a^3*d^2*E^(2*c)*f^2*x^2*Log[1 + E^(2*(c + d*x))] + 12*a*b^2*d^2*E^(2*c)*
f^2*x^2*Log[1 + E^(2*(c + d*x))] - (6*I)*b*(a^2 + 3*b^2)*d*(1 + E^(2*c))*f*
(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)] + (6*I)*b*(a^2 + 3*b^2)*d*(1 + E^(2*
c))*f*(e + f*x)*PolyLog[2, I*E^(c + d*x)] + 6*a^3*d*e*f*PolyLog[2, -E^(2*(c
```

+ d*x))] + 12*a*b^2*d*e*f*PolyLog[2, -E^(2*(c + d*x))] + 6*a^3*d*e*E^(2*c) *f*PolyLog[2, -E^(2*(c + d*x))] + 12*a*b^2*d*e*E^(2*c)*f*PolyLog[2, -E^(2*(c + d*x))] + 6*a^3*d*f^2*x*PolyLog[2, -E^(2*(c + d*x))] + 12*a*b^2*d*f^2*x* PolyLog[2, -E^(2*(c + d*x))] + 6*a^3*d*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(c + d*x))] + 12*a*b^2*d*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(c + d*x))] + (6*I)*a^2* b*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (18*I)*b^3*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (6*I)*a^2*b*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (18*I)*b^3*E ^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] - (6*I)*a^2*b*f^2*PolyLog[3, I*E^(c + d*x)] - (18*I)*b^3*f^2*PolyLog[3, I*E^(c + d*x)] - (6*I)*a^2*b*E^(2*c)*f ^2*PolyLog[3, I*E^(c + d*x)] - (18*I)*b^3*E^(2*c)*f^2*PolyLog[3, I*E^(c + d *x)] - 3*a^3*f^2*PolyLog[3, -E^(2*(c + d*x))] - 6*a*b^2*f^2*PolyLog[3, -E^(2*(c + d*x))] - 3*a^3*E^(2*c)*f^2*PolyLog[3, -E^(2*(c + d*x))] - 6*a*b^2*E^ (2*c)*f^2*PolyLog[3, -E^(2*(c + d*x))])/(6*(a^2 + b^2)^2*d^3*(1 + E^(2*c))) + (b^4*(6*d^3*e^2*E^(2*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*x^ 3 + 3*d^2*e^2*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^(2 *c)*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b*E ^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Lo g[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^ 2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^ (2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^ 2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, - ((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E ^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^ 2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^ c + Sqrt[(a^2 + b^2)*E^(2*c)]))]))/(3*a*(a^2 + b^2)^2*d^3*(-1 + E^(2*c))) + (Csch[c]*Sech[c]*Sech[c + d*x]^2*(-6*a^3*e*f - 6*a*b^2*e*f + 12*a^3*d^2*e^ 2*x + 24*a*b^2*d^2*e^2*x - 6*a^3*f^2*x - 6*a*b^2*f^2*x + 12*a^3*d^2*e*f*x^2 + 24*a*b^2*d^2*e*f*x^2 + 4*a^3*d^2*f^2*x^3 + 8*a*b^2*d^2*f^2*x^3 + 6*a^3*e *f*Cosh[2*c] + 6*a*b^2*e*f*Cosh[2*c] + 6*a^3*f^2*x*Cosh[2*c] + 6*a*b^2*f^2* x*Cosh[2*c] + 6*a^3*e*f*Cosh[2*d*x] + 6*a*b^2*e*f*Cosh[2*d*x] + 6*a^3*f^2*x *Cosh[2*d*x] + 6*a*b^2*f^2*x*Cosh[2*d*x] + 3*a^2*b*d*e^2*Cosh[c - d*x] + 3* b^3*d*e^2*Cosh[c - d*x] + 6*a^2*b*d*e*f*x*Cosh[c - d*x] + 6*b^3*d*e*f*x*Cos h[c - d*x] + 3*a^2*b*d*f^2*x^2*Cosh[c - d*x] + 3*b^3*d*f^2*x^2*Cosh[c - d*x] - 3*a^2*b*d*e^2*Cosh[3*c + d*x] - 3*b^3*d*e^2*Cosh[3*c + d*x] - 6*a^2*b*d *e*f*x*Cosh[3*c + d*x] - 6*b^3*d*e*f*x*Cosh[3*c + d*x] - 3*a^2*b*d*f^2*x^2* Cosh[3*c + d*x] - 3*b^3*d*f^2*x^2*Cosh[3*c + d*x] - 6*a^3*e*f*Cosh[2*c + 2* d*x] - 6*a*b^2*e*f*Cosh[2*c + 2*d*x] + 12*a^3*d^2*e^2*x*Cosh[2*c + 2*d*x] + 24*a*b^2*d^2*e^2*x*Cosh[2*c + 2*d*x] - 6*a^3*f^2*x*Cosh[2*c + 2*d*x] - 6*a

```
*b^2*f^2*x*Cosh[2*c + 2*d*x] + 12*a^3*d^2*e*f*x^2*Cosh[2*c + 2*d*x] + 24*a*
b^2*d^2*e*f*x^2*Cosh[2*c + 2*d*x] + 4*a^3*d^2*f^2*x^3*Cosh[2*c + 2*d*x] + 8
*a*b^2*d^2*f^2*x^3*Cosh[2*c + 2*d*x] + 6*a^3*d*e^2*Sinh[2*c] + 6*a*b^2*d*e^
2*Sinh[2*c] + 12*a^3*d*e*f*x*Sinh[2*c] + 12*a*b^2*d*e*f*x*Sinh[2*c] + 6*a^3
*d*f^2*x^2*Sinh[2*c] + 6*a*b^2*d*f^2*x^2*Sinh[2*c] - 6*a^2*b*e*f*Sinh[c - d
*x] - 6*b^3*e*f*Sinh[c - d*x] - 6*a^2*b*f^2*x*Sinh[c - d*x] - 6*b^3*f^2*x*S
inh[c - d*x] - 6*a^2*b*e*f*Sinh[3*c + d*x] - 6*b^3*e*f*Sinh[3*c + d*x] - 6*
a^2*b*f^2*x*Sinh[3*c + d*x] - 6*b^3*f^2*x*Sinh[3*c + d*x]))/(24*(a^2 + b^2)
^2*d^2)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.93, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{csch}\left(dx+c\right) \operatorname{sech}\left(dx+c\right)^{3}}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="maxima")

[Out] -a^2*b*d^2*f^2*integrate(x^2*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b
^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2
+ b^4*d^2), x) - 3*b^3*d^2*f^2*integrate(x^2*e^(d*x + c)/(a^4*d^2*e^(2*d*x
+ 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2
+ 2*a^2*b^2*d^2 + b^4*d^2), x) + 2*a^3*d^2*f^2*integrate(x^2/(a^4*d^2*e^(2*
d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*
d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + 4*a*b^2*d^2*f^2*integrate(x^2/(a^4*d^2
*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c)
+ a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) - 2*a^2*b*d^2*e*f*integrate(x*e^(d
*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2*c) + b^4*d^2*
e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) - 6*b^3*d^2*e*f*in
tegrate(x*e^(d*x + c)/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x + 2
*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) + 4*
a^3*d^2*e*f*integrate(x/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d*x +
 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x) +
8*a*b^2*d^2*e*f*integrate(x/(a^4*d^2*e^(2*d*x + 2*c) + 2*a^2*b^2*d^2*e^(2*d
*x + 2*c) + b^4*d^2*e^(2*d*x + 2*c) + a^4*d^2 + 2*a^2*b^2*d^2 + b^4*d^2), x
) - a^3*f^2*(2*(d*x + c)/((a^4 + 2*a^2*b^2 + b^4)*d^3) - log(e^(2*d*x + 2*c
) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d^3)) - a*b^2*f^2*(2*(d*x + c)/((a^4 + 2*a^
2*b^2 + b^4)*d^3) - log(e^(2*d*x + 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d^3))
 - (b^4*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^5 + 2*a^3*b^2 +
 a*b^4)*d) - (a^2*b + 3*b^3)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*
d) + (a^3 + 2*a*b^2)*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d)
+ (b*e^(-d*x - c) - 2*a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((a^2 + b^2
+ 2*(a^2 + b^2)*e^(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d) - log(e
^(-d*x - c) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d))*e^2 + 2*a^2*b*f^2*arc
tan(e^(d*x + c))/((a^4 + 2*a^2*b^2 + b^4)*d^3) + 2*b^3*f^2*arctan(e^(d*x +
c))/((a^4 + 2*a^2*b^2 + b^4)*d^3) + (2*a*f^2*x + 2*a*e*f - (b*d*f^2*x^2*e^(
3*c) + 2*b*e*f*e^(3*c) + 2*(d*e*f + f^2)*b*x*e^(3*c))*e^(3*d*x) + 2*(a*d*f^
2*x^2*e^(2*c) + a*e*f*e^(2*c) + (2*d*e*f + f^2)*a*x*e^(2*c))*e^(2*d*x) + (b
*d*f^2*x^2*e^c - 2*b*e*f*e^c + 2*(d*e*f - f^2)*b*x*e^c)*e^(d*x))/(a^2*d^2 +
 b^2*d^2 + (a^2*d^2*e^(4*c) + b^2*d^2*e^(4*c))*e^(4*d*x) + 2*(a^2*d^2*e^(2*
c) + b^2*d^2*e^(2*c))*e^(2*d*x)) + 2*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(
d*x + c)))*e*f/(a*d^2) + 2*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))
*e*f/(a*d^2) + (d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) -
2*polylog(3, -e^(d*x + c)))*f^2/(a*d^3) + (d^2*x^2*log(-e^(d*x + c) + 1) +
2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*f^2/(a*d^3) - 2/3*(d^
3*f^2*x^3 + 3*d^3*e*f*x^2)/(a*d^3) + integrate(2*(b^5*f^2*x^2 + 2*b^5*e*f*x
 - (a*b^4*f^2*x^2*e^c + 2*a*b^4*e*f*x*e^c)*e^(d*x))/(a^5*b + 2*a^3*b^3 + a*
b^5 - (a^5*b*e^(2*c) + 2*a^3*b^3*e^(2*c) + a*b^5*e^(2*c))*e^(2*d*x) - 2*(a^
6*e^c + 2*a^4*b^2*e^c + a^2*b^4*e^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^2}{{\mathrm{cosh}\left(c+d\,x\right)}^3\,\mathrm{sinh}\left(c+d\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cosh(c + d*x)^3*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^2/(cosh(c + d*x)^3*sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)*sech(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.446 $\int \frac{(e+fx)\text{csch}(c+dx)\text{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=746

$$\frac{ibf\text{Li}_2\left(-ie^{c+dx}\right)}{2d^2\left(a^2+b^2\right)}-\frac{ibf\text{Li}_2\left(ie^{c+dx}\right)}{2d^2\left(a^2+b^2\right)}+\frac{b^2f\tanh(c+dx)}{2ad^2\left(a^2+b^2\right)}-\frac{bf\text{sech}(c+dx)}{2d^2\left(a^2+b^2\right)}-\frac{b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{d\left(a^2+b^2\right)}-\frac{b^2(e+fx)\text{sech}^2}{2ad\left(a^2+\right.}$$

```
[Out] 1/2*f*x/a/d-2*b^3*(f*x+e)*arctan(exp(d*x+c))/(a^2+b^2)^2/d-b*(f*x+e)*arctan
(exp(d*x+c))/(a^2+b^2)/d-2*f*x*arctanh(exp(2*d*x+2*c))/a/d+b^4*(f*x+e)*ln(1
+exp(2*d*x+2*c))/a/(a^2+b^2)^2/d-b^4*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))/a/(a^2+b^2)^2/d-b^4*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))
/a/(a^2+b^2)^2/d-f*x*ln(tanh(d*x+c))/a/d+(f*x+e)*ln(tanh(d*x+c))/a/d-I*b^3*
f*polylog(2,I*exp(d*x+c))/(a^2+b^2)^2/d^2-1/2*I*b*f*polylog(2,I*exp(d*x+c))
/(a^2+b^2)/d^2+I*b^3*f*polylog(2,-I*exp(d*x+c))/(a^2+b^2)^2/d^2+1/2*I*b*f*p
olylog(2,-I*exp(d*x+c))/(a^2+b^2)/d^2+1/2*b^4*f*polylog(2,-exp(2*d*x+2*c))/
a/(a^2+b^2)^2/d^2-1/2*f*polylog(2,-exp(2*d*x+2*c))/a/d^2+1/2*f*polylog(2,ex
p(2*d*x+2*c))/a/d^2-b^4*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a/(a
^2+b^2)^2/d^2-b^4*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a/(a^2+b^2
)^2/d^2-1/2*b*f*sech(d*x+c)/(a^2+b^2)/d^2-1/2*b^2*(f*x+e)*sech(d*x+c)^2/a/(
a^2+b^2)/d-1/2*f*tanh(d*x+c)/a/d^2+1/2*b^2*f*tanh(d*x+c)/a/(a^2+b^2)/d^2-1/
2*b*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/(a^2+b^2)/d-1/2*(f*x+e)*tanh(d*x+c)^2/a
/d
```

Rubi [A] time = 1.06, antiderivative size = 746, normalized size of antiderivative = 1.00, number of steps used = 43, number of rules used = 20, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {5589, 2620, 14, 5462, 2548, 12, 4182, 2279, 2391, 3473, 8, 5573, 5561, 2190, 6742, 4180, 3718, 4185, 5451, 3767}

$$-\frac{b^4f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{ad^2\left(a^2+b^2\right)^2}-\frac{b^4f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{ad^2\left(a^2+b^2\right)^2}+\frac{b^4f\text{PolyLog}\left(2,-e^{2(c+dx)}\right)}{2ad^2\left(a^2+b^2\right)^2}+\frac{ib^3f\text{PolyLog}\left(2,-ie^{c+}\right.}{d^2\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (f*x)/(2*a*d) - (2*b^3*(e + f*x)*ArcTan[E^(c + d*x)])/((a^2 + b^2)^2*d) - (
b*(e + f*x)*ArcTan[E^(c + d*x)])/((a^2 + b^2)*d) - (2*f*x*ArcTanh[E^(2*c +
2*d*x)])/(a*d) - (b^4*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
]])])/(a*(a^2 + b^2)^2*d) - (b^4*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2])])/(a*(a^2 + b^2)^2*d) + (b^4*(e + f*x)*Log[1 + E^(2*(c + d*x))
])/(a*(a^2 + b^2)^2*d) - (f*x*Log[Tanh[c + d*x]])/(a*d) + ((e + f*x)*Log[Ta
```

```
nh[c + d*x]])/(a*d) + (I*b^3*f*PolyLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)^2
*d^2) + ((I/2)*b*f*PolyLog[2, (-I)*E^(c + d*x)])/((a^2 + b^2)*d^2) - (I*b^3
*f*PolyLog[2, I*E^(c + d*x)])/((a^2 + b^2)^2*d^2) - ((I/2)*b*f*PolyLog[2, I
*E^(c + d*x)])/((a^2 + b^2)*d^2) - (b^4*f*PolyLog[2, -((b*E^(c + d*x))/(a -
 Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^2*d^2) - (b^4*f*PolyLog[2, -((b*E^(c +
d*x))/(a + Sqrt[a^2 + b^2]))])/(a*(a^2 + b^2)^2*d^2) + (b^4*f*PolyLog[2, -E
^(2*(c + d*x))])/(2*a*(a^2 + b^2)^2*d^2) - (f*PolyLog[2, -E^(2*c + 2*d*x)])
/(2*a*d^2) + (f*PolyLog[2, E^(2*c + 2*d*x)])/(2*a*d^2) - (b*f*Sech[c + d*x]
)/(2*(a^2 + b^2)*d^2) - (b^2*(e + f*x)*Sech[c + d*x]^2)/(2*a*(a^2 + b^2)*d)
 - (f*Tanh[c + d*x])/(2*a*d^2) + (b^2*f*Tanh[c + d*x])/(2*a*(a^2 + b^2)*d^2
) - (b*(e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(2*(a^2 + b^2)*d) - ((e + f*x
)*Tanh[c + d*x]^2)/(2*a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2548

```
Int[Log[u_], x_Symbol] :> Simp[x*Log[u], x] - Int[SimplifyIntegrand[(x*D[u,
 x])/u, x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
```

```
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\text{csch}(c+dx)\text{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{csch}(c+dx)\text{sech}^3(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\text{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{(e+fx)\log(\tanh(c+dx))}{ad} - \frac{(e+fx)\tanh^2(c+dx)}{2ad} - \frac{b\int (e+fx)\text{se}$$

$$= \frac{(e+fx)\log(\tanh(c+dx))}{ad} - \frac{(e+fx)\tanh^2(c+dx)}{2ad} - \frac{b^3\int (e+fx)\text{s}$$

$$= \frac{b^4(e+fx)^2}{2a\left(a^2+b^2\right)^2 f} - \frac{fx\log(\tanh(c+dx))}{ad} + \frac{(e+fx)\log(\tanh(c+dx))}{ad}$$

$$= \frac{fx}{2ad} + \frac{b^4(e+fx)^2}{2a\left(a^2+b^2\right)^2 f} - \frac{b^4(e+fx)\log\left(1+\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a\left(a^2+b^2\right)^2 d} - \frac{b^4(e+fx)\text{l}}{a(}$$

$$= \frac{fx}{2ad} - \frac{2b^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} - \frac{2fx\tan\text{h}}{}$$

$$= \frac{fx}{2ad} - \frac{2b^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} - \frac{2fx\tan\text{h}}{}$$

$$= \frac{fx}{2ad} - \frac{2b^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} - \frac{2fx\tan\text{h}}{}$$

$$= \frac{fx}{2ad} - \frac{2b^3(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right)^2 d} - \frac{b(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{\left(a^2+b^2\right) d} - \frac{2fx\tan\text{h}}{}$$

Mathematica [A] time = 10.71, size = 886, normalized size = 1.19

$$-\frac{\left(-\frac{1}{2}f(c+dx)^2 + f\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)(c+dx) + f\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)(c+dx) + de\log(a+b\sinh(c+dx)) - cf}{a\left(a^2+b^2\right)^2 d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (e*Log[Sinh[c + d*x]])/(a*d) - (c*f*Log[Sinh[c + d*x]])/(a*d^2) - (I*f*(I*(
c + d*x)*Log[1 - E^(-2*(c + d*x))] - (I/2)*(-(c + d*x)^2 + PolyLog[2, E^(-2
*(c + d*x))])))/(a*d^2) - (b^4*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 +
(b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2])] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sin
h[c + d*x]] + f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*Poly
Log[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(a*(a^2 + b^2)^2*d^2) -
(-2*a^3*d*e*(c + d*x) - 4*a*b^2*d*e*(c + d*x) + 2*a^3*c*f*(c + d*x) + 4*a*b
^2*c*f*(c + d*x) - a^3*f*(c + d*x)^2 - 2*a*b^2*f*(c + d*x)^2 + 2*a^2*b*d*e*
ArcTan[E^(c + d*x)] + 6*b^3*d*e*ArcTan[E^(c + d*x)] - 2*a^2*b*c*f*ArcTan[E^
(c + d*x)] - 6*b^3*c*f*ArcTan[E^(c + d*x)] + I*a^2*b*f*(c + d*x)*Log[1 - I*
E^(c + d*x)] + (3*I)*b^3*f*(c + d*x)*Log[1 - I*E^(c + d*x)] - I*a^2*b*f*(c
+ d*x)*Log[1 + I*E^(c + d*x)] - (3*I)*b^3*f*(c + d*x)*Log[1 + I*E^(c + d*x)
] + 2*a^3*d*e*Log[1 + E^(2*(c + d*x))] + 4*a*b^2*d*e*Log[1 + E^(2*(c + d*x)
)] - 2*a^3*c*f*Log[1 + E^(2*(c + d*x))] - 4*a*b^2*c*f*Log[1 + E^(2*(c + d*x
))] + 2*a^3*f*(c + d*x)*Log[1 + E^(2*(c + d*x))] + 4*a*b^2*f*(c + d*x)*Log[
1 + E^(2*(c + d*x))] - I*b*(a^2 + 3*b^2)*f*PolyLog[2, (-I)*E^(c + d*x)] + I
*b*(a^2 + 3*b^2)*f*PolyLog[2, I*E^(c + d*x)] + a^3*f*PolyLog[2, -E^(2*(c +
d*x))] + 2*a*b^2*f*PolyLog[2, -E^(2*(c + d*x))])/(2*(a^2 + b^2)^2*d^2) + (S
ech[c + d*x]*(-(b*f) - a*f*Sinh[c + d*x]))/(2*(a^2 + b^2)*d^2) + (Sech[c +
d*x]^2*(a*d*e - a*c*f + a*f*(c + d*x) - b*d*e*Sinh[c + d*x] + b*c*f*Sinh[c
+ d*x] - b*f*(c + d*x)*Sinh[c + d*x]))/(2*(a^2 + b^2)*d^2)
```

fricas [B] time = 0.73, size = 7615, normalized size = 10.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -1/2*(2*((a^3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e + (a^3*b + a*b^3)*f)*c
osh(d*x + c)^3 + 2*((a^3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e + (a^3*b +
a*b^3)*f)*sinh(d*x + c)^3 - 2*(2*(a^4 + a^2*b^2)*d*f*x + 2*(a^4 + a^2*b^2)*
d*e + (a^4 + a^2*b^2)*f)*cosh(d*x + c)^2 - 2*(2*(a^4 + a^2*b^2)*d*f*x + 2*(
a^4 + a^2*b^2)*d*e + (a^4 + a^2*b^2)*f - 3*((a^3*b + a*b^3)*d*f*x + (a^3*b
+ a*b^3)*d*e + (a^3*b + a*b^3)*f)*cosh(d*x + c))*sinh(d*x + c)^2 - 2*(a^4 +
 a^2*b^2)*f - 2*((a^3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e - (a^3*b + a*b
^3)*f)*cosh(d*x + c) + 2*(b^4*f*cosh(d*x + c)^4 + 4*b^4*f*cosh(d*x + c)*sin
h(d*x + c)^3 + b^4*f*sinh(d*x + c)^4 + 2*b^4*f*cosh(d*x + c)^2 + b^4*f + 2*
(3*b^4*f*cosh(d*x + c)^2 + b^4*f)*sinh(d*x + c)^2 + 4*(b^4*f*cosh(d*x + c)^
3 + b^4*f*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x
```

+ c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(b^4*f*cosh(d*x + c)^4 + 4*b^4*f*cosh(d*x + c)*sinh(d*x + c)^3 + b^4 *f*sinh(d*x + c)^4 + 2*b^4*f*cosh(d*x + c)^2 + b^4*f + 2*(3*b^4*f*cosh(d*x + c)^2 + b^4*f)*sinh(d*x + c)^2 + 4*(b^4*f*cosh(d*x + c)^3 + b^4*f*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d* x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*((a^4 + 2*a ^2*b^2 + b^4)*f*cosh(d*x + c)^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*f*cosh(d*x + c) *sinh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*f*sinh(d*x + c)^4 + 2*(a^4 + 2*a ^2*b^2 + b^4)*f*cosh(d*x + c)^2 + 2*(3*(a^4 + 2*a^2*b^2 + b^4)*f*cosh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*f)*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*f + 4*((a^4 + 2*a^2*b^2 + b^4)*f*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*f*cosh(d*x + c))*sinh(d*x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) + ((2*(a^4 + 2*a^2*b^2)*f + I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c)^4 + (8*(a^4 + 2*a^2*b^2)*f + 4*I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2* (a^4 + 2*a^2*b^2)*f + I*(a^3*b + 3*a*b^3)*f)*sinh(d*x + c)^4 + (4*(a^4 + 2* a^2*b^2)*f + 2*I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c)^2 + ((12*(a^4 + 2*a^2*b ^2)*f + 6*I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c)^2 + 4*(a^4 + 2*a^2*b^2)*f + 2*I*(a^3*b + 3*a*b^3)*f)*sinh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2)*f + I*(a^3*b + 3*a*b^3)*f + ((8*(a^4 + 2*a^2*b^2)*f + 4*I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c)^3 + (8*(a^4 + 2*a^2*b^2)*f + 4*I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c))* sinh(d*x + c))*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + ((2*(a^4 + 2*a^2* b^2)*f - I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c)^4 + (8*(a^4 + 2*a^2*b^2)*f - 4*I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*(a^4 + 2*a^2*b^ 2)*f - I*(a^3*b + 3*a*b^3)*f)*sinh(d*x + c)^4 + (4*(a^4 + 2*a^2*b^2)*f - 2* I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c)^2 + ((12*(a^4 + 2*a^2*b^2)*f - 6*I*(a^ 3*b + 3*a*b^3)*f)*cosh(d*x + c)^2 + 4*(a^4 + 2*a^2*b^2)*f - 2*I*(a^3*b + 3* a*b^3)*f)*sinh(d*x + c)^2 + 2*(a^4 + 2*a^2*b^2)*f - I*(a^3*b + 3*a*b^3)*f + ((8*(a^4 + 2*a^2*b^2)*f - 4*I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c)^3 + (8*(a ^4 + 2*a^2*b^2)*f - 4*I*(a^3*b + 3*a*b^3)*f)*cosh(d*x + c))*sinh(d*x + c))* dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) - 2*((a^4 + 2*a^2*b^2 + b^4)*f*co sh(d*x + c)^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*f*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*f*co sh(d*x + c)^2 + 2*(3*(a^4 + 2*a^2*b^2 + b^4)*f*cosh(d*x + c)^2 + (a^4 + 2*a ^2*b^2 + b^4)*f)*sinh(d*x + c)^2 + (a^4 + 2*a^2*b^2 + b^4)*f + 4*((a^4 + 2* a^2*b^2 + b^4)*f*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*f*cosh(d*x + c)) *sinh(d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) + 2*(b^4*d*e - b^4*c* f + (b^4*d*e - b^4*c*f)*cosh(d*x + c)^4 + 4*(b^4*d*e - b^4*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d*e - b^4*c*f)*sinh(d*x + c)^4 + 2*(b^4*d*e - b^4 *c*f)*cosh(d*x + c)^2 + 2*(b^4*d*e - b^4*c*f + 3*(b^4*d*e - b^4*c*f)*cosh(d *x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d*e - b^4*c*f)*cosh(d*x + c)^3 + (b^4* d*e - b^4*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*si nh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(b^4*d*e - b^4*c*f + (b^ 4*d*e - b^4*c*f)*cosh(d*x + c)^4 + 4*(b^4*d*e - b^4*c*f)*cosh(d*x + c)*sinh (d*x + c)^3 + (b^4*d*e - b^4*c*f)*sinh(d*x + c)^4 + 2*(b^4*d*e - b^4*c*f)*c osh(d*x + c)^2 + 2*(b^4*d*e - b^4*c*f + 3*(b^4*d*e - b^4*c*f)*cosh(d*x + c)

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^2)*sinh(d*x + c)^2 + 4*((b^4*d*e - b^4*c*f)*cosh(d*x + c)^3 + (b^4*d*e - b
^4*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x
+ c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(b^4*d*f*x + b^4*c*f + (b^4*d*f
*x + b^4*c*f)*cosh(d*x + c)^4 + 4*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)*sinh(
d*x + c)^3 + (b^4*d*f*x + b^4*c*f)*sinh(d*x + c)^4 + 2*(b^4*d*f*x + b^4*c*f
)*cosh(d*x + c)^2 + 2*(b^4*d*f*x + b^4*c*f + 3*(b^4*d*f*x + b^4*c*f)*cosh(d
*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^3 + (b^
4*d*f*x + b^4*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*
sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) -
 b)/b) + 2*(b^4*d*f*x + b^4*c*f + (b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^4 + 4
*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d*f*x + b^4*c*f
)*sinh(d*x + c)^4 + 2*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^2 + 2*(b^4*d*f*x
+ b^4*c*f + 3*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((
b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^3 + (b^4*d*f*x + b^4*c*f)*cosh(d*x + c))
*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(((a^4 + 2*a^2*b^2 + b
^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*d*e)*cosh(d*x + c)^4 + 4*((a^4 + 2*a^2*
b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*d*e)*cosh(d*x + c)*sinh(d*x + c)
^3 + ((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*d*e)*sinh(d*x
 + c)^4 + (a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*d*e + 2*(
(a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*d*e)*cosh(d*x + c)^
2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*d*e + 3*((a^
4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*d*e)*cosh(d*x + c)^2)*
sinh(d*x + c)^2 + 4*(((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^
4)*d*e)*cosh(d*x + c)^3 + ((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2
 + b^4)*d*e)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c
) + 1) + ((2*(a^4 + 2*a^2*b^2)*d*e + I*(a^3*b + 3*a*b^3)*d*e - 2*(a^4 + 2*a
^2*b^2)*c*f - I*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c)^4 + (8*(a^4 + 2*a^2*b^
2)*d*e + 4*I*(a^3*b + 3*a*b^3)*d*e - 8*(a^4 + 2*a^2*b^2)*c*f - 4*I*(a^3*b +
 3*a*b^3)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*(a^4 + 2*a^2*b^2)*d*e + I
*(a^3*b + 3*a*b^3)*d*e - 2*(a^4 + 2*a^2*b^2)*c*f - I*(a^3*b + 3*a*b^3)*c*f)
*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2)*d*e + I*(a^3*b + 3*a*b^3)*d*e - 2*(a
^4 + 2*a^2*b^2)*c*f - I*(a^3*b + 3*a*b^3)*c*f + (4*(a^4 + 2*a^2*b^2)*d*e +
2*I*(a^3*b + 3*a*b^3)*d*e - 4*(a^4 + 2*a^2*b^2)*c*f - 2*I*(a^3*b + 3*a*b^3)
*c*f)*cosh(d*x + c)^2 + (4*(a^4 + 2*a^2*b^2)*d*e + 2*I*(a^3*b + 3*a*b^3)*d*
e - 4*(a^4 + 2*a^2*b^2)*c*f - 2*I*(a^3*b + 3*a*b^3)*c*f + (12*(a^4 + 2*a^2*
b^2)*d*e + 6*I*(a^3*b + 3*a*b^3)*d*e - 12*(a^4 + 2*a^2*b^2)*c*f - 6*I*(a^3*
b + 3*a*b^3)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*(a^4 + 2*a^2*b^2)*
d*e + 4*I*(a^3*b + 3*a*b^3)*d*e - 8*(a^4 + 2*a^2*b^2)*c*f - 4*I*(a^3*b + 3*
a*b^3)*c*f)*cosh(d*x + c)^3 + (8*(a^4 + 2*a^2*b^2)*d*e + 4*I*(a^3*b + 3*a*b
^3)*d*e - 8*(a^4 + 2*a^2*b^2)*c*f - 4*I*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c
))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + I) + ((2*(a^4 + 2*a^2
*b^2)*d*e - I*(a^3*b + 3*a*b^3)*d*e - 2*(a^4 + 2*a^2*b^2)*c*f + I*(a^3*b +
3*a*b^3)*c*f)*cosh(d*x + c)^4 + (8*(a^4 + 2*a^2*b^2)*d*e - 4*I*(a^3*b + 3*a
*b^3)*d*e - 8*(a^4 + 2*a^2*b^2)*c*f + 4*I*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x +
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c)*sinh(d*x + c)^3 + (2*(a^4 + 2*a^2*b^2)*d*e - I*(a^3*b + 3*a*b^3)*d*e - 2*(a^4 + 2*a^2*b^2)*c*f + I*(a^3*b + 3*a*b^3)*c*f)*sinh(d*x + c)^4 + 2*(a^4 + 2*a^2*b^2)*d*e - I*(a^3*b + 3*a*b^3)*d*e - 2*(a^4 + 2*a^2*b^2)*c*f + I*(a^3*b + 3*a*b^3)*c*f + (4*(a^4 + 2*a^2*b^2)*d*e - 2*I*(a^3*b + 3*a*b^3)*d*e - 4*(a^4 + 2*a^2*b^2)*c*f + 2*I*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c)^2 + (4*(a^4 + 2*a^2*b^2)*d*e - 2*I*(a^3*b + 3*a*b^3)*d*e - 4*(a^4 + 2*a^2*b^2)*c *f + 2*I*(a^3*b + 3*a*b^3)*c*f + (12*(a^4 + 2*a^2*b^2)*d*e - 6*I*(a^3*b + 3 *a*b^3)*d*e - 12*(a^4 + 2*a^2*b^2)*c*f + 6*I*(a^3*b + 3*a*b^3)*c*f)*cosh(d* x + c)^2)*sinh(d*x + c)^2 + ((8*(a^4 + 2*a^2*b^2)*d*e - 4*I*(a^3*b + 3*a*b^ 3)*d*e - 8*(a^4 + 2*a^2*b^2)*c*f + 4*I*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c) ^3 + (8*(a^4 + 2*a^2*b^2)*d*e - 4*I*(a^3*b + 3*a*b^3)*d*e - 8*(a^4 + 2*a^2* b^2)*c*f + 4*I*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(cos h(d*x + c) + sinh(d*x + c) - I) - 2*(((a^4 + 2*a^2*b^2 + b^4)*d*e - (a^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(d*x + c)^4 + 4*((a^4 + 2*a^2*b^2 + b^4)*d*e - (a ^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + 2*a^2*b^ 2 + b^4)*d*e - (a^4 + 2*a^2*b^2 + b^4)*c*f)*sinh(d*x + c)^4 + (a^4 + 2*a^2* b^2 + b^4)*d*e - (a^4 + 2*a^2*b^2 + b^4)*c*f + 2*((a^4 + 2*a^2*b^2 + b^4)*d *e - (a^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b ^4)*d*e - (a^4 + 2*a^2*b^2 + b^4)*c*f + 3*((a^4 + 2*a^2*b^2 + b^4)*d*e - (a ^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^4 + 2* a^2*b^2 + b^4)*d*e - (a^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(d*x + c)^3 + ((a^4 + 2*a^2*b^2 + b^4)*d*e - (a^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(d*x + c))*sinh(d* x + c))*log(cosh(d*x + c) + sinh(d*x + c) - 1) + ((2*(a^4 + 2*a^2*b^2)*d*f* x - I*(a^3*b + 3*a*b^3)*d*f*x + 2*(a^4 + 2*a^2*b^2)*c*f - I*(a^3*b + 3*a*b^ 3)*c*f)*cosh(d*x + c)^4 + (8*(a^4 + 2*a^2*b^2)*d*f*x - 4*I*(a^3*b + 3*a*b^3)*d*f*x + 8*(a^4 + 2*a^2*b^2)*c*f - 4*I*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*(a^4 + 2*a^2*b^2)*d*f*x - I*(a^3*b + 3*a*b^3)*d*f*x + 2*(a^4 + 2*a^2*b^2)*c*f - I*(a^3*b + 3*a*b^3)*c*f)*sinh(d*x + c)^4 + 2*(a ^4 + 2*a^2*b^2)*d*f*x - I*(a^3*b + 3*a*b^3)*d*f*x + 2*(a^4 + 2*a^2*b^2)*c*f - I*(a^3*b + 3*a*b^3)*c*f + (4*(a^4 + 2*a^2*b^2)*d*f*x - 2*I*(a^3*b + 3*a* b^3)*d*f*x + 4*(a^4 + 2*a^2*b^2)*c*f - 2*I*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c)^2 + (4*(a^4 + 2*a^2*b^2)*d*f*x - 2*I*(a^3*b + 3*a*b^3)*d*f*x + 4*(a^4 + 2*a^2*b^2)*c*f - 2*I*(a^3*b + 3*a*b^3)*c*f + (12*(a^4 + 2*a^2*b^2)*d*f*x - 6*I*(a^3*b + 3*a*b^3)*d*f*x + 12*(a^4 + 2*a^2*b^2)*c*f - 6*I*(a^3*b + 3*a *b^3)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*(a^4 + 2*a^2*b^2)*d*f*x - 4*I*(a^3*b + 3*a*b^3)*d*f*x + 8*(a^4 + 2*a^2*b^2)*c*f - 4*I*(a^3*b + 3*a*b ^3)*c*f)*cosh(d*x + c)^3 + (8*(a^4 + 2*a^2*b^2)*d*f*x - 4*I*(a^3*b + 3*a*b^ 3)*d*f*x + 8*(a^4 + 2*a^2*b^2)*c*f - 4*I*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) + ((2*(a^4 + 2*a^2*b^2)*d*f*x + I*(a^3*b + 3*a*b^3)*d*f*x + 2*(a^4 + 2*a^2*b^2)*c*f + I* (a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c)^4 + (8*(a^4 + 2*a^2*b^2)*d*f*x + 4*I*(a^3*b + 3*a*b^3)*d*f*x + 8*(a^4 + 2*a^2*b^2)*c*f + 4*I*(a^3*b + 3*a*b^3)*c* f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*(a^4 + 2*a^2*b^2)*d*f*x + I*(a^3*b + 3*a*b^3)*d*f*x + 2*(a^4 + 2*a^2*b^2)*c*f + I*(a^3*b + 3*a*b^3)*c*f)*sinh(d* x + c)^4 + 2*(a^4 + 2*a^2*b^2)*d*f*x + I*(a^3*b + 3*a*b^3)*d*f*x + 2*(a^4 +

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 2*a^2*b^2)*c*f + I*(a^3*b + 3*a*b^3)*c*f + (4*(a^4 + 2*a^2*b^2)*d*f*x + 2*
I*(a^3*b + 3*a*b^3)*d*f*x + 4*(a^4 + 2*a^2*b^2)*c*f + 2*I*(a^3*b + 3*a*b^3)
*c*f)*cosh(d*x + c)^2 + (4*(a^4 + 2*a^2*b^2)*d*f*x + 2*I*(a^3*b + 3*a*b^3)*
d*f*x + 4*(a^4 + 2*a^2*b^2)*c*f + 2*I*(a^3*b + 3*a*b^3)*c*f + (12*(a^4 + 2*
a^2*b^2)*d*f*x + 6*I*(a^3*b + 3*a*b^3)*d*f*x + 12*(a^4 + 2*a^2*b^2)*c*f + 6
*I*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*(a^4 + 2*a
^2*b^2)*d*f*x + 4*I*(a^3*b + 3*a*b^3)*d*f*x + 8*(a^4 + 2*a^2*b^2)*c*f + 4*I
*(a^3*b + 3*a*b^3)*c*f)*cosh(d*x + c)^3 + (8*(a^4 + 2*a^2*b^2)*d*f*x + 4*I*
(a^3*b + 3*a*b^3)*d*f*x + 8*(a^4 + 2*a^2*b^2)*c*f + 4*I*(a^3*b + 3*a*b^3)*c
*f)*cosh(d*x + c))*sinh(d*x + c))*log(-I*cosh(d*x + c) - I*sinh(d*x + c) +
1) - 2*(((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(
d*x + c)^4 + 4*((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*c*f
)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2
*a^2*b^2 + b^4)*c*f)*sinh(d*x + c)^4 + (a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4
 + 2*a^2*b^2 + b^4)*c*f + 2*((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b
^2 + b^4)*c*f)*cosh(d*x + c)^2 + 2*((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 +
2*a^2*b^2 + b^4)*c*f + 3*((a^4 + 2*a^2*b^2 + b^4)*d*f*x + (a^4 + 2*a^2*b^2
+ b^4)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^4 + 2*a^2*b^2 + b^4)*
d*f*x + (a^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(d*x + c)^3 + ((a^4 + 2*a^2*b^2 +
b^4)*d*f*x + (a^4 + 2*a^2*b^2 + b^4)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log
(-cosh(d*x + c) - sinh(d*x + c) + 1) - 2*((a^3*b + a*b^3)*d*f*x + (a^3*b +
a*b^3)*d*e - 3*((a^3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e + (a^3*b + a*b^
3)*f)*cosh(d*x + c)^2 - (a^3*b + a*b^3)*f + 2*(2*(a^4 + a^2*b^2)*d*f*x + 2*
(a^4 + a^2*b^2)*d*e + (a^4 + a^2*b^2)*f)*cosh(d*x + c))*sinh(d*x + c))/((a^
5 + 2*a^3*b^2 + a*b^4)*d^2*cosh(d*x + c)^4 + 4*(a^5 + 2*a^3*b^2 + a*b^4)*d^
2*cosh(d*x + c)*sinh(d*x + c)^3 + (a^5 + 2*a^3*b^2 + a*b^4)*d^2*sinh(d*x +
c)^4 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d^2*cosh(d*x + c)^2 + (a^5 + 2*a^3*b^2 +
 a*b^4)*d^2 + 2*(3*(a^5 + 2*a^3*b^2 + a*b^4)*d^2*cosh(d*x + c)^2 + (a^5 + 2
*a^3*b^2 + a*b^4)*d^2)*sinh(d*x + c)^2 + 4*((a^5 + 2*a^3*b^2 + a*b^4)*d^2*c
osh(d*x + c)^3 + (a^5 + 2*a^3*b^2 + a*b^4)*d^2*cosh(d*x + c))*sinh(d*x + c)
)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [B] time = 0.39, size = 2580, normalized size = 3.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 8/d^2/(a^2+b^2)*b^2*f*c/(4*a^2+4*b^2)*a*ln(1+exp(2*d*x+2*c))+4/d^2/(a^2+b^2
)*a^2*f*c/(4*a^2+4*b^2)*b*arctan(exp(d*x+c))-8/d/(a^2+b^2)*b^2*f/(4*a^2+4*b
^2)*ln(1+I*exp(d*x+c))*a*x+(-b*d*f*x*exp(3*d*x+3*c)+2*a*d*f*x*exp(2*d*x+2*c
)-b*d*e*exp(3*d*x+3*c)+2*a*d*e*exp(2*d*x+2*c)+b*d*f*x*exp(d*x+c)-b*f*exp(3*
d*x+3*c)+a*f*exp(2*d*x+2*c)+b*d*e*exp(d*x+c)-f*b*exp(d*x+c)+a*f)/d^2/(a^2+b
^2)/(1+exp(2*d*x+2*c))^2-8/d^2/(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x
+c))*a*c-8/d/(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*a*x-8/d^2/(a^
2+b^2)*b^2*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*a*c-1/2/d^2/(a^2+b^2)^(5/2)*a
^2*b^2*f*c*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2*I/d^2/(a^2+b
^2)*a^2*f/(4*a^2+4*b^2)*dilog(1+I*exp(d*x+c))*b+6*I/d/(a^2+b^2)*b^3*f/(4*a^
2+4*b^2)*ln(1+I*exp(d*x+c))*x+6*I/d^2/(a^2+b^2)*b^3*f/(4*a^2+4*b^2)*ln(1+I*
exp(d*x+c))*c-6*I/d/(a^2+b^2)*b^3*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*x-6*I/
d^2/(a^2+b^2)*b^3*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*c-2*I/d^2/(a^2+b^2)*a^
2*f/(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))*b+1/d^2/(a^2+b^2)*a*f*dilog(exp(d*x
+c)+1)-1/d^2/(a^2+b^2)*a*f*dilog(exp(d*x+c))+1/d/(a^2+b^2)*a*e*ln(exp(d*x+c
)+1)+1/d/(a^2+b^2)*a*e*ln(exp(d*x+c)-1)-4/d/(a^2+b^2)*a^3*e/(4*a^2+4*b^2)*l
n(1+exp(2*d*x+2*c))-1/d^2/(a^2+b^2)^2*b^4*f/a*dilog((-b*exp(d*x+c)+(a^2+b^2
)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2/(a^2+b^2)^2*b^4*f/a*dilog((b*exp(d*x
+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/d/(a^2+b^2)^2*b^4*e/a*ln(b*ex
p(2*d*x+2*c)+2*a*exp(d*x+c)-b)-4/d^2/(a^2+b^2)*a^3*f/(4*a^2+4*b^2)*dilog(1+
I*exp(d*x+c))-4/d^2/(a^2+b^2)*a^3*f/(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))-1/2
/d/(a^2+b^2)^(3/2)*b^2*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+
1/2/d/(a^2+b^2)^(5/2)*b^4*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2
))-12/d/(a^2+b^2)*b^3*e/(4*a^2+4*b^2)*arctan(exp(d*x+c))+2*I/d/(a^2+b^2)*a^
2*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*b*x+2*I/d^2/(a^2+b^2)*a^2*f/(4*a^2+4*b
^2)*ln(1+I*exp(d*x+c))*b*c-2*I/d/(a^2+b^2)*a^2*f/(4*a^2+4*b^2)*ln(1-I*exp(d
*x+c))*b*x-2*I/d^2/(a^2+b^2)*a^2*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*b*c+1/2
/d^2/(a^2+b^2)^(3/2)*b^2*f*c*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/
2))-1/2/d^2/(a^2+b^2)^(5/2)*b^4*f*c*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b
^2)^(1/2))+12/d^2/(a^2+b^2)*b^3*f*c/(4*a^2+4*b^2)*arctan(exp(d*x+c))-8/d^2/
(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*dilog(1+I*exp(d*x+c))*a-8/d^2/(a^2+b^2)*b^2*f
/(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))*a+4/d^2/(a^2+b^2)*a^3*f*c/(4*a^2+4*b^2
)*ln(1+exp(2*d*x+2*c))-8/d/(a^2+b^2)*b^2*e/(4*a^2+4*b^2)*a*ln(1+exp(2*d*x+2
*c))+1/2/d/(a^2+b^2)^(5/2)*a^2*b^2*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+
b^2)^(1/2))-4/d/(a^2+b^2)*a^2*e/(4*a^2+4*b^2)*b*arctan(exp(d*x+c))-4/d/(a^2
+b^2)*a^3*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*x-4/d^2/(a^2+b^2)*a^3*f/(4*a^2
+4*b^2)*ln(1+I*exp(d*x+c))*c-4/d/(a^2+b^2)*a^3*f/(4*a^2+4*b^2)*ln(1-I*exp(d
*x+c))*x-4/d^2/(a^2+b^2)*a^3*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*c+1/d^2/(a^
2+b^2)^2*b^4*f*c/a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-1/d/(a^2+b^2)^2*b^
4*f/a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2/(a
^2+b^2)^2*b^4*f/a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2))
```

```
)*c-1/d/(a^2+b^2)^2*b^4*f/a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2
)^(1/2)))*x-1/d^2/(a^2+b^2)^2*b^4*f/a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(
a+(a^2+b^2)^(1/2)))*c-1/d^2/(a^2+b^2)*b^2*f*c/a*ln(exp(d*x+c)-1)+1/d/(a^2+b
^2)*b^2*f/a*ln(exp(d*x+c)+1)*x+6*I/d^2/(a^2+b^2)*b^3*f/(4*a^2+4*b^2)*dilog(
1+I*exp(d*x+c))-6*I/d^2/(a^2+b^2)*b^3*f/(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))
+1/d/(a^2+b^2)*b^2*e/a*ln(exp(d*x+c)+1)+1/d/(a^2+b^2)*b^2*e/a*ln(exp(d*x+c)
-1)+1/d^2/(a^2+b^2)*b^2*f/a*dilog(exp(d*x+c)+1)-1/d^2/(a^2+b^2)*b^2*f*dilog
(exp(d*x+c))/a-1/d^2/(a^2+b^2)*a*f*c*ln(exp(d*x+c)-1)+1/d/(a^2+b^2)*ln(exp(
d*x+c)+1)*a*f*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(\frac{b^4\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^5+2\,a^3b^2+ab^4\right)d}-\frac{\left(a^2b+3\,b^3\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{\left(a^3+2\,ab^2\right)\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{}{(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -(b^4*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^5 + 2*a^3*b^2 + a
*b^4)*d) - (a^2*b + 3*b^3)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d)
 + (a^3 + 2*a*b^2)*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) +
(b*e^(-d*x - c) - 2*a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((a^2 + b^2 +
2*(a^2 + b^2)*e^(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d) - log(e^(
-d*x - c) + 1)/(a*d) - log(e^(-d*x - c) - 1)/(a*d))*e - f*(((b*d*x*e^(3*c)
+ b*e^(3*c))*e^(3*d*x) - (2*a*d*x*e^(2*c) + a*e^(2*c))*e^(2*d*x) - (b*d*x*e
^c - b*e^c)*e^(d*x) - a)/(a^2*d^2 + b^2*d^2 + (a^2*d^2*e^(4*c) + b^2*d^2*e^
(4*c))*e^(4*d*x) + 2*(a^2*d^2*e^(2*c) + b^2*d^2*e^(2*c))*e^(2*d*x)) - 16*in
tegrate(-1/8*(a*b^4*x*e^(d*x + c) - b^5*x)/(a^5*b + 2*a^3*b^3 + a*b^5 - (a^
5*b*e^(2*c) + 2*a^3*b^3*e^(2*c) + a*b^5*e^(2*c))*e^(2*d*x) - 2*(a^6*e^c + 2
*a^4*b^2*e^c + a^2*b^4*e^c)*e^(d*x)), x) + 16*integrate(1/16*((a^2*b*e^c +
3*b^3*e^c)*x*e^(d*x) - 2*(a^3 + 2*a*b^2)*x)/(a^4 + 2*a^2*b^2 + b^4 + (a^4*e
^(2*c) + 2*a^2*b^2*e^(2*c) + b^4*e^(2*c))*e^(2*d*x)), x) + 16*integrate(1/1
6*x/(a*e^(d*x + c) + a), x) - 16*integrate(1/16*x/(a*e^(d*x + c) - a), x))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{{\mathrm{cosh}\left(c+d\,x\right)}^3\,\mathrm{sinh}\left(c+d\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)^3*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)^3*sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)*sech(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.447 $\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=160

$$-\frac{b\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)}-\frac{a\left(a^2+2b^2\right)\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{\operatorname{sech}^2(c+dx)(a-b\sinh(c+dx))}{2d\left(a^2+b^2\right)}-\frac{b^4\log(a+b\sinh(}{ad\left(a^2+b^2\right.}$$

```
[Out] -b^3*arctan(sinh(d*x+c))/(a^2+b^2)^2/d-1/2*b*arctan(sinh(d*x+c))/(a^2+b^2)/
d-a*(a^2+2*b^2)*ln(cosh(d*x+c))/(a^2+b^2)^2/d+ln(sinh(d*x+c))/a/d-b^4*ln(a+
b*sinh(d*x+c))/a/(a^2+b^2)^2/d+1/2*sech(d*x+c)^2*(a-b*sinh(d*x+c))/(a^2+b^2
)/d
```

Rubi [A] time = 0.27, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {2837, 12, 894, 639, 203, 635, 260}

$$-\frac{b^4\log(a+b\sinh(c+dx))}{ad\left(a^2+b^2\right)^2}-\frac{b^3\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{b\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)}-\frac{a\left(a^2+2b^2\right)\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{\text{s}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Csch[c + d*x]*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((b^3*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)^2*d)) - (b*ArcTan[Sinh[c + d*x]]
)/(2*(a^2 + b^2)*d) - (a*(a^2 + 2*b^2)*Log[Cosh[c + d*x]])/((a^2 + b^2)^2*d
) + Log[Sinh[c + d*x]]/(a*d) - (b^4*Log[a + b*Sinh[c + d*x]])/(a*(a^2 + b^2
)^2*d) + (Sech[c + d*x]^2*(a - b*Sinh[c + d*x]))/(2*(a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{b^3\operatorname{Subst}\left(\int \frac{b}{x(a+x)\left(-b^2-x^2\right)^2}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= \frac{b^4\operatorname{Subst}\left(\int \frac{1}{x(a+x)\left(-b^2-x^2\right)^2}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= \frac{b^4\operatorname{Subst}\left(\int \left(\frac{1}{ab^4x} - \frac{1}{a\left(a^2+b^2\right)^2(a+x)} + \frac{-b^2-ax}{b^2\left(a^2+b^2\right)\left(b^2+x^2\right)^2} + \frac{-b^4-a\left(a^2+2b^2\right)x}{b^4\left(a^2+b^2\right)^2\left(b^2+x^2\right)}\right)dx, x,$$

$$= \frac{\log(\sinh(c+dx))}{ad} - \frac{b^4\log(a+b\sinh(c+dx))}{a\left(a^2+b^2\right)^2 d} + \frac{\operatorname{Subst}\left(\int \frac{-b^4-a\left(a^2+2b^2\right)x}{b^2+x^2}\,dx\right.}{\left(a^2+b^2\right)}$$

$$= \frac{\log(\sinh(c+dx))}{ad} - \frac{b^4\log(a+b\sinh(c+dx))}{a\left(a^2+b^2\right)^2 d} + \frac{\operatorname{sech}^2(c+dx)(a-b\sinh(}{2\left(a^2+b^2\right)d}$$

$$= -\frac{b^3\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{b\tan^{-1}(\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{a\left(a^2+2b^2\right)\log(\cosh(c}{\left(a^2+b^2\right)^2 d}$$

Mathematica [A] time = 0.77, size = 196, normalized size = 1.22

$$-\frac{a\left(a^3+2ab^2+\left(-b^2\right)^{3/2}\right)\log\left(\sqrt{-b^2}-b\sinh(c+dx)\right)+a\left(a^3+2ab^2-\left(-b^2\right)^{3/2}\right)\log\left(\sqrt{-b^2}+b\sinh(c+dx)\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Csch[c + d*x]*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(a*b*(a^2 + b^2)*ArcTan[Sinh[c + d*x]] - 2*(a^2 + b^2)^2*Log[Sinh[c +
d*x]] + a*(a^3 + 2*a*b^2 + (-b^2)^(3/2))*Log[Sqrt[-b^2] - b*Sinh[c + d*x]]
+ 2*b^4*Log[a + b*Sinh[c + d*x]] + a*(a^3 + 2*a*b^2 - (-b^2)^(3/2))*Log[Sqr
t[-b^2] + b*Sinh[c + d*x]] - a^2*(a^2 + b^2)*Sech[c + d*x]^2 + a*b*(a^2 + b
^2)*Sech[c + d*x]*Tanh[c + d*x])/(a*(a^2 + b^2)^2*d)
```

fricas [B] time = 1.06, size = 1279, normalized size = 7.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -((a^3*b + a*b^3)*cosh(d*x + c)^3 + (a^3*b + a*b^3)*sinh(d*x + c)^3 - 2*(a^
4 + a^2*b^2)*cosh(d*x + c)^2 - (2*a^4 + 2*a^2*b^2 - 3*(a^3*b + a*b^3)*cosh(
d*x + c))*sinh(d*x + c)^2 + ((a^3*b + 3*a*b^3)*cosh(d*x + c)^4 + 4*(a^3*b +
 3*a*b^3)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^3*b + 3*a*b^3)*sinh(d*x + c)^4
 + a^3*b + 3*a*b^3 + 2*(a^3*b + 3*a*b^3)*cosh(d*x + c)^2 + 2*(a^3*b + 3*a*b
^3 + 3*(a^3*b + 3*a*b^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((a^3*b + 3*a
*b^3)*cosh(d*x + c)^3 + (a^3*b + 3*a*b^3)*cosh(d*x + c))*sinh(d*x + c))*arc
tan(cosh(d*x + c) + sinh(d*x + c)) - (a^3*b + a*b^3)*cosh(d*x + c) + (b^4*c
osh(d*x + c)^4 + 4*b^4*cosh(d*x + c)*sinh(d*x + c)^3 + b^4*sinh(d*x + c)^4
+ 2*b^4*cosh(d*x + c)^2 + b^4 + 2*(3*b^4*cosh(d*x + c)^2 + b^4)*sinh(d*x +
c)^2 + 4*(b^4*cosh(d*x + c)^3 + b^4*cosh(d*x + c))*sinh(d*x + c))*log(2*(b*
sinh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) + ((a^4 + 2*a^2*b^2)*co
sh(d*x + c)^4 + 4*(a^4 + 2*a^2*b^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 +
2*a^2*b^2)*sinh(d*x + c)^4 + a^4 + 2*a^2*b^2 + 2*(a^4 + 2*a^2*b^2)*cosh(d*x
 + c)^2 + 2*(a^4 + 2*a^2*b^2 + 3*(a^4 + 2*a^2*b^2)*cosh(d*x + c)^2)*sinh(d*
x + c)^2 + 4*((a^4 + 2*a^2*b^2)*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2)*cosh(d*
x + c))*sinh(d*x + c))*log(2*cosh(d*x + c)/(cosh(d*x + c) - sinh(d*x + c)))
 - ((a^4 + 2*a^2*b^2 + b^4)*cosh(d*x + c)^4 + 4*(a^4 + 2*a^2*b^2 + b^4)*cos
h(d*x + c)*sinh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*sinh(d*x + c)^4 + a^4
+ 2*a^2*b^2 + b^4 + 2*(a^4 + 2*a^2*b^2 + b^4)*cosh(d*x + c)^2 + 2*(a^4 + 2*
a^2*b^2 + b^4 + 3*(a^4 + 2*a^2*b^2 + b^4)*cosh(d*x + c)^2)*sinh(d*x + c)^2
+ 4*((a^4 + 2*a^2*b^2 + b^4)*cosh(d*x + c)^3 + (a^4 + 2*a^2*b^2 + b^4)*cosh
(d*x + c))*sinh(d*x + c))*log(2*sinh(d*x + c)/(cosh(d*x + c) - sinh(d*x + c
))) - (a^3*b + a*b^3 - 3*(a^3*b + a*b^3)*cosh(d*x + c)^2 + 4*(a^4 + a^2*b^2
)*cosh(d*x + c))*sinh(d*x + c))/((a^5 + 2*a^3*b^2 + a*b^4)*d*cosh(d*x + c)^
4 + 4*(a^5 + 2*a^3*b^2 + a*b^4)*d*cosh(d*x + c)*sinh(d*x + c)^3 + (a^5 + 2*
a^3*b^2 + a*b^4)*d*sinh(d*x + c)^4 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d*cosh(d*x
 + c)^2 + 2*(3*(a^5 + 2*a^3*b^2 + a*b^4)*d*cosh(d*x + c)^2 + (a^5 + 2*a^3*b
^2 + a*b^4)*d)*sinh(d*x + c)^2 + (a^5 + 2*a^3*b^2 + a*b^4)*d + 4*((a^5 + 2*
a^3*b^2 + a*b^4)*d*cosh(d*x + c)^3 + (a^5 + 2*a^3*b^2 + a*b^4)*d*cosh(d*x +
 c))*sinh(d*x + c))
```

giac [B] time = 2.84, size = 343, normalized size = 2.14

$$-\frac{\frac{4\,b^5\log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{a^5b+2\,a^3b^3+ab^5}+\frac{\left(\pi+2\,\arctan\left(\frac{1}{2}\,\left(e^{(2\,dx+2\,c)}-1\right)e^{(-dx-c)}\right)\right)\left(a^2b+3\,b^3\right)}{a^4+2\,a^2b^2+b^4}+\frac{2\,\left(a^3+2\,ab^2\right)\log\left(\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+4\right)}{a^4+2\,a^2b^2+b^4}-\frac{4\,\log\left(\left|e^{(dx}\right.\right.}{}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/4*(4*b^5*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/(a^5*b + 2*a^3*b
^3 + a*b^5) + (pi + 2*arctan(1/2*(e^(2*d*x + 2*c) - 1)*e^(-d*x - c)))*(a^2*
b + 3*b^3)/(a^4 + 2*a^2*b^2 + b^4) + 2*(a^3 + 2*a*b^2)*log((e^(d*x + c) - e
^(-d*x - c))^2 + 4)/(a^4 + 2*a^2*b^2 + b^4) - 4*log(abs(e^(d*x + c) - e^(-d
*x - c)))/a - 2*(a^3*(e^(d*x + c) - e^(-d*x - c))^2 + 2*a*b^2*(e^(d*x + c)
- e^(-d*x - c))^2 - 2*a^2*b*(e^(d*x + c) - e^(-d*x - c)) - 2*b^3*(e^(d*x +
c) - e^(-d*x - c)) + 8*a^3 + 12*a*b^2)/((a^4 + 2*a^2*b^2 + b^4)*((e^(d*x +
c) - e^(-d*x - c))^2 + 4)))/d
```

maple [B] time = 0.00, size = 530, normalized size = 3.31

$$-\frac{b^4 \ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right) a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right) b-a\right)}{da\left(a^4+2a^2b^2+b^4\right)}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{da}+\frac{\left(\tanh^3\left(\frac{dx}{2}+\frac{c}{2}\right)\right) a^2 b}{d\left(a^4+2a^2b^2+b^4\right)\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/d*b^4/a/(a^4+2*a^2*b^2+b^4)*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/
2*c)*b-a)+1/d/a*ln(tanh(1/2*d*x+1/2*c))+1/d/(a^4+2*a^2*b^2+b^4)/(tanh(1/2*d
*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)^3*a^2*b+1/d/(a^4+2*a^2*b^2+b^4)/(tanh(
1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)^3*b^3-2/d/(a^4+2*a^2*b^2+b^4)/(ta
nh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)^2*a^3-2/d/(a^4+2*a^2*b^2+b^4)/
(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)^2*a*b^2-1/d/(a^4+2*a^2*b^2+
b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)*a^2*b-1/d/(a^4+2*a^2*b
^2+b^4)/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)*b^3-1/d/(a^4+2*a^2*
b^2+b^4)*a^3*ln(tanh(1/2*d*x+1/2*c)^2+1)-2/d/(a^4+2*a^2*b^2+b^4)*ln(tanh(1/
2*d*x+1/2*c)^2+1)*a*b^2-1/d/(a^4+2*a^2*b^2+b^4)*arctan(tanh(1/2*d*x+1/2*c))
*a^2*b-3/d/(a^4+2*a^2*b^2+b^4)*arctan(tanh(1/2*d*x+1/2*c))*b^3
```

maxima [A] time = 0.41, size = 265, normalized size = 1.66

$$-\frac{b^4 \log\left(-2\, ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^5+2\,a^3b^2+ab^4\right)d}+\frac{\left(a^2b+3\,b^3\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{\left(a^3+2\,ab^2\right)\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{}{\left(a^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -b^4*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^5 + 2*a^3*b^2 + a*
b^4)*d) + (a^2*b + 3*b^3)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*d)
```

```
- (a^3 + 2*a*b^2)*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d) - (
b*e^(-d*x - c) - 2*a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((a^2 + b^2 + 2
*(a^2 + b^2)*e^(-2*d*x - 2*c) + (a^2 + b^2)*e^(-4*d*x - 4*c))*d) + log(e^(-
d*x - c) + 1)/(a*d) + log(e^(-d*x - c) - 1)/(a*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\cosh(c+d\,x)^3\,\sinh(c+d\,x)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)^3*sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.448 $\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\operatorname{Int}\left(\frac{\operatorname{csch}(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Csch[c + d*x]*Sech[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Csch[c + d*x]*Sech[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 173.55, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Csch[c + d*x]*Sech[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] Integrate[(Csch[c + d*x]*Sech[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x]))
, x]
```

fricas [A] time = 36.59, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(dx+c)\operatorname{sech}(dx+c)^3}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(csch(d*x + c)*sech(d*x + c)^3/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 4.36, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(dx+c\right) \operatorname{sech}\left(dx+c\right)^{3}}{\left(fx+e\right) \left(a+b\sinh\left(dx+c\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -(a*f + (b*d*f*x*e^(3*c) + (d*e - f)*b*e^(3*c))*e^(3*d*x) - (2*a*d*f*x*e^(2
*c) + (2*d*e - f)*a*e^(2*c))*e^(2*d*x) - (b*d*f*x*e^c + (d*e + f)*b*e^c)*e^
(d*x))/(a^2*d^2*e^2 + b^2*d^2*e^2 + (a^2*d^2*f^2 + b^2*d^2*f^2)*x^2 + 2*(a^
2*d^2*e*f + b^2*d^2*e*f)*x + (a^2*d^2*e^2*e^(4*c) + b^2*d^2*e^2*e^(4*c) + (
a^2*d^2*f^2*e^(4*c) + b^2*d^2*f^2*e^(4*c))*x^2 + 2*(a^2*d^2*e*f*e^(4*c) + b
^2*d^2*e*f*e^(4*c))*x)*e^(4*d*x) + 2*(a^2*d^2*e^2*e^(2*c) + b^2*d^2*e^2*e^(
2*c) + (a^2*d^2*f^2*e^(2*c) + b^2*d^2*f^2*e^(2*c))*x^2 + 2*(a^2*d^2*e*f*e^(
2*c) + b^2*d^2*e*f*e^(2*c))*x)*e^(2*d*x)) + 16*integrate(-1/8*(a*b^4*e^(d*x
```

```
 + c) - b^5)/(a^5*b*e + 2*a^3*b^3*e + a*b^5*e + (a^5*b*f + 2*a^3*b^3*f + a*
b^5*f)*x - (a^5*b*e*e^(2*c) + 2*a^3*b^3*e*e^(2*c) + a*b^5*e*e^(2*c) + (a^5*
b*f*e^(2*c) + 2*a^3*b^3*f*e^(2*c) + a*b^5*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^6*
e*e^c + 2*a^4*b^2*e*e^c + a^2*b^4*e*e^c + (a^6*f*e^c + 2*a^4*b^2*f*e^c + a^
2*b^4*f*e^c)*x)*e^(d*x)), x) - 16*integrate(-1/16*(2*(d^2*e^2 - f^2)*a^3 +
2*(2*d^2*e^2 - f^2)*a*b^2 + 2*(a^3*d^2*f^2 + 2*a*b^2*d^2*f^2)*x^2 + 4*(a^3*
d^2*e*f + 2*a*b^2*d^2*e*f)*x - ((d^2*e^2 - 2*f^2)*a^2*b*e^c + (3*d^2*e^2 -
2*f^2)*b^3*e^c + (a^2*b*d^2*f^2*e^c + 3*b^3*d^2*f^2*e^c)*x^2 + 2*(a^2*b*d^2
*e*f*e^c + 3*b^3*d^2*e*f*e^c)*x)*e^(d*x))/(a^4*d^2*e^3 + 2*a^2*b^2*d^2*e^3
+ b^4*d^2*e^3 + (a^4*d^2*f^3 + 2*a^2*b^2*d^2*f^3 + b^4*d^2*f^3)*x^3 + 3*(a^
4*d^2*e*f^2 + 2*a^2*b^2*d^2*e*f^2 + b^4*d^2*e*f^2)*x^2 + 3*(a^4*d^2*e^2*f +
 2*a^2*b^2*d^2*e^2*f + b^4*d^2*e^2*f)*x + (a^4*d^2*e^3*e^(2*c) + 2*a^2*b^2*
d^2*e^3*e^(2*c) + b^4*d^2*e^3*e^(2*c) + (a^4*d^2*f^3*e^(2*c) + 2*a^2*b^2*d^
2*f^3*e^(2*c) + b^4*d^2*f^3*e^(2*c))*x^3 + 3*(a^4*d^2*e*f^2*e^(2*c) + 2*a^2
*b^2*d^2*e*f^2*e^(2*c) + b^4*d^2*e*f^2*e^(2*c))*x^2 + 3*(a^4*d^2*e^2*f*e^(2
*c) + 2*a^2*b^2*d^2*e^2*f*e^(2*c) + b^4*d^2*e^2*f*e^(2*c))*x)*e^(2*d*x)), x
) - 16*integrate(1/16/(a*f*x + a*e + (a*f*x*e^c + a*e*e^c)*e^(d*x)), x) + 1
6*integrate(-1/16/(a*f*x + a*e - (a*f*x*e^c + a*e*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+dx)^3 \sinh(c+dx) \left(e+fx\right) (a+b\sinh(c+dx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)^3*sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)*sech(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.449 $\int \frac{(e+fx)^3\coth(c+dx)\textbf{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=601

$$\frac{6bf^3\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^4}+\frac{6bf^3\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^4}-\frac{6bf^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3}-\frac{6bf^2(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^3}+\frac{3bf}{}$$

```
[Out] -6*f*(f*x+e)^2*arctanh(exp(d*x+c))/a/d^2-(f*x+e)^3*csch(d*x+c)/a/d-b*(f*x+e
)^3*ln(1-exp(2*d*x+2*c))/a^2/d+b*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(
1/2)))/a^2/d+b*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/d-6*f^2
*(f*x+e)*polylog(2,-exp(d*x+c))/a/d^3+6*f^2*(f*x+e)*polylog(2,exp(d*x+c))/a
/d^3-3/2*b*f*(f*x+e)^2*polylog(2,exp(2*d*x+2*c))/a^2/d^2+3*b*f*(f*x+e)^2*po
lylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/d^2+3*b*f*(f*x+e)^2*polylog(
2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/d^2+6*f^3*polylog(3,-exp(d*x+c))/a
/d^4-6*f^3*polylog(3,exp(d*x+c))/a/d^4+3/2*b*f^2*(f*x+e)*polylog(3,exp(2*d*
x+2*c))/a^2/d^3-6*b*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2))
)/a^2/d^3-6*b*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/
d^3-3/4*b*f^3*polylog(4,exp(2*d*x+2*c))/a^2/d^4+6*b*f^3*polylog(4,-b*exp(d*
x+c)/(a-(a^2+b^2)^(1/2)))/a^2/d^4+6*b*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b
^2)^(1/2)))/a^2/d^4
```

Rubi [A] time = 1.00, antiderivative size = 601, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {5587, 5452, 4182, 2531, 2282, 6589, 5569, 3716, 2190, 6609, 5561}

$$-\frac{6bf^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3}-\frac{6bf^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^3}+\frac{3bf(e+fx)^2\text{PolyLog}\left(2,-\frac{be^{c+}}{a-\sqrt{a^2}}\right.}{a^2d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Coth[c + d*x]*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-6*f*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d^2) - ((e + f*x)^3*Csch[c + d*x
])/(a*d) + (b*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(
a^2*d) + (b*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^
2*d) - (b*(e + f*x)^3*Log[1 - E^(2*(c + d*x))])/(a^2*d) - (6*f^2*(e + f*x)*
PolyLog[2, -E^(c + d*x)])/(a*d^3) + (6*f^2*(e + f*x)*PolyLog[2, E^(c + d*x)
])/(a*d^3) + (3*b*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2
+ b^2]))])/(a^2*d^2) + (3*b*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2]))])/(a^2*d^2) - (3*b*f*(e + f*x)^2*PolyLog[2, E^(2*(c + d*
x))])/(2*a^2*d^2) + (6*f^3*PolyLog[3, -E^(c + d*x)])/(a*d^4) - (6*f^3*PolyL
og[3, E^(c + d*x)])/(a*d^4) - (6*b*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x
```

```
))/(a - Sqrt[a^2 + b^2]))])/(a^2*d^3) - (6*b*f^2*(e + f*x)*PolyLog[3, -((b*
E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*d^3) + (3*b*f^2*(e + f*x)*PolyLo
g[3, E^(2*(c + d*x))])/(2*a^2*d^3) + (6*b*f^3*PolyLog[4, -((b*E^(c + d*x))/
(a - Sqrt[a^2 + b^2]))])/(a^2*d^4) + (6*b*f^3*PolyLog[4, -((b*E^(c + d*x))/
(a + Sqrt[a^2 + b^2]))])/(a^2*d^4) - (3*b*f^3*PolyLog[4, E^(2*(c + d*x))])/
(4*a^2*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
```

```
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5587

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*Csch[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Csch[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Csch[c + d*x]^(p - 1)*Coth[c + d*x]^n)/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
```

```
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\coth(c+dx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx=\frac{\int (e+fx)^3\coth(c+dx)\operatorname{csch}(c+dx)\,dx}{a}-\frac{b\int \frac{(e+fx)^3\coth(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$=-\frac{(e+fx)^3\operatorname{csch}(c+dx)}{ad}-\frac{b\int (e+fx)^3\coth(c+dx)\,dx}{a^2}+\frac{b^2\int \frac{(e+f}{a+}}{}$$

$$=-\frac{6f(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad^2}-\frac{(e+fx)^3\operatorname{csch}(c+dx)}{ad}+\frac{(2b)\int \frac{e^{2(c+}}{1-}}{a}$$

$$=-\frac{6f(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad^2}-\frac{(e+fx)^3\operatorname{csch}(c+dx)}{ad}+\frac{b(e+fx)^3}{}$$

$$=-\frac{6f(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad^2}-\frac{(e+fx)^3\operatorname{csch}(c+dx)}{ad}+\frac{b(e+fx)^3}{}$$

$$=-\frac{6f(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad^2}-\frac{(e+fx)^3\operatorname{csch}(c+dx)}{ad}+\frac{b(e+fx)^3}{}$$

$$=-\frac{6f(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad^2}-\frac{(e+fx)^3\operatorname{csch}(c+dx)}{ad}+\frac{b(e+fx)^3}{}$$

$$=-\frac{6f(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad^2}-\frac{(e+fx)^3\operatorname{csch}(c+dx)}{ad}+\frac{b(e+fx)^3}{}$$

Mathematica [B] time = 25.96, size = 2469, normalized size = 4.11

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Coth[c + d*x]*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] -(((e + f*x)^3*Csch[c])/(a*d)) - (b*(4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*x^2
+ 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*f^3*x^4 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(
2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) +
```

```
(4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2
+ b^2]])/((-a^2 - b^2)^(3/2)*d) + (2*e^3*Log[b - 2*a*E^(c + d*x) - b*E^(2*(
c + d*x))])/d - (2*e^3*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)
))])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(
2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^
2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sq
rt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x
))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c +
 d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 +
 (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x*Log
[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(
2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d
+ (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]
)])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 +
 b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a
^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E
^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyL
og[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(
-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a
^2 + b^2)*E^(2*c)]))])/d^2 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^
c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E
^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLo
g[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E
^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*
c)]))])/d^3 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 +
 b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(
a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*
c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*Po
lyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (
12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))]
)/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 +
 b^2)*E^(2*c)]))])/d^4 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sq
rt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c +
d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4))/(2*a^2*(-1 + E^(2*c))) +
 ((b*(e + f*x)^4*(-1 + Coth[c]))/(2*f) + (2*e^2*(b*d*e - 3*a*f)*(d*x - Log[
1 - Cosh[c + d*x] - Sinh[c + d*x]]))/d^2 - (6*e*f*(b*d*e + 2*a*f)*x*Log[1 +
 Cosh[c + d*x] - Sinh[c + d*x]])/d^2 - (6*f^2*(b*d*e + a*f)*x^2*Log[1 + Cos
h[c + d*x] - Sinh[c + d*x]])/d^2 - (2*b*f^3*x^3*Log[1 + Cosh[c + d*x] - Sin
h[c + d*x]])/d - (6*e*f*(b*d*e - 2*a*f)*x*Log[1 - Cosh[c + d*x] + Sinh[c +
d*x]])/d^2 + (6*f^2*(-(b*d*e) + a*f)*x^2*Log[1 - Cosh[c + d*x] + Sinh[c + d
*x]])/d^2 - (2*b*f^3*x^3*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]])/d + (2*e^2
*(b*d*e + 3*a*f)*(d*x - Log[1 + Cosh[c + d*x] + Sinh[c + d*x]]))/d^2 + (6*e
*f*(b*d*e - 2*a*f)*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]])/d^3 + (6*e*f*
(b*d*e + 2*a*f)*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]])/d^3 + (12*f^2*(
b*d*e - a*f)*(d*x*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + PolyLog[3, Co
```

```
sh[c + d*x] - Sinh[c + d*x]]))/d^4 + (12*f^2*(b*d*e + a*f)*(d*x*PolyLog[2,
-Cosh[c + d*x] + Sinh[c + d*x]] + PolyLog[3, -Cosh[c + d*x] + Sinh[c + d*x]
]))/d^4 + (6*b*f^3*(d^2*x^2*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + 2*(
d*x*PolyLog[3, Cosh[c + d*x] - Sinh[c + d*x]] + PolyLog[4, Cosh[c + d*x] -
Sinh[c + d*x]])))/d^4 + (6*b*f^3*(d^2*x^2*PolyLog[2, -Cosh[c + d*x] + Sinh[
c + d*x]] + 2*(d*x*PolyLog[3, -Cosh[c + d*x] + Sinh[c + d*x]] + PolyLog[4,
-Cosh[c + d*x] + Sinh[c + d*x]])))/d^4)/(2*a^2) + (Csch[c/2]*Csch[c/2 + (d*
x)/2]*(e^3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(d*x)/2] + 3*e*f^2*x^2*Sinh[(d*x)
/2] + f^3*x^3*Sinh[(d*x)/2]))/(2*a*d) + (Sech[c/2]*Sech[c/2 + (d*x)/2]*(e^3
*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(d*x)/2] + 3*e*f^2*x^2*Sinh[(d*x)/2] + f^3*
x^3*Sinh[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 0.68, size = 4313, normalized size = 7.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -(2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cosh(
d*x + c) + 3*(b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f - (b*d^2*f^3*x^
2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*cosh(d*x + c)^2 - 2*(b*d^2*f^3*x^2 + 2*b
*d^2*e*f^2*x + b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d^2*f^3*x^2 +
2*b*d^2*e*f^2*x + b*d^2*e^2*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*
sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) -
 b)/b + 1) + 3*(b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f - (b*d^2*f^3*
x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*cosh(d*x + c)^2 - 2*(b*d^2*f^3*x^2 + 2
*b*d^2*e*f^2*x + b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d^2*f^3*x^2
+ 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) +
a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
 - b)/b + 1) - 3*(b*d^2*f^3*x^2 + b*d^2*e^2*f - 2*a*d*e*f^2 - (b*d^2*f^3*x^
2 + b*d^2*e^2*f - 2*a*d*e*f^2 + 2*(b*d^2*e*f^2 - a*d*f^3)*x)*cosh(d*x + c)^
2 - 2*(b*d^2*f^3*x^2 + b*d^2*e^2*f - 2*a*d*e*f^2 + 2*(b*d^2*e*f^2 - a*d*f^3
)*x)*cosh(d*x + c)*sinh(d*x + c) - (b*d^2*f^3*x^2 + b*d^2*e^2*f - 2*a*d*e*f
^2 + 2*(b*d^2*e*f^2 - a*d*f^3)*x)*sinh(d*x + c)^2 + 2*(b*d^2*e*f^2 - a*d*f^
3)*x)*dilog(cosh(d*x + c) + sinh(d*x + c)) - 3*(b*d^2*f^3*x^2 + b*d^2*e^2*f
 + 2*a*d*e*f^2 - (b*d^2*f^3*x^2 + b*d^2*e^2*f + 2*a*d*e*f^2 + 2*(b*d^2*e*f^
2 + a*d*f^3)*x)*cosh(d*x + c)^2 - 2*(b*d^2*f^3*x^2 + b*d^2*e^2*f + 2*a*d*e*
f^2 + 2*(b*d^2*e*f^2 + a*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c) - (b*d^2*f^3
*x^2 + b*d^2*e^2*f + 2*a*d*e*f^2 + 2*(b*d^2*e*f^2 + a*d*f^3)*x)*sinh(d*x +
c)^2 + 2*(b*d^2*e*f^2 + a*d*f^3)*x)*dilog(-cosh(d*x + c) - sinh(d*x + c)) +
 (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3 - (b*d^3*e^3 -
3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*cosh(d*x + c)^2 - 2*(b*d^3*e
^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*cosh(d*x + c)*sinh(d*x
```

+ c) - (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3 - (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*cosh(d*x + c)^2 - 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) - (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3 - (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*cosh(d*x + c)^2 - 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) - (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3 - (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*cosh(d*x + c)^2 - 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) - (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b*d^3*f^3*x^3 + b*d^3*e^3 + 3*a*d^2*e^2*f + 3*(b*d^3*e*f^2 + a*d^2*f^3)*x^2 - (b*d^3*f^3*x^3 + b*d^3*e^3 + 3*a*d^2*e^2*f + 3*(b*d^3*e*f^2 + a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f + 2*a*d^2*e*f^2)*x)*cosh(d*x + c)^2 - 2*(b*d^3*f^3*x^3 + b*d^3*e^3 + 3*a*d^2*e^2*f + 3*(b*d^3*e*f^2 + a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f + 2*a*d^2*e*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - (b*d^3*f^3*x^3 + b*d^3*e^3 + 3*a*d^2*e^2*f + 3*(b*d^3*e*f^2 + a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f + 2*a*d^2*e*f^2)*x)*sinh(d*x + c)^2 + 3*(b*d^3*e^2*f + 2*a*d^2*e*f^2)*x)*log(cosh(d*x + c) + sinh(d*x + c) + 1) - (b*d^3*e^3 - 3*(b*c + a)*d^2*e^2*f + 3*(b*c^2 + 2*a*c)*d*e*f^2 - (b*c^3 + 3*a*c^2)*f^3 - (b*d^3*e^3 - 3*(b*c + a)*d^2*e^2*f + 3*(b*c^2 + 2*a*c)*d*e*f^2 - (b*c^3 + 3*a*c^2)*f^3)*cosh(d*x + c)^2 - 2*(b*d^3*e^3 - 3*(b*c + a)*d^2*e^2*f + 3*(b*c^2 + 2*a*c)*d*e*f^2 - (b*c^3 + 3*a*c^2)*f^3)*cosh(d*x + c)*sinh(d*x + c) - (b*d^3*e^3 - 3*(b*c + a)*d^2*e^2*f + 3*(b*c^2 + 2*a*c)*d*e*f^2 - (b*c^3 + 3*a*c^2)*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1) - (b*d^3*f^3*x^3 + 3*b*c*d^2*e^2*f - 3*(b*c^2 + 2*a*c)*d*e*f^2 + (b*c^3 + 3*a*c^2)*f^3 + 3*(b*d^3*e*f^2 - a*d^2*f^3)*x^2 - (b*d^3*f^3*x^3 + 3*b*c*d^2*e^2*f - 3*(b*c^2 + 2*a*c)*d*e*f^2 + (b*c^3 + 3*a*c^2)*f^3 + 3*(b*d^3*e*f^2 - a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f - 2*a*d^2*e*f^2)*x)*cosh(d*x + c)^2 - 2*(b*d^3*f^3*x^3 + 3*b*c*d^2*e^2*f - 3*(b*c^2 + 2*a*c)*d*e*f^2 + (b*c^3 + 3*a*c^2)*f^3 + 3*(b*d^3*e*f^2 - a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f - 2*a*d^2*e*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - (b*d^3*f^3*x^3 + 3*b*c*d^2*e^2*f - 3*(b*c^2 + 2*a*c)*d*e*f^2 + (b*c^3 + 3*a*c^2)*f^3 + 3*(b*d^3*e*f^2 - a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f - 2*a*d^

```
2*e*f^2)*x)*sinh(d*x + c)^2 + 3*(b*d^3*e^2*f - 2*a*d^2*e*f^2)*x)*log(-cosh(
d*x + c) - sinh(d*x + c) + 1) - 6*(b*f^3*cosh(d*x + c)^2 + 2*b*f^3*cosh(d*x
 + c)*sinh(d*x + c) + b*f^3*sinh(d*x + c)^2 - b*f^3)*polylog(4, (a*cosh(d*x
 + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b
^2)/b^2))/b) - 6*(b*f^3*cosh(d*x + c)^2 + 2*b*f^3*cosh(d*x + c)*sinh(d*x +
c) + b*f^3*sinh(d*x + c)^2 - b*f^3)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*
x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*
(b*f^3*cosh(d*x + c)^2 + 2*b*f^3*cosh(d*x + c)*sinh(d*x + c) + b*f^3*sinh(d
*x + c)^2 - b*f^3)*polylog(4, cosh(d*x + c) + sinh(d*x + c)) + 6*(b*f^3*cos
h(d*x + c)^2 + 2*b*f^3*cosh(d*x + c)*sinh(d*x + c) + b*f^3*sinh(d*x + c)^2
- b*f^3)*polylog(4, -cosh(d*x + c) - sinh(d*x + c)) - 6*(b*d*f^3*x + b*d*e*
f^2 - (b*d*f^3*x + b*d*e*f^2)*cosh(d*x + c)^2 - 2*(b*d*f^3*x + b*d*e*f^2)*c
osh(d*x + c)*sinh(d*x + c) - (b*d*f^3*x + b*d*e*f^2)*sinh(d*x + c)^2)*polyl
og(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2))/b) - 6*(b*d*f^3*x + b*d*e*f^2 - (b*d*f^3*x + b*d
*e*f^2)*cosh(d*x + c)^2 - 2*(b*d*f^3*x + b*d*e*f^2)*cosh(d*x + c)*sinh(d*x
+ c) - (b*d*f^3*x + b*d*e*f^2)*sinh(d*x + c)^2)*polylog(3, (a*cosh(d*x + c)
 + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2))/b) + 6*(b*d*f^3*x + b*d*e*f^2 - a*f^3 - (b*d*f^3*x + b*d*e*f^2 - a*f^3
)*cosh(d*x + c)^2 - 2*(b*d*f^3*x + b*d*e*f^2 - a*f^3)*cosh(d*x + c)*sinh(d*
x + c) - (b*d*f^3*x + b*d*e*f^2 - a*f^3)*sinh(d*x + c)^2)*polylog(3, cosh(d
*x + c) + sinh(d*x + c)) + 6*(b*d*f^3*x + b*d*e*f^2 + a*f^3 - (b*d*f^3*x +
b*d*e*f^2 + a*f^3)*cosh(d*x + c)^2 - 2*(b*d*f^3*x + b*d*e*f^2 + a*f^3)*cosh
(d*x + c)*sinh(d*x + c) - (b*d*f^3*x + b*d*e*f^2 + a*f^3)*sinh(d*x + c)^2)*
polylog(3, -cosh(d*x + c) - sinh(d*x + c)) + 2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f
^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*sinh(d*x + c))/(a^2*d^4*cosh(d*x + c)
^2 + 2*a^2*d^4*cosh(d*x + c)*sinh(d*x + c) + a^2*d^4*sinh(d*x + c)^2 - a^2*
d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [F] time = 1.76, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \coth \left(dx+c\right) \operatorname{csch}\left(dx+c\right)}{a+b\sinh \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^3\left(\frac{2\,e^{(-dx-c)}}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}+\frac{b\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{a^2d}-\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^2d}-\frac{b\log\left(e^{(-dx-c)}-1\right)}{a^2d}\right)-\frac{2\left(f^3x^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] e^3*(2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) + b*log(-2*a*e^(-d*x - c)
+ b*e^(-2*d*x - 2*c) - b)/(a^2*d) - b*log(e^(-d*x - c) + 1)/(a^2*d) - b*log
(e^(-d*x - c) - 1)/(a^2*d)) - 2*(f^3*x^3*e^c + 3*e*f^2*x^2*e^c + 3*e^2*f*x*
e^c)*e^(d*x)/(a*d*e^(2*d*x + 2*c) - a*d) - 3*e^2*f*log(e^(d*x + c) + 1)/(a*
d^2) + 3*e^2*f*log(e^(d*x + c) - 1)/(a*d^2) - (d^3*x^3*log(e^(d*x + c) + 1)
 + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x + c)) + 6*polyl
og(4, -e^(d*x + c)))*b*f^3/(a^2*d^4) - (d^3*x^3*log(-e^(d*x + c) + 1) + 3*d
^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*polylog(4, e^
(d*x + c)))*b*f^3/(a^2*d^4) - 3*(b*d*e^2*f + 2*a*e*f^2)*(d*x*log(e^(d*x + c
) + 1) + dilog(-e^(d*x + c)))/(a^2*d^3) - 3*(b*d*e^2*f - 2*a*e*f^2)*(d*x*lo
g(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^2*d^3) - 3*(b*d*e*f^2 + a*f^3)
*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -
e^(d*x + c)))/(a^2*d^4) - 3*(b*d*e*f^2 - a*f^3)*(d^2*x^2*log(-e^(d*x + c) +
 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))/(a^2*d^4) + 1/4
*(b*d^4*f^3*x^4 + 4*(b*d*e*f^2 + a*f^3)*d^3*x^3 + 6*(b*d^2*e^2*f + 2*a*d*e*
f^2)*d^2*x^2)/(a^2*d^4) + 1/4*(b*d^4*f^3*x^4 + 4*(b*d*e*f^2 - a*f^3)*d^3*x^
3 + 6*(b*d^2*e^2*f - 2*a*d*e*f^2)*d^2*x^2)/(a^2*d^4) - integrate(-2*(b^2*f^
3*x^3 + 3*b^2*e*f^2*x^2 + 3*b^2*e^2*f*x - (a*b*f^3*x^3*e^c + 3*a*b*e*f^2*x^
2*e^c + 3*a*b*e^2*f*x*e^c)*e^(d*x))/(a^2*b*e^(2*d*x + 2*c) + 2*a^3*e^(d*x +
 c) - a^2*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{\mathrm{sinh}\left(c+d\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)*(e + f*x)^3)/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((coth(c + d*x)*(e + f*x)^3)/(sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.450 $\int \frac{(e+fx)^2 \coth(c+dx)\mathbf{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=419

$$-\frac{2bf^2\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3}-\frac{2bf^2\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^3}+\frac{2bf(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2}+\frac{2bf(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^2}+\frac{b(e\cdots}{\cdots}$$

```
[Out] -4*f*(f*x+e)*arctanh(exp(d*x+c))/a/d^2-(f*x+e)^2*csch(d*x+c)/a/d-b*(f*x+e)^
2*ln(1-exp(2*d*x+2*c))/a^2/d+b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/
2)))/a^2/d+b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/d-2*f^2*p
olylog(2,-exp(d*x+c))/a/d^3+2*f^2*polylog(2,exp(d*x+c))/a/d^3-b*f*(f*x+e)*p
olylog(2,exp(2*d*x+2*c))/a^2/d^2+2*b*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(
a^2+b^2)^(1/2)))/a^2/d^2+2*b*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)
^(1/2)))/a^2/d^2+1/2*b*f^2*polylog(3,exp(2*d*x+2*c))/a^2/d^3-2*b*f^2*polylo
g(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/d^3-2*b*f^2*polylog(3,-b*exp(d*x
+c)/(a+(a^2+b^2)^(1/2)))/a^2/d^3
```

Rubi [A] time = 0.82, antiderivative size = 419, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 12, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {5587, 5452, 4182, 2279, 2391, 5569, 3716, 2190, 2531, 2282, 6589, 5561}

$$\frac{2bf(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2}+\frac{2bf(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^2}-\frac{2bf^2\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3}-\frac{2bf^2\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Coth[c + d*x]*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-4*f*(e + f*x)*ArcTanh[E^(c + d*x)])/(a*d^2) - ((e + f*x)^2*Csch[c + d*x])
/(a*d) + (b*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^
2*d) + (b*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^2*
d) - (b*(e + f*x)^2*Log[1 - E^(2*(c + d*x))])/(a^2*d) - (2*f^2*PolyLog[2, -
E^(c + d*x)])/(a*d^3) + (2*f^2*PolyLog[2, E^(c + d*x)])/(a*d^3) + (2*b*f*(e
 + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*d^2) + (
2*b*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*
d^2) - (b*f*(e + f*x)*PolyLog[2, E^(2*(c + d*x))])/(a^2*d^2) - (2*b*f^2*Pol
yLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*d^3) - (2*b*f^2*Pol
yLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*d^3) + (b*f^2*PolyL
og[3, E^(2*(c + d*x))])/(2*a^2*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
```

```
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5587

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*Csch[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Csch[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Csch[c + d*x]^(p - 1)*Coth[c + d*x]^n)/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\coth(c+dx)\text{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\coth(c+dx)\text{csch}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\coth(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^2\text{csch}(c+dx)}{ad} - \frac{b\int (e+fx)^2\coth(c+dx)\,dx}{a^2} + \frac{b^2\int \frac{(e+f}{a+}}{}$$

$$= -\frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} - \frac{(e+fx)^2\text{csch}(c+dx)}{ad} + \frac{(2b)\int \frac{e^{2(c+dx}}{1-e}}{a^2}$$

$$= -\frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} - \frac{(e+fx)^2\text{csch}(c+dx)}{ad} + \frac{b(e+fx)^2\,\text{l}}{}$$

$$= -\frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} - \frac{(e+fx)^2\text{csch}(c+dx)}{ad} + \frac{b(e+fx)^2\,\text{l}}{}$$

$$= -\frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} - \frac{(e+fx)^2\text{csch}(c+dx)}{ad} + \frac{b(e+fx)^2\,\text{l}}{}$$

$$= -\frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} - \frac{(e+fx)^2\text{csch}(c+dx)}{ad} + \frac{b(e+fx)^2\,\text{l}}{}$$

Mathematica [B] time = 17.09, size = 1383, normalized size = 3.30

$$-\frac{\text{csch}(c)(e+fx)^2}{ad} - \frac{b\left(2e^{2c}f^2x^3d^3 + 6ee^{2c}fx^2d^3 + 6e^2e^{2c}xd^3 - 3e^2e^{2c}\log\left(-2e^{c+dx}a - be^{2(c+dx)} + b\right)d^2 + 3e^2\log\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Coth[c + d*x]*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] -(((e + f*x)^2*Csch[c])/(a*d)) - (b*(6*d^3*e^2*E^(2*c)*x + 6*d^3*e*E^(2*c)*
f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*d^2*e^2*Log[b - 2*a*E^(c + d*x) - b*E^(2*
(c + d*x))] - 3*d^2*e^2*E^(2*c)*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))
] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)
])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^
2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2
+ b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c
- Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^
```

```
c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d
*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c
 + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1
 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d*(-1 + E^(2*
c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^
(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(
a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))
/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2
*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^
(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[
3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))]))/(3*a^2*d^3*(
-1 + E^(2*c))) + (b*d^3*(e + f*x)^3*(-1 + Coth[c]) + 3*d*e*f*(b*d*e - 2*a*f
)*(d*x - Log[1 - Cosh[c + d*x] - Sinh[c + d*x]]) - 6*d*f^2*(b*d*e + a*f)*x*
Log[1 + Cosh[c + d*x] - Sinh[c + d*x]] - 3*b*d^2*f^3*x^2*Log[1 + Cosh[c + d
*x] - Sinh[c + d*x]] - 6*d*f^2*(b*d*e - a*f)*x*Log[1 - Cosh[c + d*x] + Sinh
[c + d*x]] - 3*b*d^2*f^3*x^2*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]] + 3*d*e
*f*(b*d*e + 2*a*f)*(d*x - Log[1 + Cosh[c + d*x] + Sinh[c + d*x]]) + 6*f^2*(
b*d*e - a*f)*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + 6*f^2*(b*d*e + a*f
)*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + 6*b*f^3*(d*x*PolyLog[2, Cosh
[c + d*x] - Sinh[c + d*x]] + PolyLog[3, Cosh[c + d*x] - Sinh[c + d*x]]) + 6
*b*f^3*(d*x*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + PolyLog[3, -Cosh[c
 + d*x] + Sinh[c + d*x]]))/(3*a^2*d^3*f) + (Csch[c/2]*Csch[c/2 + (d*x)/2]*(
e^2*Sinh[(d*x)/2] + 2*e*f*x*Sinh[(d*x)/2] + f^2*x^2*Sinh[(d*x)/2]))/(2*a*d)
 + (Sech[c/2]*Sech[c/2 + (d*x)/2]*(e^2*Sinh[(d*x)/2] + 2*e*f*x*Sinh[(d*x)/2
] + f^2*x^2*Sinh[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 0.73, size = 2528, normalized size = 6.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -(2*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*cosh(d*x + c) + 2*(b*d*f^2*
x + b*d*e*f - (b*d*f^2*x + b*d*e*f)*cosh(d*x + c)^2 - 2*(b*d*f^2*x + b*d*e*
f)*cosh(d*x + c)*sinh(d*x + c) - (b*d*f^2*x + b*d*e*f)*sinh(d*x + c)^2)*dil
og((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))
*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(b*d*f^2*x + b*d*e*f - (b*d*f^2*x +
b*d*e*f)*cosh(d*x + c)^2 - 2*(b*d*f^2*x + b*d*e*f)*cosh(d*x + c)*sinh(d*x +
 c) - (b*d*f^2*x + b*d*e*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sin
h(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)
/b + 1) - 2*(b*d*f^2*x + b*d*e*f - a*f^2 - (b*d*f^2*x + b*d*e*f - a*f^2)*co
sh(d*x + c)^2 - 2*(b*d*f^2*x + b*d*e*f - a*f^2)*cosh(d*x + c)*sinh(d*x + c)
 - (b*d*f^2*x + b*d*e*f - a*f^2)*sinh(d*x + c)^2)*dilog(cosh(d*x + c) + sin
```

h(d*x + c)) - 2*(b*d*f^2*x + b*d*e*f + a*f^2 - (b*d*f^2*x + b*d*e*f + a*f^2
)*cosh(d*x + c)^2 - 2*(b*d*f^2*x + b*d*e*f + a*f^2)*cosh(d*x + c)*sinh(d*x
+ c) - (b*d*f^2*x + b*d*e*f + a*f^2)*sinh(d*x + c)^2)*dilog(-cosh(d*x + c)
- sinh(d*x + c)) + (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2 - (b*d^2*e^2 - 2*b*
c*d*e*f + b*c^2*f^2)*cosh(d*x + c)^2 - 2*(b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f
^2)*cosh(d*x + c)*sinh(d*x + c) - (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sin
h(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b
^2)/b^2) + 2*a) + (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2 - (b*d^2*e^2 - 2*b*c
*d*e*f + b*c^2*f^2)*cosh(d*x + c)^2 - 2*(b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^
2)*cosh(d*x + c)*sinh(d*x + c) - (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sinh
(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^
2)/b^2) + 2*a) + (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2 -
(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*cosh(d*x + c)^2
- 2*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*cosh(d*x + c)
*sinh(d*x + c) - (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*
sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (b*d^2*f^2*x^2 + 2*b*d^
2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2 - (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*
d*e*f - b*c^2*f^2)*cosh(d*x + c)^2 - 2*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b
*c*d*e*f - b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) - (b*d^2*f^2*x^2 + 2*b*d^
2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) +
a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2
) - b)/b) - (b*d^2*f^2*x^2 + b*d^2*e^2 + 2*a*d*e*f - (b*d^2*f^2*x^2 + b*d^2
*e^2 + 2*a*d*e*f + 2*(b*d^2*e*f + a*d*f^2)*x)*cosh(d*x + c)^2 - 2*(b*d^2*f^
2*x^2 + b*d^2*e^2 + 2*a*d*e*f + 2*(b*d^2*e*f + a*d*f^2)*x)*cosh(d*x + c)*si
nh(d*x + c) - (b*d^2*f^2*x^2 + b*d^2*e^2 + 2*a*d*e*f + 2*(b*d^2*e*f + a*d*f
^2)*x)*sinh(d*x + c)^2 + 2*(b*d^2*e*f + a*d*f^2)*x)*log(cosh(d*x + c) + sin
h(d*x + c) + 1) - (b*d^2*e^2 - 2*(b*c + a)*d*e*f + (b*c^2 + 2*a*c)*f^2 - (b
*d^2*e^2 - 2*(b*c + a)*d*e*f + (b*c^2 + 2*a*c)*f^2)*cosh(d*x + c)^2 - 2*(b*
d^2*e^2 - 2*(b*c + a)*d*e*f + (b*c^2 + 2*a*c)*f^2)*cosh(d*x + c)*sinh(d*x +
c) - (b*d^2*e^2 - 2*(b*c + a)*d*e*f + (b*c^2 + 2*a*c)*f^2)*sinh(d*x + c)^2
)*log(cosh(d*x + c) + sinh(d*x + c) - 1) - (b*d^2*f^2*x^2 + 2*b*c*d*e*f - (
b*c^2 + 2*a*c)*f^2 - (b*d^2*f^2*x^2 + 2*b*c*d*e*f - (b*c^2 + 2*a*c)*f^2 + 2
*(b*d^2*e*f - a*d*f^2)*x)*cosh(d*x + c)^2 - 2*(b*d^2*f^2*x^2 + 2*b*c*d*e*f
- (b*c^2 + 2*a*c)*f^2 + 2*(b*d^2*e*f - a*d*f^2)*x)*cosh(d*x + c)*sinh(d*x +
c) - (b*d^2*f^2*x^2 + 2*b*c*d*e*f - (b*c^2 + 2*a*c)*f^2 + 2*(b*d^2*e*f - a
*d*f^2)*x)*sinh(d*x + c)^2 + 2*(b*d^2*e*f - a*d*f^2)*x)*log(-cosh(d*x + c)
- sinh(d*x + c) + 1) + 2*(b*f^2*cosh(d*x + c)^2 + 2*b*f^2*cosh(d*x + c)*sin
h(d*x + c) + b*f^2*sinh(d*x + c)^2 - b*f^2)*polylog(3, (a*cosh(d*x + c) + a
*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))
/b) + 2*(b*f^2*cosh(d*x + c)^2 + 2*b*f^2*cosh(d*x + c)*sinh(d*x + c) + b*f^
2*sinh(d*x + c)^2 - b*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) -
(b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2*(b*f^2*co
sh(d*x + c)^2 + 2*b*f^2*cosh(d*x + c)*sinh(d*x + c) + b*f^2*sinh(d*x + c)^2
- b*f^2)*polylog(3, cosh(d*x + c) + sinh(d*x + c)) - 2*(b*f^2*cosh(d*x + c

```
)^2 + 2*b*f^2*cosh(d*x + c)*sinh(d*x + c) + b*f^2*sinh(d*x + c)^2 - b*f^2)*
polylog(3, -cosh(d*x + c) - sinh(d*x + c)) + 2*(a*d^2*f^2*x^2 + 2*a*d^2*e*f
*x + a*d^2*e^2)*sinh(d*x + c))/(a^2*d^3*cosh(d*x + c)^2 + 2*a^2*d^3*cosh(d*
x + c)*sinh(d*x + c) + a^2*d^3*sinh(d*x + c)^2 - a^2*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [F] time = 1.23, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \coth\left(dx+c\right) \operatorname{csch}\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^{2}\left(\frac{2\,e^{(-dx-c)}}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}+\frac{b\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{a^{2}d}-\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^{2}d}-\frac{b\log\left(e^{(-dx-c)}-1\right)}{a^{2}d}\right)-\frac{2\left(f^{2}x^{2}\right.}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] e^2*(2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) + b*log(-2*a*e^(-d*x - c)
+ b*e^(-2*d*x - 2*c) - b)/(a^2*d) - b*log(e^(-d*x - c) + 1)/(a^2*d) - b*log
(e^(-d*x - c) - 1)/(a^2*d)) - 2*(f^2*x^2*e^c + 2*e*f*x*e^c)*e^(d*x)/(a*d*e^
(2*d*x + 2*c) - a*d) - 2*e*f*log(e^(d*x + c) + 1)/(a*d^2) + 2*e*f*log(e^(d*
x + c) - 1)/(a*d^2) - (d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x +
 c)) - 2*polylog(3, -e^(d*x + c)))*b*f^2/(a^2*d^3) - (d^2*x^2*log(-e^(d*x +
 c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*b*f^2/(a^2
*d^3) - 2*(b*d*e*f + a*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c))
)/(a^2*d^3) - 2*(b*d*e*f - a*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x
```

```
 + c)))/(a^2*d^3) + 1/3*(b*d^3*f^2*x^3 + 3*(b*d*e*f + a*f^2)*d^2*x^2)/(a^2*
d^3) + 1/3*(b*d^3*f^2*x^3 + 3*(b*d*e*f - a*f^2)*d^2*x^2)/(a^2*d^3) - integr
ate(-2*(b^2*f^2*x^2 + 2*b^2*e*f*x - (a*b*f^2*x^2*e^c + 2*a*b*e*f*x*e^c)*e^(
d*x))/(a^2*b*e^(2*d*x + 2*c) + 2*a^3*e^(d*x + c) - a^2*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth (c+d\,x)\,{\left(e+f\,x\right)}^2}{\sinh (c+d\,x)\,\left(a+b\,\sinh (c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)*(e + f*x)^2)/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int((coth(c + d*x)*(e + f*x)^2)/(sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2 \coth (c+dx) \operatorname{csch} (c+dx)}{a+b\sinh (c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**2*coth(c + d*x)*csch(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.451 $\int \frac{(e+fx)\coth(c+dx)\mathrm{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=243

$$\frac{bf\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2}+\frac{bf\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^2}+\frac{b(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{a^2d}+\frac{b(e+fx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{a^2d}-\frac{bf\mathrm{Li}_2\left(e^{2(}\right.}{2a^2d^{}}$$

```
[Out] -f*arctanh(cosh(d*x+c))/a/d^2-(f*x+e)*csch(d*x+c)/a/d-b*(f*x+e)*ln(1-exp(2*
d*x+2*c))/a^2/d+b*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/d+b*(f
*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/d-1/2*b*f*polylog(2,exp(2*
d*x+2*c))/a^2/d^2+b*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/d^2+
b*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/d^2
```

Rubi [A] time = 0.46, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {5587, 5452, 3770, 5569, 3716, 2190, 2279, 2391, 5561}

$$\frac{bf\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2}+\frac{bf\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^2}-\frac{bf\,\mathrm{PolyLog}\left(2,e^{2(c+dx)}\right)}{2a^2d^2}+\frac{b(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{a^2d}-$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Coth[c + d*x]*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((f*ArcTanh[Cosh[c + d*x]])/(a*d^2)) - ((e + f*x)*Csch[c + d*x])/(a*d) + (
b*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^2*d) + (b*(e
 + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^2*d) - (b*(e + f
*x)*Log[1 - E^(2*(c + d*x))])/(a^2*d) + (b*f*PolyLog[2, -((b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2]))])/(a^2*d^2) + (b*f*PolyLog[2, -((b*E^(c + d*x))/(a +
Sqrt[a^2 + b^2]))])/(a^2*d^2) - (b*f*PolyLog[2, E^(2*(c + d*x))])/(2*a^2*d^
2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5587

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*Csch[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Csch[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Csch[c + d*x]^(p - 1)*Coth[c + d*x]^n)/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\coth(c+dx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\coth(c+dx)\operatorname{csch}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)\operatorname{csch}(c+dx)}{ad} - \frac{b\int (e+fx)\coth(c+dx)\,dx}{a^2} + \frac{b^2\int \frac{(e+fx)\cosh}{a+b\sinh(}}{a^2}$$

$$= -\frac{f\tanh^{-1}(\cosh(c+dx))}{ad^2} - \frac{(e+fx)\operatorname{csch}(c+dx)}{ad} + \frac{(2b)\int \frac{e^{2(c+dx)}(e+fx)}{1-e^{2(c+dx)}}}{a^2}$$

$$= -\frac{f\tanh^{-1}(\cosh(c+dx))}{ad^2} - \frac{(e+fx)\operatorname{csch}(c+dx)}{ad} + \frac{b(e+fx)\log\left(1+\right.}{a^2d}$$

$$= -\frac{f\tanh^{-1}(\cosh(c+dx))}{ad^2} - \frac{(e+fx)\operatorname{csch}(c+dx)}{ad} + \frac{b(e+fx)\log\left(1+\right.}{a^2d}$$

$$= -\frac{f\tanh^{-1}(\cosh(c+dx))}{ad^2} - \frac{(e+fx)\operatorname{csch}(c+dx)}{ad} + \frac{b(e+fx)\log\left(1+\right.}{a^2d}$$

Mathematica [A] time = 1.80, size = 416, normalized size = 1.71

$$\frac{2bf\operatorname{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right) + 2bf\operatorname{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right) + 2bcf\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) + 2bcf\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right) + 2bdfx\log\left(\frac{be}{a-\sqrt{}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Coth[c + d*x]*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*b*c^2*f - 4*b*c*d*f*x - 2*b*d^2*f*x^2 - a*d*e*Coth[(c + d*x)/2] - a*d*f
*x*Coth[(c + d*x)/2] - 2*b*c*f*Log[1 - E^(-2*(c + d*x))] - 2*b*d*f*x*Log[1
- E^(-2*(c + d*x))] + 2*b*c*f*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])
] + 2*b*d*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*b*c*f*Log[
```

```
1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 2*b*d*f*x*Log[1 + (b*E^(c + d*
x))/(a + Sqrt[a^2 + b^2])] - 2*b*d*e*Log[Sinh[c + d*x]] + 2*b*c*f*Log[Sinh[
c + d*x]] + 2*b*d*e*Log[a + b*Sinh[c + d*x]] - 2*b*c*f*Log[a + b*Sinh[c + d
*x]] + 2*a*f*Log[Tanh[(c + d*x)/2]] + b*f*PolyLog[2, E^(-2*(c + d*x))] + 2*
b*f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*b*f*PolyLog[2, -
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + a*d*e*Tanh[(c + d*x)/2] + a*d*f*
x*Tanh[(c + d*x)/2])/(2*a^2*d^2)
```

fricas [B] time = 0.54, size = 1221, normalized size = 5.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] -(2*(a*d*f*x + a*d*e)*cosh(d*x + c) - (b*f*cosh(d*x + c)^2 + 2*b*f*cosh(d*x
 + c)*sinh(d*x + c) + b*f*sinh(d*x + c)^2 - b*f)*dilog((a*cosh(d*x + c) + a
*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b + 1) - (b*f*cosh(d*x + c)^2 + 2*b*f*cosh(d*x + c)*sinh(d*x + c) + b*
f*sinh(d*x + c)^2 - b*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (b*f*cosh(
d*x + c)^2 + 2*b*f*cosh(d*x + c)*sinh(d*x + c) + b*f*sinh(d*x + c)^2 - b*f)
*dilog(cosh(d*x + c) + sinh(d*x + c)) + (b*f*cosh(d*x + c)^2 + 2*b*f*cosh(d
*x + c)*sinh(d*x + c) + b*f*sinh(d*x + c)^2 - b*f)*dilog(-cosh(d*x + c) - s
inh(d*x + c)) + (b*d*e - b*c*f - (b*d*e - b*c*f)*cosh(d*x + c)^2 - 2*(b*d*e
 - b*c*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d*e - b*c*f)*sinh(d*x + c)^2)*lo
g(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a)
+ (b*d*e - b*c*f - (b*d*e - b*c*f)*cosh(d*x + c)^2 - 2*(b*d*e - b*c*f)*cosh
(d*x + c)*sinh(d*x + c) - (b*d*e - b*c*f)*sinh(d*x + c)^2)*log(2*b*cosh(d*x
 + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b*d*f*x + b
*c*f - (b*d*f*x + b*c*f)*cosh(d*x + c)^2 - 2*(b*d*f*x + b*c*f)*cosh(d*x + c
)*sinh(d*x + c) - (b*d*f*x + b*c*f)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c)
+ a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2) - b)/b) + (b*d*f*x + b*c*f - (b*d*f*x + b*c*f)*cosh(d*x + c)^2 - 2*(b*d*
f*x + b*c*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d*f*x + b*c*f)*sinh(d*x + c)^
2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b*d*f*x + b*d*e - (b*d*f*x + b*d*e +
 a*f)*cosh(d*x + c)^2 - 2*(b*d*f*x + b*d*e + a*f)*cosh(d*x + c)*sinh(d*x +
c) - (b*d*f*x + b*d*e + a*f)*sinh(d*x + c)^2 + a*f)*log(cosh(d*x + c) + sin
h(d*x + c) + 1) - (b*d*e - (b*d*e - (b*c + a)*f)*cosh(d*x + c)^2 - 2*(b*d*e
 - (b*c + a)*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d*e - (b*c + a)*f)*sinh(d*
x + c)^2 - (b*c + a)*f)*log(cosh(d*x + c) + sinh(d*x + c) - 1) - (b*d*f*x +
 b*c*f - (b*d*f*x + b*c*f)*cosh(d*x + c)^2 - 2*(b*d*f*x + b*c*f)*cosh(d*x +
 c)*sinh(d*x + c) - (b*d*f*x + b*c*f)*sinh(d*x + c)^2)*log(-cosh(d*x + c) -
```

```
sinh(d*x + c) + 1) + 2*(a*d*f*x + a*d*e)*sinh(d*x + c))/(a^2*d^2*cosh(d*x
+ c)^2 + 2*a^2*d^2*cosh(d*x + c)*sinh(d*x + c) + a^2*d^2*sinh(d*x + c)^2 -
a^2*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\coth(dx+c)\operatorname{csch}(dx+c)}{b\sinh(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] integrate((f*x + e)*coth(d*x + c)*csch(d*x + c)/(b*sinh(d*x + c) + a), x)
```

maple [B] time = 0.22, size = 528, normalized size = 2.17

$$-\frac{2(fx+e)\,e^{dx+c}}{da\left(e^{2dx+2c}-1\right)}-\frac{bf\operatorname{dilog}\left(e^{dx+c}+1\right)}{d^2a^2}+\frac{bf\operatorname{dilog}\left(\frac{-b\,e^{dx+c}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right)}{d^2a^2}+\frac{bf\operatorname{dilog}\left(\frac{b\,e^{dx+c}+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right)}{d^2a^2}+\frac{bf\operatorname{dilog}\left(e^{dx}\right.}{d^2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -2/d*(f*x+e)/a*exp(d*x+c)/(exp(2*d*x+2*c)-1)-1/d^2/a^2*b*f*dilog(exp(d*x+c)
+1)+1/d^2/a^2*b*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/
2)))+1/d^2/a^2*b*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2
)))+1/d^2/a^2*b*f*dilog(exp(d*x+c))-1/d^2/a*f*ln(exp(d*x+c)+1)+1/d^2/a*f*ln
(exp(d*x+c)-1)+1/d^2/a^2*b*f*c*ln(exp(d*x+c)-1)+1/d/a^2*b*f*ln((b*exp(d*x+c
)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2/a^2*b*f*ln((b*exp(d*x+c)+
(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d/a^2*b*f*ln(exp(d*x+c)+1)*x+1/
d/a^2*b*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d^
2/a^2*b*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d^
2/a^2*b*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-1/d/a^2*b*e*ln(exp(d*x+c)
+1)+1/d/a^2*b*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-1/d/a^2*b*e*ln(exp(d*
x+c)-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(2\,bd\int\frac{x}{2\left(a^2de^{(dx+c)}+a^2d\right)}\,dx-2\,bd\int\frac{x}{2\left(a^2de^{(dx+c)}-a^2d\right)}\,dx+a\left(\frac{dx+c}{a^2d^2}-\frac{\log\left(e^{(dx+c)}+1\right)}{a^2d^2}\right)-a\left(\frac{dx+c}{a^2d^2}-\frac{\log}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] (2*b*d*integrate(1/2*x/(a^2*d*e^(d*x + c) + a^2*d), x) - 2*b*d*integrate(1/
2*x/(a^2*d*e^(d*x + c) - a^2*d), x) + a*((d*x + c)/(a^2*d^2) - log(e^(d*x +
 c) + 1)/(a^2*d^2)) - a*((d*x + c)/(a^2*d^2) - log(e^(d*x + c) - 1)/(a^2*d^
2)) - 2*x*e^(d*x + c)/(a*d*e^(2*d*x + 2*c) - a*d) - 2*integrate((a*b*x*e^(d
*x + c) - b^2*x)/(a^2*b*e^(2*d*x + 2*c) + 2*a^3*e^(d*x + c) - a^2*b), x))*f
 + e*(2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) + b*log(-2*a*e^(-d*x - c)
 + b*e^(-2*d*x - 2*c) - b)/(a^2*d) - b*log(e^(-d*x - c) + 1)/(a^2*d) - b*lo
g(e^(-d*x - c) - 1)/(a^2*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth(c+d\,x)\,\left(e+f\,x\right)}{\sinh(c+d\,x)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)*(e + f*x))/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((coth(c + d*x)*(e + f*x))/(sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\coth(c+dx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*coth(c + d*x)*csch(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.452 $\int \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=50

$$-\frac{b\log(\sinh(c+dx))}{a^2d}+\frac{b\log(a+b\sinh(c+dx))}{a^2d}-\frac{\operatorname{csch}(c+dx)}{ad}$$

```
[Out] -csch(d*x+c)/a/d-b*ln(sinh(d*x+c))/a^2/d+b*ln(a+b*sinh(d*x+c))/a^2/d
```

Rubi [A] time = 0.07, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2833, 12, 44}

$$-\frac{b\log(\sinh(c+dx))}{a^2d}+\frac{b\log(a+b\sinh(c+dx))}{a^2d}-\frac{\operatorname{csch}(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Coth[c + d*x]*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(Csch[c + d*x]/(a*d)) - (b*Log[Sinh[c + d*x]])/(a^2*d) + (b*Log[a + b*Sinh
[c + d*x]])/(a^2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2833

```
Int[cos[(e_.) + (f_.)*(x_)]*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((
c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b*f), Sub
st[Int[(a + x)^m*(c + (d*x)/b)^n, x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b
, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{b^2}{x^2(a+x)}\,dx, x, b\sinh(c+dx)\right)}{bd}$$

$$= \frac{b\,\text{Subst}\left(\int \frac{1}{x^2(a+x)}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= \frac{b\,\text{Subst}\left(\int \left(\frac{1}{ax^2} - \frac{1}{a^2x} + \frac{1}{a^2(a+x)}\right)\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{\operatorname{csch}(c+dx)}{ad} - \frac{b\log(\sinh(c+dx))}{a^2d} + \frac{b\log(a+b\sinh(c+dx))}{a^2d}$$

Mathematica [A] time = 0.04, size = 50, normalized size = 1.00

$$-\frac{b\log(\sinh(c+dx))}{a^2d} + \frac{b\log(a+b\sinh(c+dx))}{a^2d} - \frac{\operatorname{csch}(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Coth[c + d*x]*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(Csch[c + d*x]/(a*d)) - (b*Log[Sinh[c + d*x]])/(a^2*d) + (b*Log[a + b*Sinh
[c + d*x]])/(a^2*d)
```

fricas [B] time = 0.51, size = 211, normalized size = 4.22

$$-\frac{2\,a\cosh(dx+c) - \left(b\cosh(dx+c)^2 + 2\,b\cosh(dx+c)\sinh(dx+c) + b\sinh(dx+c)^2 - b\right)\log\left(\frac{2\,(b\sinh(dx+}{\cosh(dx+c)-\sin}\right.}{a^2d\cosh(dx+c)^2 + 2\,a^2d\cosh}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*a*cosh(d*x + c) - (b*cosh(d*x + c)^2 + 2*b*cosh(d*x + c)*sinh(d*x + c)
+ b*sinh(d*x + c)^2 - b)*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x + c) - sinh(
d*x + c))) + (b*cosh(d*x + c)^2 + 2*b*cosh(d*x + c)*sinh(d*x + c) + b*sinh(
d*x + c)^2 - b)*log(2*sinh(d*x + c)/(cosh(d*x + c) - sinh(d*x + c))) + 2*a*
sinh(d*x + c))/(a^2*d*cosh(d*x + c)^2 + 2*a^2*d*cosh(d*x + c)*sinh(d*x + c)
 + a^2*d*sinh(d*x + c)^2 - a^2*d)
```

giac [A] time = 6.79, size = 98, normalized size = 1.96

$$-\frac{\frac{b\log\left(e^{(dx+c)}+1\right)}{a^2} - \frac{b\log\left(\left|be^{(2\,dx+2\,c)}+2\,ae^{(dx+c)}-b\right|\right)}{a^2} + \frac{b\log\left(\left|e^{(dx+c)}-1\right|\right)}{a^2} + \frac{2\,e^{(dx+c)}}{a\left(e^{(dx+c)}+1\right)\left(e^{(dx+c)}-1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -(b*log(e^(d*x + c) + 1)/a^2 - b*log(abs(b*e^(2*d*x + 2*c) + 2*a*e^(d*x + c
) - b))/a^2 + b*log(abs(e^(d*x + c) - 1))/a^2 + 2*e^(d*x + c)/(a*(e^(d*x +
c) + 1)*(e^(d*x + c) - 1)))/d
```

maple [A] time = 0.00, size = 35, normalized size = 0.70

$$-\frac{\operatorname{csch}(dx+c)}{ad}+\frac{b\ln(a\operatorname{csch}(dx+c)+b)}{d\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -csch(d*x+c)/a/d+1/d*b/a^2*ln(a*csch(d*x+c)+b)
```

maxima [B] time = 0.32, size = 110, normalized size = 2.20

$$\frac{2\,e^{(-dx-c)}}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}+\frac{b\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{a^2d}-\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^2d}-\frac{b\log\left(e^{(-dx-c)}-1\right)}{a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] 2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) + b*log(-2*a*e^(-d*x - c) + b*e
^(-2*d*x - 2*c) - b)/(a^2*d) - b*log(e^(-d*x - c) + 1)/(a^2*d) - b*log(e^(-
d*x - c) - 1)/(a^2*d)
```

mupad [B] time = 0.87, size = 409, normalized size = 8.18

$$\frac{\left(2\operatorname{atan}\left(\left(4\,a^3\,b\,d\,\left(b^2\right)^{5/2}\,\sqrt{-a^4\,d^2}+4\,a^5\,b\,d\,\left(b^2\right)^{3/2}\,\sqrt{-a^4\,d^2}\right)\left(\frac{1}{8\,a^3\,b^4\,d^2\,\left(a^2+b^2\right)^2}-\mathrm{e}^{d\,x}\,\mathrm{e}^{c}\,\left(\frac{1}{16\,a^2\,b^5\,d^2\,\left(a^2+b^2\right)^2}-\frac{\left(a^2+\right.}{16\,a^6\,b^5\,d}\right.\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] ((2*atan((4*a^3*b*d*(b^2)^(5/2)*(-a^4*d^2)^(1/2) + 4*a^5*b*d*(b^2)^(3/2)*(-
a^4*d^2)^(1/2))*(1/(8*a^3*b^4*d^2*(a^2 + b^2)^2) - exp(d*x)*exp(c)*(1/(16*a
^2*b^5*d^2*(a^2 + b^2)^2) - (a^2 + 2*b^2)^2/(16*a^6*b^5*d^2*(a^2 + b^2)^2))
 + (a^2 + 2*b^2)/(8*a^5*b^4*d^2*(a^2 + b^2)^2))) + 2*atan(-(4*a^3*b^5*(-a^4
```

```
*d^2)^(1/2) + 4*a*b^7*(-a^4*d^2)^(1/2) - 4*b^8*exp(3*c)*exp(3*d*x)*(-a^4*d^
2)^(1/2) + 4*b^8*exp(d*x)*exp(c)*(-a^4*d^2)^(1/2) - 8*a*b^7*exp(2*c)*exp(2*
d*x)*(-a^4*d^2)^(1/2) + 4*a^2*b^6*exp(d*x)*exp(c)*(-a^4*d^2)^(1/2) - 8*a^3*
b^5*exp(2*c)*exp(2*d*x)*(-a^4*d^2)^(1/2) - 4*a^2*b^6*exp(3*c)*exp(3*d*x)*(-
a^4*d^2)^(1/2))/(b^4*(4*a^3*d*(b^2)^(3/2) + 4*a^5*d*(b^2)^(1/2))))*(b^2)^(
1/2))/(-a^4*d^2)^(1/2) - 1/(a*d*sinh(c + d*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(coth(c + d*x)*csch(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.453 $\int \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=35

$$\text{Int}\left(\frac{\coth(c+dx)\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(coth(d*x+c)*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Coth[c + d*x]*Csch[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
[Out] Defer[Int][(Coth[c + d*x]*Csch[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),
 x]
```

Rubi steps

$$\int \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Coth[c + d*x]*Csch[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x
]
[Out] $Aborted
```

fricas [A] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\coth\left(dx+c\right)\operatorname{csch}\left(dx+c\right)}{afx+ae+\left(bfx+be\right)\sinh\left(dx+c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="f
ricas")
```

```
[Out] integral(coth(d*x + c)*csch(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x
 + c)), x)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="g
iac")
```

```
[Out] Timed out
```

maple [**A**] time = 1.25, size = 0, normalized size = 0.00

$$\int \frac{\coth(dx+c)\operatorname{csch}(dx+c)}{\left(fx+e\right)\left(a+b\sinh(dx+c)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(coth(d*x+c)*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\,e^{(dx+c)}}{adfx+ade-\left(adfxe^{(2\,c)}+adee^{(2\,c)}\right)e^{(2\,dx)}}-2\int -\frac{bdfx+bde+af}{2\left(a^2df^2x^2+2\,a^2defx+a^2de^2-\left(a^2df^2x^2e^c+2\,a^2defxe^c+a\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="m
axima")
```

```
[Out] 2*e^(d*x + c)/(a*d*f*x + a*d*e - (a*d*f*x*e^(2*c) + a*d*e*e^(2*c))*e^(2*d*x
)) - 2*integrate(-1/2*(b*d*f*x + b*d*e + a*f)/(a^2*d*f^2*x^2 + 2*a^2*d*e*f*
x + a^2*d*e^2 - (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f*x*e^c + a^2*d*e^2*e^c)*e^(
d*x)), x) + 2*integrate(1/2*(b*d*f*x + b*d*e - a*f)/(a^2*d*f^2*x^2 + 2*a^2*
d*e*f*x + a^2*d*e^2 + (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f*x*e^c + a^2*d*e^2*e^
c)*e^(d*x)), x) - 2*integrate(-(a*b*e^(d*x + c) - b^2)/(a^2*b*f*x + a^2*b*e
 - (a^2*b*f*x*e^(2*c) + a^2*b*e*e^(2*c))*e^(2*d*x) - 2*(a^3*f*x*e^c + a^3*e
*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\coth(c+dx)}{\sinh(c+dx)\left(e+fx\right)\left(a+b\sinh(c+dx)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)/(sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(coth(c + d*x)/(sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{\left(a+b\sinh(c+dx)\right)\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(coth(c + d*x)*csch(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.454 $\int \frac{(e+fx)^3 \coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=721

$$\frac{6f^3\sqrt{a^2+b^2}\,\text{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^4}-\frac{6f^3\sqrt{a^2+b^2}\,\text{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^4}-\frac{6f^2\sqrt{a^2+b^2}\,(e+fx)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3}+\frac{6f^2\sqrt{a^2}}{}$$

```
[Out] -(f*x+e)^3/a/d+2*b*(f*x+e)^3*arctanh(exp(d*x+c))/a^2/d-(f*x+e)^3*coth(d*x+c
)/a/d+3*f*(f*x+e)^2*ln(1-exp(2*d*x+2*c))/a/d^2+3*b*f*(f*x+e)^2*polylog(2,-e
xp(d*x+c))/a^2/d^2-3*b*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a^2/d^2+3*f^2*(f*x
+e)*polylog(2,exp(2*d*x+2*c))/a/d^3-6*b*f^2*(f*x+e)*polylog(3,-exp(d*x+c))/
a^2/d^3+6*b*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a^2/d^3-3/2*f^3*polylog(3,exp
(2*d*x+2*c))/a/d^4+6*b*f^3*polylog(4,-exp(d*x+c))/a^2/d^4-6*b*f^3*polylog(4
,exp(d*x+c))/a^2/d^4+(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+
b^2)^(1/2)/a^2/d-(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)
^(1/2)/a^2/d+3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^
2+b^2)^(1/2)/a^2/d^2-3*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/
2)))*(a^2+b^2)^(1/2)/a^2/d^2-6*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+
b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^2/d^3+6*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/
(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^2/d^3+6*f^3*polylog(4,-b*exp(d*x+c)/
(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^2/d^4-6*f^3*polylog(4,-b*exp(d*x+c)/
(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^2/d^4
```

Rubi [A] time = 1.64, antiderivative size = 721, normalized size of antiderivative = 1.00, number of steps used = 41, number of rules used = 17, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.607, Rules used = {5569, 3720, 3716, 2190, 2531, 2282, 6589, 32, 5585, 5450, 3296, 2637, 4182, 6609, 5565, 3322, 2264}

$$-\frac{6f^2\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3}+\frac{6f^2\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^3}+\frac{3f\sqrt{a^2+b^2}\,(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((e + f*x)^3/(a*d)) + (2*b*(e + f*x)^3*ArcTanh[E^(c + d*x)])/(a^2*d) - ((e
 + f*x)^3*Coth[c + d*x])/(a*d) + (Sqrt[a^2 + b^2]*(e + f*x)^3*Log[1 + (b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^2*d) - (Sqrt[a^2 + b^2]*(e + f*x)^3*L
og[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^2*d) + (3*f*(e + f*x)^2*L
og[1 - E^(2*(c + d*x))])/(a*d^2) + (3*b*f*(e + f*x)^2*PolyLog[2, -E^(c + d*
x)])/(a^2*d^2) - (3*b*f*(e + f*x)^2*PolyLog[2, E^(c + d*x)])/(a^2*d^2) + (3
*Sqrt[a^2 + b^2]*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2]))])/(a^2*d^2) - (3*Sqrt[a^2 + b^2]*f*(e + f*x)^2*PolyLog[2, -((b*E^(c
```

```
 + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*d^2) + (3*f^2*(e + f*x)*PolyLog[2, E
^(2*(c + d*x))])/(a*d^3) - (6*b*f^2*(e + f*x)*PolyLog[3, -E^(c + d*x)])/(a^
2*d^3) + (6*b*f^2*(e + f*x)*PolyLog[3, E^(c + d*x)])/(a^2*d^3) - (6*Sqrt[a^
2 + b^2]*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))]
)/(a^2*d^3) + (6*Sqrt[a^2 + b^2]*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))
/(a + Sqrt[a^2 + b^2]))])/(a^2*d^3) - (3*f^3*PolyLog[3, E^(2*(c + d*x))])/(
2*a*d^4) + (6*b*f^3*PolyLog[4, -E^(c + d*x)])/(a^2*d^4) - (6*b*f^3*PolyLog[
4, E^(c + d*x)])/(a^2*d^4) + (6*Sqrt[a^2 + b^2]*f^3*PolyLog[4, -((b*E^(c +
d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*d^4) - (6*Sqrt[a^2 + b^2]*f^3*PolyLog[4
, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*d^4)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
```

```
d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\coth^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{\int (e+fx)^3\,dx}{a} - \frac{b\int (e+fx)^3\cosh(c+dx)\coth(c+}{a^2}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} - \frac{(e+fx)^3\coth(c+dx)}{ad} - \frac{\int (e+fx)^3\,dx}{a} - \frac{b\int (e+fx}{}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{3f(e+fx}{}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{3f(e+fx}{}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(}{}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(}{}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(}{}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(}{}$$

$$= -\frac{(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^3\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(}{}$$

Mathematica [A] time = 8.48, size = 1350, normalized size = 1.87

$$\frac{\sqrt{a^2+b^2}\left(-2e^3\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right)d^3+f^3x^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3+3ef^2x^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)d^3+3e^2fx\log\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (Sqrt[a^2 + b^2]*(-2*d^3*e^3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] +
 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 3*d^3*e*f^2
*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + d^3*f^3*x^3*Log[1 + (
b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2])] - 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sq
rt[a^2 + b^2])] - d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])
] + 3*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])]
- 3*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]
- 6*d*e*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 6*d*f^3*x*
PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*d*e*f^2*PolyLog[3, -
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] + 6*d*f^3*x*PolyLog[3, -((b*E^(c +
 d*x))/(a + Sqrt[a^2 + b^2]))] + 6*f^3*PolyLog[4, (b*E^(c + d*x))/(-a + Sqr
t[a^2 + b^2])] - 6*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]
))/(a^2*d^4) - (a*d^3*(e + f*x)^3*(-1 + Coth[c]) - d^2*e^2*(b*d*e - 3*a*f)*
(d*x - Log[1 - Cosh[c + d*x] - Sinh[c + d*x]]) - 3*d^2*e*f*(b*d*e + 2*a*f)*
x*Log[1 + Cosh[c + d*x] - Sinh[c + d*x]] - 3*d^2*f^2*(b*d*e + a*f)*x^2*Log[
1 + Cosh[c + d*x] - Sinh[c + d*x]] - b*d^3*f^3*x^3*Log[1 + Cosh[c + d*x] -
Sinh[c + d*x]] + 3*d^2*e*f*(b*d*e - 2*a*f)*x*Log[1 - Cosh[c + d*x] + Sinh[c
 + d*x]] + 3*d^2*f^2*(b*d*e - a*f)*x^2*Log[1 - Cosh[c + d*x] + Sinh[c + d*x
]] + b*d^3*f^3*x^3*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]] + d^2*e^2*(b*d*e
+ 3*a*f)*(d*x - Log[1 + Cosh[c + d*x] + Sinh[c + d*x]]) - 3*d*e*f*(b*d*e -
2*a*f)*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + 3*d*e*f*(b*d*e + 2*a*f)*
PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + 6*f^2*(-(b*d*e) + a*f)*(d*x*Po
lyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + PolyLog[3, Cosh[c + d*x] - Sinh[c
 + d*x]]) + 6*f^2*(b*d*e + a*f)*(d*x*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d
*x]] + PolyLog[3, -Cosh[c + d*x] + Sinh[c + d*x]]) - 3*b*f^3*(d^2*x^2*PolyL
og[2, Cosh[c + d*x] - Sinh[c + d*x]] + 2*(d*x*PolyLog[3, Cosh[c + d*x] - Si
nh[c + d*x]] + PolyLog[4, Cosh[c + d*x] - Sinh[c + d*x]])) + 3*b*f^3*(d^2*x
^2*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + 2*(d*x*PolyLog[3, -Cosh[c +
 d*x] + Sinh[c + d*x]] + PolyLog[4, -Cosh[c + d*x] + Sinh[c + d*x]])))/(a^2
*d^4) + (Sech[c/2]*Sech[c/2 + (d*x)/2]*(-(e^3*Sinh[(d*x)/2]) - 3*e^2*f*x*Si
nh[(d*x)/2] - 3*e*f^2*x^2*Sinh[(d*x)/2] - f^3*x^3*Sinh[(d*x)/2]))/(2*a*d) +
 (Csch[c/2]*Csch[c/2 + (d*x)/2]*(e^3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(d*x)/2
] + 3*e*f^2*x^2*Sinh[(d*x)/2] + f^3*x^3*Sinh[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 0.69, size = 4612, normalized size = 6.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*a*d^3*e^3 - 6*a*c*d^2*e^2*f + 6*a*c^2*d*e*f^2 - 2*a*c^3*f^3 + 2*(a*d^3*
f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + 3*a*c*d^2*e^2*f - 3*a*c^2*d
```

```
*e*f^2 + a*c^3*f^3)*cosh(d*x + c)^2 + 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2
+ 3*a*d^3*e^2*f*x + 3*a*c*d^2*e^2*f - 3*a*c^2*d*e*f^2 + a*c^3*f^3)*cosh(d*x
 + c)*sinh(d*x + c) + 2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*
x + 3*a*c*d^2*e^2*f - 3*a*c^2*d*e*f^2 + a*c^3*f^3)*sinh(d*x + c)^2 + 3*(b*d
^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f - (b*d^2*f^3*x^2 + 2*b*d^2*e*f^2
*x + b*d^2*e^2*f)*cosh(d*x + c)^2 - 2*(b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*
d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x +
 b*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c)
 + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2) - b)/b + 1) - 3*(b*d^2*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f - (b*d^2
*f^3*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*cosh(d*x + c)^2 - 2*(b*d^2*f^3*x^
2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d^2*f^3
*x^2 + 2*b*d^2*e*f^2*x + b*d^2*e^2*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2
)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*
b*c^2*d*e*f^2 - b*c^3*f^3 - (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2
- b*c^3*f^3)*cosh(d*x + c)^2 - 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e
*f^2 - b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) - (b*d^3*e^3 - 3*b*c*d^2*e^2*
f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log
(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) +
 (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3 - (b*d^3*e^3 -
3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*cosh(d*x + c)^2 - 2*(b*d^3*e
^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*cosh(d*x + c)*sinh(d*x
+ c) - (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sinh(d*x
 + c)^2)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) -
2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b
*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3 - (b*d^3*f^3*x
^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^
2 + b*c^3*f^3)*cosh(d*x + c)^2 - 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b
*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*cosh(d*x + c)
*sinh(d*x + c) - (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b
*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sinh(d*x + c)^2)*sqrt((a^2 + b^
2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x
^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3 - (b*d
^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^
2*d*e*f^2 + b*c^3*f^3)*cosh(d*x + c)^2 - 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x
^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*cosh(
d*x + c)*sinh(d*x + c) - (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f
*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sinh(d*x + c)^2)*sqrt((
a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 6*(b*f^3*cosh(d*x + c)^2
 + 2*b*f^3*cosh(d*x + c)*sinh(d*x + c) + b*f^3*sinh(d*x + c)^2 - b*f^3)*sqr
t((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(
d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(b*f^3*cosh(d*x +
```

```
c)^2 + 2*b*f^3*cosh(d*x + c)*sinh(d*x + c) + b*f^3*sinh(d*x + c)^2 - b*f^3
)*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*(b*d*f^3*x +
 b*d*e*f^2 - (b*d*f^3*x + b*d*e*f^2)*cosh(d*x + c)^2 - 2*(b*d*f^3*x + b*d*e
*f^2)*cosh(d*x + c)*sinh(d*x + c) - (b*d*f^3*x + b*d*e*f^2)*sinh(d*x + c)^2
)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(b*d*f^3*x +
 b*d*e*f^2 - (b*d*f^3*x + b*d*e*f^2)*cosh(d*x + c)^2 - 2*(b*d*f^3*x + b*d*e
*f^2)*cosh(d*x + c)*sinh(d*x + c) - (b*d*f^3*x + b*d*e*f^2)*sinh(d*x + c)^2
)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 3*(b*d^2*f^3*x
^2 + b*d^2*e^2*f - 2*a*d*e*f^2 - (b*d^2*f^3*x^2 + b*d^2*e^2*f - 2*a*d*e*f^2
 + 2*(b*d^2*e*f^2 - a*d*f^3)*x)*cosh(d*x + c)^2 - 2*(b*d^2*f^3*x^2 + b*d^2*
e^2*f - 2*a*d*e*f^2 + 2*(b*d^2*e*f^2 - a*d*f^3)*x)*cosh(d*x + c)*sinh(d*x +
 c) - (b*d^2*f^3*x^2 + b*d^2*e^2*f - 2*a*d*e*f^2 + 2*(b*d^2*e*f^2 - a*d*f^3
)*x)*sinh(d*x + c)^2 + 2*(b*d^2*e*f^2 - a*d*f^3)*x)*dilog(cosh(d*x + c) + s
inh(d*x + c)) + 3*(b*d^2*f^3*x^2 + b*d^2*e^2*f + 2*a*d*e*f^2 - (b*d^2*f^3*x
^2 + b*d^2*e^2*f + 2*a*d*e*f^2 + 2*(b*d^2*e*f^2 + a*d*f^3)*x)*cosh(d*x + c)
^2 - 2*(b*d^2*f^3*x^2 + b*d^2*e^2*f + 2*a*d*e*f^2 + 2*(b*d^2*e*f^2 + a*d*f^
3)*x)*cosh(d*x + c)*sinh(d*x + c) - (b*d^2*f^3*x^2 + b*d^2*e^2*f + 2*a*d*e*
f^2 + 2*(b*d^2*e*f^2 + a*d*f^3)*x)*sinh(d*x + c)^2 + 2*(b*d^2*e*f^2 + a*d*f
^3)*x)*dilog(-cosh(d*x + c) - sinh(d*x + c)) + (b*d^3*f^3*x^3 + b*d^3*e^3 +
 3*a*d^2*e^2*f + 3*(b*d^3*e*f^2 + a*d^2*f^3)*x^2 - (b*d^3*f^3*x^3 + b*d^3*e
^3 + 3*a*d^2*e^2*f + 3*(b*d^3*e*f^2 + a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f + 2*a
*d^2*e*f^2)*x)*cosh(d*x + c)^2 - 2*(b*d^3*f^3*x^3 + b*d^3*e^3 + 3*a*d^2*e^2
*f + 3*(b*d^3*e*f^2 + a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f + 2*a*d^2*e*f^2)*x)*c
osh(d*x + c)*sinh(d*x + c) - (b*d^3*f^3*x^3 + b*d^3*e^3 + 3*a*d^2*e^2*f + 3
*(b*d^3*e*f^2 + a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f + 2*a*d^2*e*f^2)*x)*sinh(d*
x + c)^2 + 3*(b*d^3*e^2*f + 2*a*d^2*e*f^2)*x)*log(cosh(d*x + c) + sinh(d*x
+ c) + 1) - (b*d^3*e^3 - 3*(b*c + a)*d^2*e^2*f + 3*(b*c^2 + 2*a*c)*d*e*f^2
- (b*c^3 + 3*a*c^2)*f^3 - (b*d^3*e^3 - 3*(b*c + a)*d^2*e^2*f + 3*(b*c^2 + 2
*a*c)*d*e*f^2 - (b*c^3 + 3*a*c^2)*f^3)*cosh(d*x + c)^2 - 2*(b*d^3*e^3 - 3*(
b*c + a)*d^2*e^2*f + 3*(b*c^2 + 2*a*c)*d*e*f^2 - (b*c^3 + 3*a*c^2)*f^3)*cos
h(d*x + c)*sinh(d*x + c) - (b*d^3*e^3 - 3*(b*c + a)*d^2*e^2*f + 3*(b*c^2 +
2*a*c)*d*e*f^2 - (b*c^3 + 3*a*c^2)*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c)
+ sinh(d*x + c) - 1) - (b*d^3*f^3*x^3 + 3*b*c*d^2*e^2*f - 3*(b*c^2 + 2*a*c)
*d*e*f^2 + (b*c^3 + 3*a*c^2)*f^3 + 3*(b*d^3*e*f^2 - a*d^2*f^3)*x^2 - (b*d^3
*f^3*x^3 + 3*b*c*d^2*e^2*f - 3*(b*c^2 + 2*a*c)*d*e*f^2 + (b*c^3 + 3*a*c^2)*
f^3 + 3*(b*d^3*e*f^2 - a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f - 2*a*d^2*e*f^2)*x)*
cosh(d*x + c)^2 - 2*(b*d^3*f^3*x^3 + 3*b*c*d^2*e^2*f - 3*(b*c^2 + 2*a*c)*d*
e*f^2 + (b*c^3 + 3*a*c^2)*f^3 + 3*(b*d^3*e*f^2 - a*d^2*f^3)*x^2 + 3*(b*d^3*
e^2*f - 2*a*d^2*e*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - (b*d^3*f^3*x^3 + 3*
b*c*d^2*e^2*f - 3*(b*c^2 + 2*a*c)*d*e*f^2 + (b*c^3 + 3*a*c^2)*f^3 + 3*(b*d^
3*e*f^2 - a*d^2*f^3)*x^2 + 3*(b*d^3*e^2*f - 2*a*d^2*e*f^2)*x)*sinh(d*x + c)
^2 + 3*(b*d^3*e^2*f - 2*a*d^2*e*f^2)*x)*log(-cosh(d*x + c) - sinh(d*x + c)
```

```
+ 1) + 6*(b*f^3*cosh(d*x + c)^2 + 2*b*f^3*cosh(d*x + c)*sinh(d*x + c) + b*f
^3*sinh(d*x + c)^2 - b*f^3)*polylog(4, cosh(d*x + c) + sinh(d*x + c)) - 6*(
b*f^3*cosh(d*x + c)^2 + 2*b*f^3*cosh(d*x + c)*sinh(d*x + c) + b*f^3*sinh(d*
x + c)^2 - b*f^3)*polylog(4, -cosh(d*x + c) - sinh(d*x + c)) + 6*(b*d*f^3*x
 + b*d*e*f^2 - a*f^3 - (b*d*f^3*x + b*d*e*f^2 - a*f^3)*cosh(d*x + c)^2 - 2*
(b*d*f^3*x + b*d*e*f^2 - a*f^3)*cosh(d*x + c)*sinh(d*x + c) - (b*d*f^3*x +
b*d*e*f^2 - a*f^3)*sinh(d*x + c)^2)*polylog(3, cosh(d*x + c) + sinh(d*x + c
)) - 6*(b*d*f^3*x + b*d*e*f^2 + a*f^3 - (b*d*f^3*x + b*d*e*f^2 + a*f^3)*cos
h(d*x + c)^2 - 2*(b*d*f^3*x + b*d*e*f^2 + a*f^3)*cosh(d*x + c)*sinh(d*x + c
) - (b*d*f^3*x + b*d*e*f^2 + a*f^3)*sinh(d*x + c)^2)*polylog(3, -cosh(d*x +
 c) - sinh(d*x + c)))/(a^2*d^4*cosh(d*x + c)^2 + 2*a^2*d^4*cosh(d*x + c)*si
nh(d*x + c) + a^2*d^4*sinh(d*x + c)^2 - a^2*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.05, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\coth^{2}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^{3}\left(\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^{2}d}-\frac{b\log\left(e^{(-dx-c)}-1\right)}{a^{2}d}+\frac{\sqrt{a^{2}+b^{2}}\,\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^{2}+b^{2}}}{be^{(-dx-c)}-a+\sqrt{a^{2}+b^{2}}}\right)}{a^{2}d}+\frac{2}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}\right)-\frac{6\,e^{2}fx}{ad}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] e^3*(b*log(e^(-d*x - c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d) + sq
rt(a^2 + b^2)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) -
```

```
a + sqrt(a^2 + b^2)))/(a^2*d) + 2/((a*e^(-2*d*x - 2*c) - a)*d)) - 6*e^2*f*x
/(a*d) + 3*e^2*f*log(e^(d*x + c) + 1)/(a*d^2) + 3*e^2*f*log(e^(d*x + c) - 1
)/(a*d^2) - 2*(f^3*x^3 + 3*e*f^2*x^2 + 3*e^2*f*x)/(a*d*e^(2*d*x + 2*c) - a*
d) + (d^3*x^3*log(e^(d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*
polylog(3, -e^(d*x + c)) + 6*polylog(4, -e^(d*x + c)))*b*f^3/(a^2*d^4) - (d
^3*x^3*log(-e^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog
(3, e^(d*x + c)) + 6*polylog(4, e^(d*x + c)))*b*f^3/(a^2*d^4) + 3*(b*d*e^2*
f + 2*a*e*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^2*d^3) -
 3*(b*d*e^2*f - 2*a*e*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))
/(a^2*d^3) + 3*(b*d*e*f^2 + a*f^3)*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*di
log(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))/(a^2*d^4) - 3*(b*d*e*f^2 -
a*f^3)*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylo
g(3, e^(d*x + c)))/(a^2*d^4) - 1/4*(b*d^4*f^3*x^4 + 4*(b*d*e*f^2 + a*f^3)*d
^3*x^3 + 6*(b*d^2*e^2*f + 2*a*d*e*f^2)*d^2*x^2)/(a^2*d^4) + 1/4*(b*d^4*f^3*
x^4 + 4*(b*d*e*f^2 - a*f^3)*d^3*x^3 + 6*(b*d^2*e^2*f - 2*a*d*e*f^2)*d^2*x^2
)/(a^2*d^4) + integrate(2*((a^2*f^3*e^c + b^2*f^3*e^c)*x^3 + 3*(a^2*e*f^2*e
^c + b^2*e*f^2*e^c)*x^2 + 3*(a^2*e^2*f*e^c + b^2*e^2*f*e^c)*x)*e^(d*x)/(a^2
*b*e^(2*d*x + 2*c) + 2*a^3*e^(d*x + c) - a^2*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth(c+d\,x)^2\,\left(e+f\,x\right)^3}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((coth(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^3\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*coth(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*coth(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.455 $\int \frac{(e+fx)^2 \coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=517

$$-\frac{2f^2\sqrt{a^2+b^2}\,\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^3}+\frac{2f^2\sqrt{a^2+b^2}\,\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^3}+\frac{2f\sqrt{a^2+b^2}\,(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2}-\frac{2f\sqrt{a^2+}}{}$$

```
[Out] -(f*x+e)^2/a/d+2*b*(f*x+e)^2*arctanh(exp(d*x+c))/a^2/d-(f*x+e)^2*coth(d*x+c
)/a/d+2*f*(f*x+e)*ln(1-exp(2*d*x+2*c))/a/d^2+2*b*f*(f*x+e)*polylog(2,-exp(d
*x+c))/a^2/d^2-2*b*f*(f*x+e)*polylog(2,exp(d*x+c))/a^2/d^2+f^2*polylog(2,ex
p(2*d*x+2*c))/a/d^3-2*b*f^2*polylog(3,-exp(d*x+c))/a^2/d^3+2*b*f^2*polylog(
3,exp(d*x+c))/a^2/d^3+(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2
+b^2)^(1/2)/a^2/d-(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2
)^(1/2)/a^2/d+2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2
+b^2)^(1/2)/a^2/d^2-2*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2))
)*(a^2+b^2)^(1/2)/a^2/d^2-2*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2))
)*(a^2+b^2)^(1/2)/a^2/d^3+2*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2))
)*(a^2+b^2)^(1/2)/a^2/d^3
```

Rubi [A] time = 1.30, antiderivative size = 517, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 18, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {5569, 3720, 3716, 2190, 2279, 2391, 32, 5585, 5450, 3296, 2638, 4182, 2531, 2282, 6589, 5565, 3322, 2264}

$$\frac{2f\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2}-\frac{2f\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^2}-\frac{2f^2\sqrt{a^2+b^2}\,\text{Poly}}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((e + f*x)^2/(a*d)) + (2*b*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a^2*d) - ((e
 + f*x)^2*Coth[c + d*x])/(a*d) + (Sqrt[a^2 + b^2]*(e + f*x)^2*Log[1 + (b*E^
(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^2*d) - (Sqrt[a^2 + b^2]*(e + f*x)^2*L
og[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^2*d) + (2*f*(e + f*x)*Log
[1 - E^(2*(c + d*x))])/(a*d^2) + (2*b*f*(e + f*x)*PolyLog[2, -E^(c + d*x)])
/(a^2*d^2) - (2*b*f*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a^2*d^2) + (2*Sqrt[
a^2 + b^2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))]
)/(a^2*d^2) - (2*Sqrt[a^2 + b^2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2]))])/(a^2*d^2) + (f^2*PolyLog[2, E^(2*(c + d*x))])/(a*d^
3) - (2*b*f^2*PolyLog[3, -E^(c + d*x)])/(a^2*d^3) + (2*b*f^2*PolyLog[3, E^(
c + d*x)])/(a^2*d^3) - (2*Sqrt[a^2 + b^2]*f^2*PolyLog[3, -((b*E^(c + d*x))/
```

```
(a - Sqrt[a^2 + b^2]))])/(a^2*d^3) + (2*Sqrt[a^2 + b^2]*f^2*PolyLog[3, -((b
*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*d^3)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
```

```
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\coth^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{\int (e+fx)^2\,dx}{a} - \frac{b\int (e+fx)^2\cosh(c+dx)\coth(c+}{a^2}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{(e+fx)^3}{3af} - \frac{(e+fx)^2\coth(c+dx)}{ad} - \frac{\int (e+fx)^2\,dx}{a} - \frac{b\int (e+fx}{}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{2f(e+fx}{}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{2f(e+fx}{}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(}{}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(}{}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(}{}$$

$$= -\frac{(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)^2\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(}{}$$

Mathematica [A] time = 7.88, size = 792, normalized size = 1.53

$$\frac{\sqrt{a^2+b^2}\left(-2d^2e^2\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) + 2d^2efx\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) - 2d^2efx\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right) + d^2f^2x^2\log\left(\frac{b}{a-}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((((2*a*d^2*(e + f*x)^2)/(-1 + E^(2*c)) + 2*d*f*(b*d*e - a*f)*x*Log[1 - E^(
-c - d*x)] + b*d^2*f^2*x^2*Log[1 - E^(-c - d*x)] - 2*d*f*(b*d*e + a*f)*x*Lo
g[1 + E^(-c - d*x)] - b*d^2*f^2*x^2*Log[1 + E^(-c - d*x)] - d*e*(b*d*e - 2*
a*f)*(d*x - Log[1 - E^(c + d*x)]) + d*e*(b*d*e + 2*a*f)*(d*x - Log[1 + E^(c
```

```
 + d*x)]) + 2*f*(b*d*e + a*f)*PolyLog[2, -E^(-c - d*x)] + 2*f*(-(b*d*e) + a
*f)*PolyLog[2, E^(-c - d*x)] + 2*b*f^2*(d*x*PolyLog[2, -E^(-c - d*x)] + Pol
yLog[3, -E^(-c - d*x)]) - 2*b*f^2*(d*x*PolyLog[2, E^(-c - d*x)] + PolyLog[3
, E^(-c - d*x)]))/(a^2*d^3)) + (Sqrt[a^2 + b^2]*(-2*d^2*e^2*ArcTanh[(a + b*
E^(c + d*x))/Sqrt[a^2 + b^2]] + 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a - Sq
rt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])
] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - d^2*f^2*x^
2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 2*d*f*(e + f*x)*PolyLog[
2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*f*(e + f*x)*PolyLog[2, -((
b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*f^2*PolyLog[3, (b*E^(c + d*x))/(
-a + Sqrt[a^2 + b^2])] + 2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2]))]))/(a^2*d^3) + (Sech[c/2]*Sech[c/2 + (d*x)/2]*(-(e^2*Sinh[(d*x)/2])
 - 2*e*f*x*Sinh[(d*x)/2] - f^2*x^2*Sinh[(d*x)/2]))/(2*a*d) + (Csch[c/2]*Csc
h[c/2 + (d*x)/2]*(e^2*Sinh[(d*x)/2] + 2*e*f*x*Sinh[(d*x)/2] + f^2*x^2*Sinh[
(d*x)/2]))/(2*a*d)
```

fricas [C] time = 0.58, size = 2729, normalized size = 5.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*a*d^2*e^2 - 4*a*c*d*e*f + 2*a*c^2*f^2 + 2*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*
x + 2*a*c*d*e*f - a*c^2*f^2)*cosh(d*x + c)^2 + 4*(a*d^2*f^2*x^2 + 2*a*d^2*e
*f*x + 2*a*c*d*e*f - a*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + 2*(a*d^2*f^2*
x^2 + 2*a*d^2*e*f*x + 2*a*c*d*e*f - a*c^2*f^2)*sinh(d*x + c)^2 + 2*(b*d*f^2
*x + b*d*e*f - (b*d*f^2*x + b*d*e*f)*cosh(d*x + c)^2 - 2*(b*d*f^2*x + b*d*e
*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d*f^2*x + b*d*e*f)*sinh(d*x + c)^2)*sq
rt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(b*d*f^2*x +
b*d*e*f - (b*d*f^2*x + b*d*e*f)*cosh(d*x + c)^2 - 2*(b*d*f^2*x + b*d*e*f)*c
osh(d*x + c)*sinh(d*x + c) - (b*d*f^2*x + b*d*e*f)*sinh(d*x + c)^2)*sqrt((a
^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b*d^2*e^2 - 2*b*c*d
*e*f + b*c^2*f^2 - (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*cosh(d*x + c)^2 -
2*(b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) - (b*d^
2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log
(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) +
 (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2 - (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^
2)*cosh(d*x + c)^2 - 2*(b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*cosh(d*x + c)*
sinh(d*x + c) - (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sinh(d*x + c)^2)*sqrt
((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2
 + b^2)/b^2) + 2*a) + (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*
f^2 - (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*cosh(d*x +
```

```
c)^2 - 2*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*cosh(d*x
 + c)*sinh(d*x + c) - (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*
f^2)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(
d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b
) - (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2 - (b*d^2*f^2*x
^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*cosh(d*x + c)^2 - 2*(b*d^2*f^
2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c
) - (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*sinh(d*x + c)
^2)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 2*(b*f^2*cosh(
d*x + c)^2 + 2*b*f^2*cosh(d*x + c)*sinh(d*x + c) + b*f^2*sinh(d*x + c)^2 -
b*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c)
+ (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2*(b*f^2*
cosh(d*x + c)^2 + 2*b*f^2*cosh(d*x + c)*sinh(d*x + c) + b*f^2*sinh(d*x + c)
^2 - b*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x
+ c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2*(b
*d*f^2*x + b*d*e*f - a*f^2 - (b*d*f^2*x + b*d*e*f - a*f^2)*cosh(d*x + c)^2
- 2*(b*d*f^2*x + b*d*e*f - a*f^2)*cosh(d*x + c)*sinh(d*x + c) - (b*d*f^2*x
+ b*d*e*f - a*f^2)*sinh(d*x + c)^2)*dilog(cosh(d*x + c) + sinh(d*x + c)) +
2*(b*d*f^2*x + b*d*e*f + a*f^2 - (b*d*f^2*x + b*d*e*f + a*f^2)*cosh(d*x + c
)^2 - 2*(b*d*f^2*x + b*d*e*f + a*f^2)*cosh(d*x + c)*sinh(d*x + c) - (b*d*f^
2*x + b*d*e*f + a*f^2)*sinh(d*x + c)^2)*dilog(-cosh(d*x + c) - sinh(d*x + c
)) + (b*d^2*f^2*x^2 + b*d^2*e^2 + 2*a*d*e*f - (b*d^2*f^2*x^2 + b*d^2*e^2 +
2*a*d*e*f + 2*(b*d^2*e*f + a*d*f^2)*x)*cosh(d*x + c)^2 - 2*(b*d^2*f^2*x^2 +
 b*d^2*e^2 + 2*a*d*e*f + 2*(b*d^2*e*f + a*d*f^2)*x)*cosh(d*x + c)*sinh(d*x
+ c) - (b*d^2*f^2*x^2 + b*d^2*e^2 + 2*a*d*e*f + 2*(b*d^2*e*f + a*d*f^2)*x)*
sinh(d*x + c)^2 + 2*(b*d^2*e*f + a*d*f^2)*x)*log(cosh(d*x + c) + sinh(d*x +
 c) + 1) - (b*d^2*e^2 - 2*(b*c + a)*d*e*f + (b*c^2 + 2*a*c)*f^2 - (b*d^2*e^
2 - 2*(b*c + a)*d*e*f + (b*c^2 + 2*a*c)*f^2)*cosh(d*x + c)^2 - 2*(b*d^2*e^2
 - 2*(b*c + a)*d*e*f + (b*c^2 + 2*a*c)*f^2)*cosh(d*x + c)*sinh(d*x + c) - (
b*d^2*e^2 - 2*(b*c + a)*d*e*f + (b*c^2 + 2*a*c)*f^2)*sinh(d*x + c)^2)*log(c
osh(d*x + c) + sinh(d*x + c) - 1) - (b*d^2*f^2*x^2 + 2*b*c*d*e*f - (b*c^2 +
 2*a*c)*f^2 - (b*d^2*f^2*x^2 + 2*b*c*d*e*f - (b*c^2 + 2*a*c)*f^2 + 2*(b*d^2
*e*f - a*d*f^2)*x)*cosh(d*x + c)^2 - 2*(b*d^2*f^2*x^2 + 2*b*c*d*e*f - (b*c^
2 + 2*a*c)*f^2 + 2*(b*d^2*e*f - a*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - (
b*d^2*f^2*x^2 + 2*b*c*d*e*f - (b*c^2 + 2*a*c)*f^2 + 2*(b*d^2*e*f - a*d*f^2)
*x)*sinh(d*x + c)^2 + 2*(b*d^2*e*f - a*d*f^2)*x)*log(-cosh(d*x + c) - sinh(
d*x + c) + 1) - 2*(b*f^2*cosh(d*x + c)^2 + 2*b*f^2*cosh(d*x + c)*sinh(d*x +
 c) + b*f^2*sinh(d*x + c)^2 - b*f^2)*polylog(3, cosh(d*x + c) + sinh(d*x +
c)) + 2*(b*f^2*cosh(d*x + c)^2 + 2*b*f^2*cosh(d*x + c)*sinh(d*x + c) + b*f^
2*sinh(d*x + c)^2 - b*f^2)*polylog(3, -cosh(d*x + c) - sinh(d*x + c)))/(a^2
*d^3*cosh(d*x + c)^2 + 2*a^2*d^3*cosh(d*x + c)*sinh(d*x + c) + a^2*d^3*sinh
(d*x + c)^2 - a^2*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 1.35, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \left(\coth^2(dx+c)\right)}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^2*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^2\left(\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^2d}-\frac{b\log\left(e^{(-dx-c)}-1\right)}{a^2d}+\frac{\sqrt{a^2+b^2}\,\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{a^2d}+\frac{2}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}\right)-\frac{4\,efx}{ad}-\frac{2(}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] e^2*(b*log(e^(-d*x - c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d) + sq
rt(a^2 + b^2)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) -
a + sqrt(a^2 + b^2)))/(a^2*d) + 2/((a*e^(-2*d*x - 2*c) - a)*d)) - 4*e*f*x/(
a*d) - 2*(f^2*x^2 + 2*e*f*x)/(a*d*e^(2*d*x + 2*c) - a*d) + 2*e*f*log(e^(d*x
 + c) + 1)/(a*d^2) + 2*e*f*log(e^(d*x + c) - 1)/(a*d^2) + (d^2*x^2*log(e^(d
*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*b*f^
2/(a^2*d^3) - (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2
*polylog(3, e^(d*x + c)))*b*f^2/(a^2*d^3) + 2*(b*d*e*f + a*f^2)*(d*x*log(e^
(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^2*d^3) - 2*(b*d*e*f - a*f^2)*(d*x*
log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^2*d^3) - 1/3*(b*d^3*f^2*x^3
+ 3*(b*d*e*f + a*f^2)*d^2*x^2)/(a^2*d^3) + 1/3*(b*d^3*f^2*x^3 + 3*(b*d*e*f
- a*f^2)*d^2*x^2)/(a^2*d^3) + integrate(2*((a^2*f^2*e^c + b^2*f^2*e^c)*x^2
+ 2*(a^2*e*f*e^c + b^2*e*f*e^c)*x)*e^(d*x)/(a^2*b*e^(2*d*x + 2*c) + 2*a^3*e
^(d*x + c) - a^2*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth(c+d\,x)^2\,{\left(e+f\,x\right)}^2}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
[Out] int((coth(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*coth(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**2*coth(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.456 $\int \frac{(e+fx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=294

$$\frac{f\sqrt{a^2+b^2}\,\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2}-\frac{f\sqrt{a^2+b^2}\,\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^2}+\frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{a^2d}-\frac{\sqrt{a^2+b^2}\,(e+f}{}$$

```
[Out] 2*b*(f*x+e)*arctanh(exp(d*x+c))/a^2/d-(f*x+e)*coth(d*x+c)/a/d+f*ln(sinh(d*x
+c))/a/d^2+b*f*polylog(2,-exp(d*x+c))/a^2/d^2-b*f*polylog(2,exp(d*x+c))/a^2
/d^2+(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^2/d-(
f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^2/d+f*polyl
og(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^2/d^2-f*polylog(2
,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^2/d^2
```

Rubi [A] time = 0.69, antiderivative size = 294, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 14, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.538, Rules used = {5569, 3720, 3475, 5585, 5450, 3296, 2637, 4182, 2279, 2391, 5565, 3322, 2264, 2190}

$$\frac{f\sqrt{a^2+b^2}\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2}-\frac{f\sqrt{a^2+b^2}\,\mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^2}+\frac{bf\,\mathrm{PolyLog}\left(2,-e^{c+dx}\right)}{a^2d^2}-\frac{bf\,\mathrm{PolyLog}\left(2\right.}{a^2d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*b*(e + f*x)*ArcTanh[E^(c + d*x)])/(a^2*d) - ((e + f*x)*Coth[c + d*x])/(a
*d) + (Sqrt[a^2 + b^2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^
2])])/(a^2*d) - (Sqrt[a^2 + b^2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqr
t[a^2 + b^2])])/(a^2*d) + (f*Log[Sinh[c + d*x]])/(a*d^2) + (b*f*PolyLog[2,
-E^(c + d*x)])/(a^2*d^2) - (b*f*PolyLog[2, E^(c + d*x)])/(a^2*d^2) + (Sqrt[
a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*d^2
) - (Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]
)/(a^2*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
```

```
x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\coth^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cosh(c+dx)\coth(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)\coth(c+dx)}{ad} + \frac{\int (e+fx)\,dx}{a} - \frac{b\int (e+fx)\cosh(c+dx)\coth(c+dx)}{a^2}$$

$$= \frac{ex}{a} + \frac{fx^2}{2a} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{f\log(\sinh(c+dx))}{ad^2} - \frac{\int (e+fx)\,dx}{a} - \frac{b\int (}{}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{f\log(\sinh(c+dx))}{ad^2} + \frac{\left(2\left(\right.\right.}{}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{f\log(\sinh(c+dx))}{ad^2} + \frac{\left(2b\right.}{}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(1+\right.}{a^2d}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(1+\right.}{a^2d}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{(e+fx)\coth(c+dx)}{ad} + \frac{\sqrt{a^2+b^2}\,(e+fx)\log\left(1+\right.}{a^2d}$$

Mathematica [A] time = 3.60, size = 364, normalized size = 1.24

$$\frac{2\sqrt{a^2+b^2}\left(-2de\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) + f\mathrm{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right) - f\mathrm{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right) + f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) - f(c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-(a*d*(e + f*x)*Coth[(c + d*x)/2]) + 2*a*f*Log[Sinh[c + d*x]] - 2*b*d*e*Lo
g[Tanh[(c + d*x)/2]] + 2*b*c*f*Log[Tanh[(c + d*x)/2]] + 2*b*f*(-((c + d*x)*
(Log[1 - E^(-c - d*x)] - Log[1 + E^(-c - d*x)])) - PolyLog[2, -E^(-c - d*x)
] + PolyLog[2, E^(-c - d*x)]) + 2*Sqrt[a^2 + b^2]*(-2*d*e*ArcTanh[(a + b*E^
(c + d*x))/Sqrt[a^2 + b^2]] + 2*c*f*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 +
b^2]] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - f*(c +
```

```
 d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + f*PolyLog[2, (b*E^(c
 + d*x))/(-a + Sqrt[a^2 + b^2])] - f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2]))]) - a*d*(e + f*x)*Tanh[(c + d*x)/2])/(2*a^2*d^2)
```

fricas [B] time = 0.49, size = 1338, normalized size = 4.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*a*d*e - 2*a*c*f + 2*(a*d*f*x + a*c*f)*cosh(d*x + c)^2 + 4*(a*d*f*x + a*
c*f)*cosh(d*x + c)*sinh(d*x + c) + 2*(a*d*f*x + a*c*f)*sinh(d*x + c)^2 - (b
*f*cosh(d*x + c)^2 + 2*b*f*cosh(d*x + c)*sinh(d*x + c) + b*f*sinh(d*x + c)^
2 - b*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (
b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + (b*f
*cosh(d*x + c)^2 + 2*b*f*cosh(d*x + c)*sinh(d*x + c) + b*f*sinh(d*x + c)^2
- b*f)*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*
cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b*d*e
 - b*c*f - (b*d*e - b*c*f)*cosh(d*x + c)^2 - 2*(b*d*e - b*c*f)*cosh(d*x + c
)*sinh(d*x + c) - (b*d*e - b*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*lo
g(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a)
+ (b*d*e - b*c*f - (b*d*e - b*c*f)*cosh(d*x + c)^2 - 2*(b*d*e - b*c*f)*cosh
(d*x + c)*sinh(d*x + c) - (b*d*e - b*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)
/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2)
 + 2*a) + (b*d*f*x + b*c*f - (b*d*f*x + b*c*f)*cosh(d*x + c)^2 - 2*(b*d*f*x
 + b*c*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d*f*x + b*c*f)*sinh(d*x + c)^2)*
sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x
 + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b*d*f*x + b*c*f -
 (b*d*f*x + b*c*f)*cosh(d*x + c)^2 - 2*(b*d*f*x + b*c*f)*cosh(d*x + c)*sinh
(d*x + c) - (b*d*f*x + b*c*f)*sinh(d*x + c)^2)*sqrt((a^2 + b^2)/b^2)*log(-(
a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqr
t((a^2 + b^2)/b^2) - b)/b) + (b*f*cosh(d*x + c)^2 + 2*b*f*cosh(d*x + c)*sin
h(d*x + c) + b*f*sinh(d*x + c)^2 - b*f)*dilog(cosh(d*x + c) + sinh(d*x + c)
) - (b*f*cosh(d*x + c)^2 + 2*b*f*cosh(d*x + c)*sinh(d*x + c) + b*f*sinh(d*x
 + c)^2 - b*f)*dilog(-cosh(d*x + c) - sinh(d*x + c)) + (b*d*f*x + b*d*e - (
b*d*f*x + b*d*e + a*f)*cosh(d*x + c)^2 - 2*(b*d*f*x + b*d*e + a*f)*cosh(d*x
 + c)*sinh(d*x + c) - (b*d*f*x + b*d*e + a*f)*sinh(d*x + c)^2 + a*f)*log(co
sh(d*x + c) + sinh(d*x + c) + 1) - (b*d*e - (b*d*e - (b*c + a)*f)*cosh(d*x
+ c)^2 - 2*(b*d*e - (b*c + a)*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d*e - (b*
c + a)*f)*sinh(d*x + c)^2 - (b*c + a)*f)*log(cosh(d*x + c) + sinh(d*x + c)
- 1) - (b*d*f*x + b*c*f - (b*d*f*x + b*c*f)*cosh(d*x + c)^2 - 2*(b*d*f*x +
b*c*f)*cosh(d*x + c)*sinh(d*x + c) - (b*d*f*x + b*c*f)*sinh(d*x + c)^2)*log
(-cosh(d*x + c) - sinh(d*x + c) + 1))/(a^2*d^2*cosh(d*x + c)^2 + 2*a^2*d^2*
cosh(d*x + c)*sinh(d*x + c) + a^2*d^2*sinh(d*x + c)^2 - a^2*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.24, size = 1017, normalized size = 3.46

$$\frac{b^2 f \ln\left(\frac{-b\,e^{dx+c}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right) x}{d\,a^2\sqrt{a^2+b^2}}+\frac{b^2 f \ln\left(\frac{-b\,e^{dx+c}+\sqrt{a^2+b^2}-a}{-a+\sqrt{a^2+b^2}}\right) c}{d^2a^2\sqrt{a^2+b^2}}-\frac{b^2 f \ln\left(\frac{b\,e^{dx+c}+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right) x}{d\,a^2\sqrt{a^2+b^2}}-\frac{b^2 f \ln\left(\frac{b\,e^{dx+c}+\sqrt{a^2+b^2}+a}{a+\sqrt{a^2+b^2}}\right) c}{d^2a^2\sqrt{a^2+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 2/d^2/a^2*b^2*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2
)^(1/2))+1/d/a^2*b^2*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)
/(-a+(a^2+b^2)^(1/2)))*x+1/d^2/a^2*b^2*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+
(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d/a^2*b^2*f/(a^2+b^2)^(1/2)*ln
((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2/a^2*b^2*f/(a
^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/
d^2/a^2*b^2*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^
2+b^2)^(1/2)))-2/d/a^2*b^2*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*
a)/(a^2+b^2)^(1/2))+1/d^2/a^2*b*f*c*ln(exp(d*x+c)-1)+1/d/a^2*b*f*ln(exp(d*x
+c)+1)*x+1/d^2/a^2*b^2*f/(a^2+b^2)^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/
2)-a)/(-a+(a^2+b^2)^(1/2)))-2/d*(f*x+e)/a/(exp(2*d*x+2*c)-1)-2/d*e/(a^2+b^2
)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d^2*f/(a^2+b^2)
^(1/2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2*
f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)
))+1/d*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)
^(1/2)))*x+1/d^2*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a
+(a^2+b^2)^(1/2)))*c-1/d*f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)
+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^
2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+2/d^2*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2
*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d^2/a*f*ln(exp(d*x+c)+1)-2/d^2/a*f*ln
(exp(d*x+c))+1/d^2/a*f*ln(exp(d*x+c)-1)+1/d/a^2*b*e*ln(exp(d*x+c)+1)-1/d/a^
2*b*e*ln(exp(d*x+c)-1)+1/d^2/a^2*b*f*dilog(exp(d*x+c)+1)+1/d^2/a^2*b*f*dilo
g(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(bd\int \frac{x}{a^2de^{(dx+c)}+a^2d}\,dx+bd\int \frac{x}{a^2de^{(dx+c)}-a^2d}\,dx+a\left(\frac{dx+c}{a^2d^2}-\frac{\log\left(e^{(dx+c)}+1\right)}{a^2d^2}\right)+a\left(\frac{dx+c}{a^2d^2}-\frac{\log\left(e^{(dx+c)}\right.}{a^2d^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(b*d*integrate(x/(a^2*d*e^(d*x + c) + a^2*d), x) + b*d*integrate(x/(a^2*d*
e^(d*x + c) - a^2*d), x) + a*((d*x + c)/(a^2*d^2) - log(e^(d*x + c) + 1)/(a
^2*d^2)) + a*((d*x + c)/(a^2*d^2) - log(e^(d*x + c) - 1)/(a^2*d^2)) - 2*(a^
2*e^c + b^2*e^c)*integrate(x*e^(d*x)/(a^2*b*e^(2*d*x + 2*c) + 2*a^3*e^(d*x
+ c) - a^2*b), x) + 2*x/(a*d*e^(2*d*x + 2*c) - a*d))*f + e*(b*log(e^(-d*x -
 c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d) + sqrt(a^2 + b^2)*log((b
*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2))
)/(a^2*d) + 2/((a*e^(-2*d*x - 2*c) - a)*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth\left(c+d\,x\right)^2\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((coth(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\coth^2\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*coth(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.457 $\int \frac{\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=77

$$-\frac{2\sqrt{a^2+b^2}\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^2d}+\frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d}-\frac{\coth(c+dx)}{ad}$$

```
[Out] b*arctanh(cosh(d*x+c))/a^2/d-coth(d*x+c)/a/d-2*arctanh((b-a*tanh(1/2*d*x+1/
2*c))/(a^2+b^2)^(1/2))*(a^2+b^2)^(1/2)/a^2/d
```

Rubi [A] time = 0.27, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2723, 3056, 3001, 3770, 2660, 618, 204}

$$-\frac{2\sqrt{a^2+b^2}\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^2d}+\frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d}-\frac{\coth(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[Coth[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*ArcTanh[Cosh[c + d*x]])/(a^2*d) - (2*Sqrt[a^2 + b^2]*ArcTanh[(b - a*Tanh
[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(a^2*d) - Coth[c + d*x]/(a*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
```

```
a^2 - b^2, 0]
```

Rule 2723

```
Int[((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)/tan[(e_.) + (f_.)*(x_)]^2,
x_Symbol] :> Int[((a + b*Sin[e + f*x])^m*(1 - Sin[e + f*x]^2))/Sin[e + f*x]
^2, x] /; FreeQ[{a, b, e, f, m}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3001

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])), x_Symbol] :> Dist[(A*b
- a*B)/(b*c - a*d), Int[1/(a + b*Sin[e + f*x]), x], x] + Dist[(B*c - A*d)/(
b*c - a*d), Int[1/(c + d*Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f,
A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3056

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
-Simp[((A*b^2 + a^2*C)*Cos[e + f*x]*(a + b*Sin[e + f*x])^(m + 1)*(c + d*Sin
[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 - b^2)), x] + Dist[1/((m +
1)*(b*c - a*d)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^(m + 1)*(c + d*Sin[e
+ f*x])^n*Simp[a*(m + 1)*(b*c - a*d)*(A + C) + d*(A*b^2 + a^2*C)*(m + n + 2
) - (c*(A*b^2 + a^2*C) + b*(m + 1)*(b*c - a*d)*(A + C))*Sin[e + f*x] - d*(A
*b^2 + a^2*C)*(m + n + 3)*Sin[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d,
e, f, A, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d
^2, 0] && LtQ[m, -1] && ((EqQ[a, 0] && IntegerQ[m] &&  !IntegerQ[n]) ||  !(
IntegerQ[2*n] && LtQ[n, -1] && ((IntegerQ[n] &&  !IntegerQ[m]) || EqQ[a, 0]
)))
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \int \frac{\text{csch}^2(c+dx)\left(1+\sinh^2(c+dx)\right)}{a+b\sinh(c+dx)}\,dx$$
$$= -\frac{\coth(c+dx)}{ad} + \frac{i\int \frac{\text{csch}(c+dx)(ib-ia\sinh(c+dx))}{a+b\sinh(c+dx)}\,dx}{a}$$
$$= -\frac{\coth(c+dx)}{ad} - \frac{b\int \text{csch}(c+dx)\,dx}{a^2} + \frac{\left(a^2+b^2\right)\int \frac{1}{a+b\sinh(c+dx)}\,dx}{a^2}$$
$$= \frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{\coth(c+dx)}{ad} - \frac{\left(2i\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{1}{a-2ibx+ax^2}\,dx, x, \text{ta}$$
$$= \frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{\coth(c+dx)}{ad} + \frac{\left(4i\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{1}{-4\left(a^2+b^2\right)-x^2}\,dx, x,$$
$$= \frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{2\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^2d} - \frac{\coth(c+dx)}{ad}$$

Mathematica [A] time = 0.41, size = 98, normalized size = 1.27

$$-\frac{4\sqrt{-a^2-b^2}\,\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right) + a\tanh\left(\frac{1}{2}(c+dx)\right) + a\coth\left(\frac{1}{2}(c+dx)\right) + 2b\log\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)}{2a^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Coth[c + d*x]^2/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(4*Sqrt[-a^2 - b^2]*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]]
 + a*Coth[(c + d*x)/2] + 2*b*Log[Tanh[(c + d*x)/2]] + a*Tanh[(c + d*x)/2])/
(a^2*d)
```

fricas [B] time = 0.49, size = 360, normalized size = 4.68

$$\frac{\sqrt{a^2+b^2}\left(\cosh(dx+c)^2 + 2\cosh(dx+c)\sinh(dx+c) + \sinh(dx+c)^2 - 1\right)\log\left(\frac{b^2\cosh(dx+c)^2 + b^2\sinh(dx+c)^2 + 2\,a\ldots}{b\cosh(d\ldots}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (sqrt(a^2 + b^2)*(cosh(d*x + c)^2 + 2*cosh(d*x + c)*sinh(d*x + c) + sinh(d*
x + c)^2 - 1)*log((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d
*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x + c) - 2*sqrt(
a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*
sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c)
 - b)) + (b*cosh(d*x + c)^2 + 2*b*cosh(d*x + c)*sinh(d*x + c) + b*sinh(d*x
+ c)^2 - b)*log(cosh(d*x + c) + sinh(d*x + c) + 1) - (b*cosh(d*x + c)^2 + 2
*b*cosh(d*x + c)*sinh(d*x + c) + b*sinh(d*x + c)^2 - b)*log(cosh(d*x + c) +
 sinh(d*x + c) - 1) - 2*a)/(a^2*d*cosh(d*x + c)^2 + 2*a^2*d*cosh(d*x + c)*s
inh(d*x + c) + a^2*d*sinh(d*x + c)^2 - a^2*d)
```

giac [B] time = 1.11, size = 149, normalized size = 1.94

$$\frac{\frac{\left(a^2e^c+b^2e^c\right)e^{(-c)}\log\left(\frac{\left|2\,be^{(dx+2\,c)}+2\,ae^c-2\,\sqrt{a^2+b^2}\,e^c\right|}{\left|2\,be^{(dx+2\,c)}+2\,ae^c+2\,\sqrt{a^2+b^2}\,e^c\right|}\right)}{\sqrt{a^2+b^2}\,a^2}+\frac{b\log\left(e^{(dx+c)}+1\right)}{a^2}-\frac{b\log\left(\left|e^{(dx+c)}-1\right|\right)}{a^2}-\frac{2}{a\left(e^{(2\,dx+2\,c)}-1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] ((a^2*e^c + b^2*e^c)*e^(-c)*log(abs(2*b*e^(d*x + 2*c) + 2*a*e^c - 2*sqrt(a^
2 + b^2)*e^c)/abs(2*b*e^(d*x + 2*c) + 2*a*e^c + 2*sqrt(a^2 + b^2)*e^c))/(sq
rt(a^2 + b^2)*a^2) + b*log(e^(d*x + c) + 1)/a^2 - b*log(abs(e^(d*x + c) - 1
))/a^2 - 2/(a*(e^(2*d*x + 2*c) - 1)))/d
```

maple [B] time = 0.00, size = 147, normalized size = 1.91

$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da}+\frac{2\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{d\sqrt{a^2+b^2}}+\frac{2b^2\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{d\,a^2\sqrt{a^2+b^2}}-\frac{1}{2da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{b\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/2/d/a*tanh(1/2*d*x+1/2*c)+2/d/(a^2+b^2)^(1/2)*arctanh(1/2*(2*a*tanh(1/2*
d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))+2/d/a^2*b^2/(a^2+b^2)^(1/2)*arctanh(1/2*(2
*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))-1/2/d/a/tanh(1/2*d*x+1/2*c)-1/
d/a^2*b*ln(tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.41, size = 134, normalized size = 1.74

$$\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^2d}-\frac{b\log\left(e^{(-dx-c)}-1\right)}{a^2d}+\frac{\sqrt{a^2+b^2}\,\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{a^2d}+\frac{2}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] b*log(e^(-d*x - c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d) + sqrt(a^
2 + b^2)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + s
qrt(a^2 + b^2)))/(a^2*d) + 2/((a*e^(-2*d*x - 2*c) - a)*d)
```

mupad [B] time = 0.64, size = 380, normalized size = 4.94

$$\frac{2}{a\,d-a\,d\,e^{2\,c+2\,d\,x}}-\frac{b\,\ln\left(32\,a^2+32\,b^2-32\,a^2\,e^{d\,x}\,e^{c}-32\,b^2\,e^{d\,x}\,e^{c}\right)}{a^2\,d}+\frac{b\,\ln\left(32\,a^2+32\,b^2+32\,a^2\,e^{d\,x}\,e^{c}+32\,b^2\,e^{d\,x}\,e^{c}\right)}{a^2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)^2/(a + b*sinh(c + d*x)),x)
```

```
[Out] 2/(a*d - a*d*exp(2*c + 2*d*x)) - (b*log(32*a^2 + 32*b^2 - 32*a^2*exp(d*x)*e
xp(c) - 32*b^2*exp(d*x)*exp(c)))/(a^2*d) + (b*log(32*a^2 + 32*b^2 + 32*a^2*
exp(d*x)*exp(c) + 32*b^2*exp(d*x)*exp(c)))/(a^2*d) + (log(128*a^4*exp(d*x)*
exp(c) - 64*a*b^3 - 64*a^3*b - 32*b^3*(a^2 + b^2)^(1/2) + 32*b^4*exp(d*x)*e
xp(c) - 64*a^2*b*(a^2 + b^2)^(1/2) + 160*a^2*b^2*exp(d*x)*exp(c) + 128*a^3*
exp(d*x)*exp(c)*(a^2 + b^2)^(1/2) + 96*a*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1
/2))*(a^2 + b^2)^(1/2))/(a^2*d) - (log(32*b^3*(a^2 + b^2)^(1/2) - 64*a*b^3
- 64*a^3*b + 128*a^4*exp(d*x)*exp(c) + 32*b^4*exp(d*x)*exp(c) + 64*a^2*b*(a
^2 + b^2)^(1/2) + 160*a^2*b^2*exp(d*x)*exp(c) - 128*a^3*exp(d*x)*exp(c)*(a^
2 + b^2)^(1/2) - 96*a*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2))*(a^2 + b^2)^(1
/2))/(a^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(coth(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.458 $\int \frac{\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Coth[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Coth[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 179.77, size = 0, normalized size = 0.00

$$\int \frac{\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Coth[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Integrate[Coth[c + d*x]^2/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

fricas [A] time = 0.64, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\coth(dx+c)^2}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(coth(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [A] time = 1.26, size = 0, normalized size = 0.00

$$\int \frac{\coth^{2}\left(dx+c\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] int(coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$2\left(a^{2}e^{c}+b^{2}e^{c}\right)\int -\frac{e^{(dx)}}{a^{2}bfx+a^{2}be-\left(a^{2}bfxe^{(2c)}+a^{2}bee^{(2c)}\right)e^{(2dx)}-2\left(a^{3}fxe^{c}+a^{3}ee^{c}\right)e^{(dx)}}\,dx+\frac{}{adfx+ade-\left(ad\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] 2*(a^2*e^c + b^2*e^c)*integrate(-e^(d*x)/(a^2*b*f*x + a^2*b*e - (a^2*b*f*x*
e^(2*c) + a^2*b*e*e^(2*c))*e^(2*d*x) - 2*(a^3*f*x*e^c + a^3*e*e^c)*e^(d*x))
, x) + 2/(a*d*f*x + a*d*e - (a*d*f*x*e^(2*c) + a*d*e*e^(2*c))*e^(2*d*x)) -
integrate(-(b*d*f*x + b*d*e + a*f)/(a^2*d*f^2*x^2 + 2*a^2*d*e*f*x + a^2*d*e
^2 - (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f*x*e^c + a^2*d*e^2*e^c)*e^(d*x)), x) -
 integrate((b*d*f*x + b*d*e - a*f)/(a^2*d*f^2*x^2 + 2*a^2*d*e*f*x + a^2*d*e
^2 + (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f*x*e^c + a^2*d*e^2*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\mathrm{coth}\left(c+d\,x\right)}^2}{\left(e+f\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)^2/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(coth(c + d*x)^2/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth^2(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(coth(c + d*x)**2/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.459 $\int \frac{(e+fx)^3 \cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=718

$$\frac{6f^3\left(a^2+b^2\right)\mathrm{Li}_4\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd^4}+\frac{6f^3\left(a^2+b^2\right)\mathrm{Li}_4\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2bd^4}-\frac{6f^2\left(a^2+b^2\right)(e+fx)\mathrm{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd^3}-\frac{6f^2\left(a^2\right.}{}$$

```
[Out] 1/4*b*(f*x+e)^4/a^2/f-1/4*(a^2+b^2)*(f*x+e)^4/a^2/b/f-6*f*(f*x+e)^2*arctanh
(exp(d*x+c))/a/d^2-(f*x+e)^3*csch(d*x+c)/a/d-b*(f*x+e)^3*ln(1-exp(2*d*x+2*c
))/a^2/d+(a^2+b^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/b/d
+(a^2+b^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/b/d-6*f^2*(
f*x+e)*polylog(2,-exp(d*x+c))/a/d^3+6*f^2*(f*x+e)*polylog(2,exp(d*x+c))/a/d
^3-3/2*b*f*(f*x+e)^2*polylog(2,exp(2*d*x+2*c))/a^2/d^2+3*(a^2+b^2)*f*(f*x+e
)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/b/d^2+3*(a^2+b^2)*f*(f
*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/b/d^2+6*f^3*polylo
g(3,-exp(d*x+c))/a/d^4-6*f^3*polylog(3,exp(d*x+c))/a/d^4+3/2*b*f^2*(f*x+e)*
polylog(3,exp(2*d*x+2*c))/a^2/d^3-6*(a^2+b^2)*f^2*(f*x+e)*polylog(3,-b*exp(
d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/b/d^3-6*(a^2+b^2)*f^2*(f*x+e)*polylog(3,-b*
exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/b/d^3-3/4*b*f^3*polylog(4,exp(2*d*x+2*c
))/a^2/d^4+6*(a^2+b^2)*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2
/b/d^4+6*(a^2+b^2)*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/b/d
^4
```

Rubi [A] time = 1.64, antiderivative size = 718, normalized size of antiderivative = 1.00, number of steps used = 48, number of rules used = 19, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.559, Rules used = {5585, 5450, 3296, 2638, 5452, 4182, 2531, 2282, 6589, 5446, 3311, 32, 2635, 8, 3716, 2190, 6609, 5565, 5561}

$$-\frac{6f^2\left(a^2+b^2\right)(e+fx)\mathrm{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd^3}-\frac{6f^2\left(a^2+b^2\right)(e+fx)\mathrm{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2bd^3}+\frac{3f\left(a^2+b^2\right)(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cosh[c + d*x]*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(e + f*x)^4)/(4*a^2*f) - ((a^2 + b^2)*(e + f*x)^4)/(4*a^2*b*f) - (6*f*(e
 + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d^2) - ((e + f*x)^3*Csch[c + d*x])/(a*d)
 + ((a^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])
/(a^2*b*d) + ((a^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2
 + b^2])])/(a^2*b*d) - (b*(e + f*x)^3*Log[1 - E^(2*(c + d*x))])/(a^2*d) - (
6*f^2*(e + f*x)*PolyLog[2, -E^(c + d*x)])/(a*d^3) + (6*f^2*(e + f*x)*PolyLo
g[2, E^(c + d*x)])/(a*d^3) + (3*(a^2 + b^2)*f*(e + f*x)^2*PolyLog[2, -((b*E
```

```
^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*b*d^2) + (3*(a^2 + b^2)*f*(e + f*
x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*b*d^2) - (3
*b*f*(e + f*x)^2*PolyLog[2, E^(2*(c + d*x))])/(2*a^2*d^2) + (6*f^3*PolyLog[
3, -E^(c + d*x)])/(a*d^4) - (6*f^3*PolyLog[3, E^(c + d*x)])/(a*d^4) - (6*(a
^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))
])/(a^2*b*d^3) - (6*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/
(a + Sqrt[a^2 + b^2]))])/(a^2*b*d^3) + (3*b*f^2*(e + f*x)*PolyLog[3, E^(2*(
c + d*x))])/(2*a^2*d^3) + (6*(a^2 + b^2)*f^3*PolyLog[4, -((b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2]))])/(a^2*b*d^4) + (6*(a^2 + b^2)*f^3*PolyLog[4, -((b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*b*d^4) - (3*b*f^3*PolyLog[4, E^(2*
(c + d*x))])/(4*a^2*d^4)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\cosh(c+dx)\coth^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cosh^2(c+dx)\operatorname{cot}}{a+b\sinh(c+dx)}}{a}$$

$$= \frac{\int (e+fx)^3\cosh(c+dx)\,dx}{a} + \frac{\int (e+fx)^3\coth(c+dx)\operatorname{csch}(c+dx)}{a}$$

$$= -\frac{(e+fx)^3\operatorname{csch}(c+dx)}{ad} + \frac{(e+fx)^3\sinh(c+dx)}{ad} - \frac{\int (e+fx)^3\cos}{a}$$

$$= \frac{b(e+fx)^4}{4a^2f} - \frac{(a^2+b^2)(e+fx)^4}{4a^2bf} - \frac{6f(e+fx)^2\tanh^{-1}(e^{c+dx})}{ad^2} - \frac{3j}{}$$

$$= \frac{b(e+fx)^4}{4a^2f} - \frac{(a^2+b^2)(e+fx)^4}{4a^2bf} - \frac{6f(e+fx)^2\tanh^{-1}(e^{c+dx})}{ad^2} - \frac{(e}{}$$

$$= \frac{b(e+fx)^4}{4a^2f} - \frac{(a^2+b^2)(e+fx)^4}{4a^2bf} - \frac{6f(e+fx)^2\tanh^{-1}(e^{c+dx})}{ad^2} - \frac{6j}{}$$

$$= \frac{b(e+fx)^4}{4a^2f} - \frac{(a^2+b^2)(e+fx)^4}{4a^2bf} - \frac{6f(e+fx)^2\tanh^{-1}(e^{c+dx})}{ad^2} - \frac{(e}{}$$

$$= \frac{b(e+fx)^4}{4a^2f} - \frac{(a^2+b^2)(e+fx)^4}{4a^2bf} - \frac{6f(e+fx)^2\tanh^{-1}(e^{c+dx})}{ad^2} - \frac{(e}{}$$

$$= \frac{b(e+fx)^4}{4a^2f} - \frac{(a^2+b^2)(e+fx)^4}{4a^2bf} - \frac{6f(e+fx)^2\tanh^{-1}(e^{c+dx})}{ad^2} - \frac{(e}{}$$

Mathematica [B] time = 16.82, size = 2567, normalized size = 3.58

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cosh[c + d*x]*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/2*((a^2 + b^2)*(4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*x^2 + 4*e*E^(2*c)*f^2*
x^3 + E^(2*c)*f^3*x^4 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTan[(a + b
*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) + (4*a*Sqrt[-(a^2 +
b^2)^2]*e^3*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 -
```

b^2)^(3/2)*d) + (2*e^3*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))])/d - (2
*e^3*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d + (6*e^2*f*
x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^
2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])
])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(
2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(
a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sq
rt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))
/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d
*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (
b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log
[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*
c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/
d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]
)])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b
^2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c
+ d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(-1 + E^(2*c))*f*(e
 + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]
))])/d^2 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^
2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E
^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c +
 d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyL
og[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*
e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])
/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2
+ b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c +
 Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2
*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*f^3*PolyLog[4,
-((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c
)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])
/d^4 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(
2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqr
t[(a^2 + b^2)*E^(2*c)]))])/d^4))/(a^2*b*(-1 + E^(2*c))) + ((b*(e + f*x)^4*(
-1 + Coth[c]))/(2*f) + (2*e^2*(b*d*e - 3*a*f)*(d*x - Log[1 - Cosh[c + d*x]
- Sinh[c + d*x]]))/d^2 - (6*e*f*(b*d*e + 2*a*f)*x*Log[1 + Cosh[c + d*x] - S
inh[c + d*x]])/d^2 - (6*f^2*(b*d*e + a*f)*x^2*Log[1 + Cosh[c + d*x] - Sinh[
c + d*x]])/d^2 - (2*b*f^3*x^3*Log[1 + Cosh[c + d*x] - Sinh[c + d*x]])/d - (
6*e*f*(b*d*e - 2*a*f)*x*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]])/d^2 + (6*f^
2*(-(b*d*e) + a*f)*x^2*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]])/d^2 - (2*b*f
^3*x^3*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]])/d + (2*e^2*(b*d*e + 3*a*f)*(
d*x - Log[1 + Cosh[c + d*x] + Sinh[c + d*x]]))/d^2 + (6*e*f*(b*d*e - 2*a*f)
*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]])/d^3 + (6*e*f*(b*d*e + 2*a*f)*Po
lyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]])/d^3 + (12*f^2*(b*d*e - a*f)*(d*x*
PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + PolyLog[3, Cosh[c + d*x] - Sinh
[c + d*x]]))/d^4 + (12*f^2*(b*d*e + a*f)*(d*x*PolyLog[2, -Cosh[c + d*x] + S

```
inh[c + d*x]] + PolyLog[3, -Cosh[c + d*x] + Sinh[c + d*x]]))/d^4 + (6*b*f^3
*(d^2*x^2*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + 2*(d*x*PolyLog[3, Cos
h[c + d*x] - Sinh[c + d*x]] + PolyLog[4, Cosh[c + d*x] - Sinh[c + d*x]])))/
d^4 + (6*b*f^3*(d^2*x^2*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + 2*(d*x
*PolyLog[3, -Cosh[c + d*x] + Sinh[c + d*x]] + PolyLog[4, -Cosh[c + d*x] + S
inh[c + d*x]])))/d^4)/(2*a^2) + ((-4*b*e^3 - 12*b*e^2*f*x - 12*b*e*f^2*x^2
- 4*b*f^3*x^3 + 4*a*d*e^3*x*Cosh[c] + 6*a*d*e^2*f*x^2*Cosh[c] + 4*a*d*e*f^2
*x^3*Cosh[c] + a*d*f^3*x^4*Cosh[c])*Csch[c/2]*Sech[c/2])/(8*a*b*d) + (Csch[
c/2]*Csch[c/2 + (d*x)/2]*(e^3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(d*x)/2] + 3*e
*f^2*x^2*Sinh[(d*x)/2] + f^3*x^3*Sinh[(d*x)/2]))/(2*a*d) + (Sech[c/2]*Sech[
c/2 + (d*x)/2]*(e^3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(d*x)/2] + 3*e*f^2*x^2*S
inh[(d*x)/2] + f^3*x^3*Sinh[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 0.72, size = 5829, normalized size = 8.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/4*(a^2*d^4*f^3*x^4 + 4*a^2*d^4*e*f^2*x^3 + 6*a^2*d^4*e^2*f*x^2 + 4*a^2*d^
4*e^3*x + 8*a^2*c*d^3*e^3 - 12*a^2*c^2*d^2*e^2*f + 8*a^2*c^3*d*e*f^2 - 2*a^
2*c^4*f^3 - (a^2*d^4*f^3*x^4 + 4*a^2*d^4*e*f^2*x^3 + 6*a^2*d^4*e^2*f*x^2 +
4*a^2*d^4*e^3*x + 8*a^2*c*d^3*e^3 - 12*a^2*c^2*d^2*e^2*f + 8*a^2*c^3*d*e*f^
2 - 2*a^2*c^4*f^3)*cosh(d*x + c)^2 - (a^2*d^4*f^3*x^4 + 4*a^2*d^4*e*f^2*x^3
 + 6*a^2*d^4*e^2*f*x^2 + 4*a^2*d^4*e^3*x + 8*a^2*c*d^3*e^3 - 12*a^2*c^2*d^2
*e^2*f + 8*a^2*c^3*d*e*f^2 - 2*a^2*c^4*f^3)*sinh(d*x + c)^2 - 8*(a*b*d^3*f^
3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + a*b*d^3*e^3)*cosh(d*x + c
) - 12*((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d
^2*e^2*f - ((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^
2)*d^2*e^2*f)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*
d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) - ((a^2 +
b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*sinh(
d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b
*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 12*((a^2 + b^2)*d^2*f^3
*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f - ((a^2 + b^2)*d^2
*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*cosh(d*x + c)
^2 - 2*((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 + b^2)*d^2*e*f^2*x + (a^2 + b^2)*d
^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) - ((a^2 + b^2)*d^2*f^3*x^2 + 2*(a^2 +
 b^2)*d^2*e*f^2*x + (a^2 + b^2)*d^2*e^2*f)*sinh(d*x + c)^2)*dilog((a*cosh(d
*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
 b^2)/b^2) - b)/b + 1) + 12*(b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*f^
2 - (b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*f^2 + 2*(b^2*d^2*e*f^2 - a
*b*d*f^3)*x)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d
```

*e*f^2 + 2*(b^2*d^2*e*f^2 - a*b*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c) - (b^
2*d^2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*f^2 + 2*(b^2*d^2*e*f^2 - a*b*d*f^
3)*x)*sinh(d*x + c)^2 + 2*(b^2*d^2*e*f^2 - a*b*d*f^3)*x)*dilog(cosh(d*x + c
) + sinh(d*x + c)) + 12*(b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f + 2*a*b*d*e*f^2 -
(b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f + 2*a*b*d*e*f^2 + 2*(b^2*d^2*e*f^2 + a*b*d
*f^3)*x)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f + 2*a*b*d*e*f
^2 + 2*(b^2*d^2*e*f^2 + a*b*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c) - (b^2*d^
2*f^3*x^2 + b^2*d^2*e^2*f + 2*a*b*d*e*f^2 + 2*(b^2*d^2*e*f^2 + a*b*d*f^3)*x
)*sinh(d*x + c)^2 + 2*(b^2*d^2*e*f^2 + a*b*d*f^3)*x)*dilog(-cosh(d*x + c) -
sinh(d*x + c)) - 4*((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a
^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3 - ((a^2 + b^2)*d^3*e^3 - 3*(a^2
+ b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*cosh
(d*x + c)^2 - 2*((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a^2 +
b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) - ((a^
2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 -
(a^2 + b^2)*c^3*f^3)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x
+ c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 4*((a^2 + b^2)*d^3*e^3 - 3*(a^2 +
b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3 - ((a^2
+ b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 - (
a^2 + b^2)*c^3*f^3)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2
)*c*d^2*e^2*f + 3*(a^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*cosh(d*x +
c)*sinh(d*x + c) - ((a^2 + b^2)*d^3*e^3 - 3*(a^2 + b^2)*c*d^2*e^2*f + 3*(a
^2 + b^2)*c^2*d*e*f^2 - (a^2 + b^2)*c^3*f^3)*sinh(d*x + c)^2)*log(2*b*cosh(
d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 4*((a^2 +
b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x
+ 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*
f^3 - ((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2
)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^
2 + b^2)*c^3*f^3)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b
^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f -
3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x +
c) - ((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)
*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2
+ b^2)*c^3*f^3)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) +
(b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 4*((a^
2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*
f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c
^3*f^3 - ((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 +
b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 +
(a^2 + b^2)*c^3*f^3)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2
+ b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*
f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (a^2 + b^2)*c^3*f^3)*cosh(d*x + c)*sinh(d*x
+ c) - ((a^2 + b^2)*d^3*f^3*x^3 + 3*(a^2 + b^2)*d^3*e*f^2*x^2 + 3*(a^2 + b
^2)*d^3*e^2*f*x + 3*(a^2 + b^2)*c*d^2*e^2*f - 3*(a^2 + b^2)*c^2*d*e*f^2 + (
a^2 + b^2)*c^3*f^3)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c

```
) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 4*(
b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*(b^2*d^3*e*f^2 + a*b*d^
2*f^3)*x^2 - (b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*(b^2*d^3*
e*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2)*x)*cosh(d*x
+ c)^2 - 2*(b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*(b^2*d^3*e*
f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2)*x)*cosh(d*x +
c)*sinh(d*x + c) - (b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*(b^
2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2)*x)*sin
h(d*x + c)^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2)*x)*log(cosh(d*x + c) + s
inh(d*x + c) + 1) + 4*(b^2*d^3*e^3 - 3*(b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2
 + 2*a*b*c)*d*e*f^2 - (b^2*c^3 + 3*a*b*c^2)*f^3 - (b^2*d^3*e^3 - 3*(b^2*c +
 a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 - (b^2*c^3 + 3*a*b*c^2)*f^3
)*cosh(d*x + c)^2 - 2*(b^2*d^3*e^3 - 3*(b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2
 + 2*a*b*c)*d*e*f^2 - (b^2*c^3 + 3*a*b*c^2)*f^3)*cosh(d*x + c)*sinh(d*x + c
) - (b^2*d^3*e^3 - 3*(b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c)*d*e*f^
2 - (b^2*c^3 + 3*a*b*c^2)*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*
x + c) - 1) + 4*(b^2*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c
)*d*e*f^2 + (b^2*c^3 + 3*a*b*c^2)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2
 - (b^2*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 + (
b^2*c^3 + 3*a*b*c^2)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(b^2*d^3
*e^2*f - 2*a*b*d^2*e*f^2)*x)*cosh(d*x + c)^2 - 2*(b^2*d^3*f^3*x^3 + 3*b^2*c
*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 + (b^2*c^3 + 3*a*b*c^2)*f^3 + 3*
(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f - 2*a*b*d^2*e*f^2)*x)*
cosh(d*x + c)*sinh(d*x + c) - (b^2*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2
*c^2 + 2*a*b*c)*d*e*f^2 + (b^2*c^3 + 3*a*b*c^2)*f^3 + 3*(b^2*d^3*e*f^2 - a*
b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f - 2*a*b*d^2*e*f^2)*x)*sinh(d*x + c)^2 + 3
*(b^2*d^3*e^2*f - 2*a*b*d^2*e*f^2)*x)*log(-cosh(d*x + c) - sinh(d*x + c) +
1) + 24*((a^2 + b^2)*f^3*cosh(d*x + c)^2 + 2*(a^2 + b^2)*f^3*cosh(d*x + c)*
sinh(d*x + c) + (a^2 + b^2)*f^3*sinh(d*x + c)^2 - (a^2 + b^2)*f^3)*polylog(
4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))
*sqrt((a^2 + b^2)/b^2))/b) + 24*((a^2 + b^2)*f^3*cosh(d*x + c)^2 + 2*(a^2 +
 b^2)*f^3*cosh(d*x + c)*sinh(d*x + c) + (a^2 + b^2)*f^3*sinh(d*x + c)^2 - (
a^2 + b^2)*f^3)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
 + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 24*(b^2*f^3*cosh(d*x +
 c)^2 + 2*b^2*f^3*cosh(d*x + c)*sinh(d*x + c) + b^2*f^3*sinh(d*x + c)^2 - b
^2*f^3)*polylog(4, cosh(d*x + c) + sinh(d*x + c)) - 24*(b^2*f^3*cosh(d*x +
c)^2 + 2*b^2*f^3*cosh(d*x + c)*sinh(d*x + c) + b^2*f^3*sinh(d*x + c)^2 - b^
2*f^3)*polylog(4, -cosh(d*x + c) - sinh(d*x + c)) + 24*((a^2 + b^2)*d*f^3*x
 + (a^2 + b^2)*d*e*f^2 - ((a^2 + b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*cosh(d
*x + c)^2 - 2*((a^2 + b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*cosh(d*x + c)*sin
h(d*x + c) - ((a^2 + b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*sinh(d*x + c)^2)*p
olylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*
x + c))*sqrt((a^2 + b^2)/b^2))/b) + 24*((a^2 + b^2)*d*f^3*x + (a^2 + b^2)*d
*e*f^2 - ((a^2 + b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*cosh(d*x + c)^2 - 2*((
a^2 + b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) - ((a
```

```
^2 + b^2)*d*f^3*x + (a^2 + b^2)*d*e*f^2)*sinh(d*x + c)^2)*polylog(3, (a*cos
h(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2))/b) - 24*(b^2*d*f^3*x + b^2*d*e*f^2 - a*b*f^3 - (b^2*d*f^3*x
+ b^2*d*e*f^2 - a*b*f^3)*cosh(d*x + c)^2 - 2*(b^2*d*f^3*x + b^2*d*e*f^2 - a
*b*f^3)*cosh(d*x + c)*sinh(d*x + c) - (b^2*d*f^3*x + b^2*d*e*f^2 - a*b*f^3)
*sinh(d*x + c)^2)*polylog(3, cosh(d*x + c) + sinh(d*x + c)) - 24*(b^2*d*f^3
*x + b^2*d*e*f^2 + a*b*f^3 - (b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f^3)*cosh(d*x
 + c)^2 - 2*(b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f^3)*cosh(d*x + c)*sinh(d*x +
c) - (b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f^3)*sinh(d*x + c)^2)*polylog(3, -cos
h(d*x + c) - sinh(d*x + c)) - 2*(4*a*b*d^3*f^3*x^3 + 12*a*b*d^3*e*f^2*x^2 +
 12*a*b*d^3*e^2*f*x + 4*a*b*d^3*e^3 + (a^2*d^4*f^3*x^4 + 4*a^2*d^4*e*f^2*x^
3 + 6*a^2*d^4*e^2*f*x^2 + 4*a^2*d^4*e^3*x + 8*a^2*c*d^3*e^3 - 12*a^2*c^2*d^
2*e^2*f + 8*a^2*c^3*d*e*f^2 - 2*a^2*c^4*f^3)*cosh(d*x + c))*sinh(d*x + c))/
(a^2*b*d^4*cosh(d*x + c)^2 + 2*a^2*b*d^4*cosh(d*x + c)*sinh(d*x + c) + a^2*
b*d^4*sinh(d*x + c)^2 - a^2*b*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.75, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \cosh\left(dx+c\right) \left(\coth^{2}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] e^3*((d*x + c)/(b*d) + 2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) - b*log(
e^(-d*x - c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d) + (a^2 + b^2)*l
og(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a^2*b*d)) - 3*e^2*f*log(e^(
d*x + c) + 1)/(a*d^2) + 3*e^2*f*log(e^(d*x + c) - 1)/(a*d^2) - 1/4*(a*d*f^3
*x^4 + 4*a*d*e*f^2*x^3 + 6*a*d*e^2*f*x^2 - (a*d*f^3*x^4*e^(2*c) + 4*a*d*e*f
^2*x^3*e^(2*c) + 6*a*d*e^2*f*x^2*e^(2*c))*e^(2*d*x) + 8*(b*f^3*x^3*e^c + 3*
b*e*f^2*x^2*e^c + 3*b*e^2*f*x*e^c)*e^(d*x))/(a*b*d*e^(2*d*x + 2*c) - a*b*d)
 - (d^3*x^3*log(e^(d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*po
lylog(3, -e^(d*x + c)) + 6*polylog(4, -e^(d*x + c)))*b*f^3/(a^2*d^4) - (d^3
*x^3*log(-e^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3
, e^(d*x + c)) + 6*polylog(4, e^(d*x + c)))*b*f^3/(a^2*d^4) - 3*(b*d*e^2*f
+ 2*a*e*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^2*d^3) - 3
*(b*d*e^2*f - 2*a*e*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(
a^2*d^3) - 3*(b*d*e*f^2 + a*f^3)*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilo
g(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))/(a^2*d^4) - 3*(b*d*e*f^2 - a*
f^3)*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(
3, e^(d*x + c)))/(a^2*d^4) + 1/4*(b*d^4*f^3*x^4 + 4*(b*d*e*f^2 + a*f^3)*d^3
*x^3 + 6*(b*d^2*e^2*f + 2*a*d*e*f^2)*d^2*x^2)/(a^2*d^4) + 1/4*(b*d^4*f^3*x^
4 + 4*(b*d*e*f^2 - a*f^3)*d^3*x^3 + 6*(b*d^2*e^2*f - 2*a*d*e*f^2)*d^2*x^2)/
(a^2*d^4) - integrate(-2*((a^2*b*f^3 + b^3*f^3)*x^3 + 3*(a^2*b*e*f^2 + b^3*
e*f^2)*x^2 + 3*(a^2*b*e^2*f + b^3*e^2*f)*x - ((a^3*f^3*e^c + a*b^2*f^3*e^c)
*x^3 + 3*(a^3*e*f^2*e^c + a*b^2*e*f^2*e^c)*x^2 + 3*(a^3*e^2*f*e^c + a*b^2*e
^2*f*e^c)*x)*e^(d*x))/(a^2*b^2*e^(2*d*x + 2*c) + 2*a^3*b*e^(d*x + c) - a^2*
b^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh(c+d\,x)\,\coth(c+d\,x)^2\,\left(e+f\,x\right)^3}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*coth(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*coth(c + d*x)^2*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^3\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cosh(d*x+c)*coth(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*cosh(c + d*x)*coth(c + d*x)**2/(a + b*sinh(c + d*x)),
 x)
```

3.460 $\int \frac{(e+fx)^2 \cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=518

$$-\frac{2f^2\left(a^2+b^2\right)\text{Li}_3\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd^3}-\frac{2f^2\left(a^2+b^2\right)\text{Li}_3\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2bd^3}+\frac{2f\left(a^2+b^2\right)(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd^2}+\frac{2f\left(a^2\right.}{}$$

```
[Out] 1/3*b*(f*x+e)^3/a^2/f-1/3*(a^2+b^2)*(f*x+e)^3/a^2/b/f-4*f*(f*x+e)*arctanh(e
xp(d*x+c))/a/d^2-(f*x+e)^2*csch(d*x+c)/a/d-b*(f*x+e)^2*ln(1-exp(2*d*x+2*c))
/a^2/d+(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/b/d+(
a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/b/d-2*f^2*pol
ylog(2,-exp(d*x+c))/a/d^3+2*f^2*polylog(2,exp(d*x+c))/a/d^3-b*f*(f*x+e)*pol
ylog(2,exp(2*d*x+2*c))/a^2/d^2+2*(a^2+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c
)/(a-(a^2+b^2)^(1/2)))/a^2/b/d^2+2*(a^2+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x
+c)/(a+(a^2+b^2)^(1/2)))/a^2/b/d^2+1/2*b*f^2*polylog(3,exp(2*d*x+2*c))/a^2/
d^3-2*(a^2+b^2)*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/b/d^3-
2*(a^2+b^2)*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/b/d^3
```

Rubi [A] time = 1.29, antiderivative size = 518, normalized size of antiderivative = 1.00, number of steps used = 37, number of rules used = 17, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {5585, 5450, 3296, 2637, 5452, 4182, 2279, 2391, 5446, 3310, 3716, 2190, 2531, 2282, 6589, 5565, 5561}

$$\frac{2f\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd^2}+\frac{2f\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2bd^2}-\frac{2f^2\left(a^2+b^2\right)\text{Pol}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cosh[c + d*x]*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(e + f*x)^3)/(3*a^2*f) - ((a^2 + b^2)*(e + f*x)^3)/(3*a^2*b*f) - (4*f*(e
 + f*x)*ArcTanh[E^(c + d*x)])/(a*d^2) - ((e + f*x)^2*Csch[c + d*x])/(a*d) +
 ((a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(
a^2*b*d) + ((a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2])])/(a^2*b*d) - (b*(e + f*x)^2*Log[1 - E^(2*(c + d*x))])/(a^2*d) - (2*
f^2*PolyLog[2, -E^(c + d*x)])/(a*d^3) + (2*f^2*PolyLog[2, E^(c + d*x)])/(a*
d^3) + (2*(a^2 + b^2)*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^
2 + b^2]))])/(a^2*b*d^2) + (2*(a^2 + b^2)*f*(e + f*x)*PolyLog[2, -((b*E^(c
+ d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*b*d^2) - (b*f*(e + f*x)*PolyLog[2, E^
(2*(c + d*x))])/(a^2*d^2) - (2*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(c + d*x))
/(a - Sqrt[a^2 + b^2]))])/(a^2*b*d^3) - (2*(a^2 + b^2)*f^2*PolyLog[3, -((b*
E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*b*d^3) + (b*f^2*PolyLog[3, E^(2*
(c + d*x))])/(2*a^2*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
```

```
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\cosh(c+dx)\coth^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cosh^2(c+dx)\,c}{a+b\sinh(c+d}}{a}$$

$$= \frac{\int (e+fx)^2\cosh(c+dx)\,dx}{a} + \frac{\int (e+fx)^2\coth(c+dx)\mathrm{csch}(c+d}{a}$$

$$= -\frac{(e+fx)^2\mathrm{csch}(c+dx)}{ad} + \frac{(e+fx)^2\sinh(c+dx)}{ad} - \frac{\int (e+fx)^2\,\mathrm{cc}}{a}$$

$$= \frac{b(e+fx)^3}{3a^2f} - \frac{(a^2+b^2)(e+fx)^3}{3a^2bf} - \frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} - 2$$

$$= \frac{b(e+fx)^3}{3a^2f} - \frac{(a^2+b^2)(e+fx)^3}{3a^2bf} - \frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} - (e$$

$$= \frac{b(e+fx)^3}{3a^2f} - \frac{(a^2+b^2)(e+fx)^3}{3a^2bf} - \frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} - (e$$

$$= \frac{b(e+fx)^3}{3a^2f} - \frac{(a^2+b^2)(e+fx)^3}{3a^2bf} - \frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} - (e$$

$$= \frac{b(e+fx)^3}{3a^2f} - \frac{(a^2+b^2)(e+fx)^3}{3a^2bf} - \frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} - (e$$

Mathematica [B] time = 11.37, size = 1454, normalized size = 2.81

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cosh[c + d*x]*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/3*((a^2 + b^2)*(6*d^3*e^2*E^(2*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2
*c)*f^2*x^3 + 3*d^2*e^2*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^
2*e^2*E^(2*c)*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Lo
g[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2
*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*
d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])]
- 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)
```

```
*E^(2*c)])] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^
2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt
[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c +
Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x
))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*Po
lyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-
1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2
+ b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^
2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c
- Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^
c + Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d
*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))]))/(a^2*b*d^3*(-1 + E^(2*c))) + (
b*d^3*(e + f*x)^3*(-1 + Coth[c]) + 3*d*e*f*(b*d*e - 2*a*f)*(d*x - Log[1 - C
osh[c + d*x] - Sinh[c + d*x]]) - 6*d*f^2*(b*d*e + a*f)*x*Log[1 + Cosh[c + d
*x] - Sinh[c + d*x]] - 3*b*d^2*f^3*x^2*Log[1 + Cosh[c + d*x] - Sinh[c + d*x
]] - 6*d*f^2*(b*d*e - a*f)*x*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]] - 3*b*d
^2*f^3*x^2*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]] + 3*d*e*f*(b*d*e + 2*a*f)
*(d*x - Log[1 + Cosh[c + d*x] + Sinh[c + d*x]]) + 6*f^2*(b*d*e - a*f)*PolyL
og[2, Cosh[c + d*x] - Sinh[c + d*x]] + 6*f^2*(b*d*e + a*f)*PolyLog[2, -Cosh
[c + d*x] + Sinh[c + d*x]] + 6*b*f^3*(d*x*PolyLog[2, Cosh[c + d*x] - Sinh[c
 + d*x]] + PolyLog[3, Cosh[c + d*x] - Sinh[c + d*x]]) + 6*b*f^3*(d*x*PolyLo
g[2, -Cosh[c + d*x] + Sinh[c + d*x]] + PolyLog[3, -Cosh[c + d*x] + Sinh[c +
 d*x]]))/(3*a^2*d^3*f) + ((-3*b*e^2 - 6*b*e*f*x - 3*b*f^2*x^2 + 3*a*d*e^2*x
*Cosh[c] + 3*a*d*e*f*x^2*Cosh[c] + a*d*f^2*x^3*Cosh[c])*Csch[c/2]*Sech[c/2]
)/(6*a*b*d) + (Csch[c/2]*Csch[c/2 + (d*x)/2]*(e^2*Sinh[(d*x)/2] + 2*e*f*x*S
inh[(d*x)/2] + f^2*x^2*Sinh[(d*x)/2]))/(2*a*d) + (Sech[c/2]*Sech[c/2 + (d*x
)/2]*(e^2*Sinh[(d*x)/2] + 2*e*f*x*Sinh[(d*x)/2] + f^2*x^2*Sinh[(d*x)/2]))/(
2*a*d)
```

fricas [C] time = 0.72, size = 3506, normalized size = 6.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/3*(a^2*d^3*f^2*x^3 + 3*a^2*d^3*e*f*x^2 + 3*a^2*d^3*e^2*x + 6*a^2*c*d^2*e^
2 - 6*a^2*c^2*d*e*f + 2*a^2*c^3*f^2 - (a^2*d^3*f^2*x^3 + 3*a^2*d^3*e*f*x^2
+ 3*a^2*d^3*e^2*x + 6*a^2*c*d^2*e^2 - 6*a^2*c^2*d*e*f + 2*a^2*c^3*f^2)*cosh
(d*x + c)^2 - (a^2*d^3*f^2*x^3 + 3*a^2*d^3*e*f*x^2 + 3*a^2*d^3*e^2*x + 6*a^
2*c*d^2*e^2 - 6*a^2*c^2*d*e*f + 2*a^2*c^3*f^2)*sinh(d*x + c)^2 - 6*(a*b*d^2
*f^2*x^2 + 2*a*b*d^2*e*f*x + a*b*d^2*e^2)*cosh(d*x + c) - 6*((a^2 + b^2)*d*
f^2*x + (a^2 + b^2)*d*e*f - ((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(
d*x + c)^2 - 2*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)*sinh
```

```
(d*x + c) - ((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*sinh(d*x + c)^2)*dilo
g((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*
sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 6*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*
e*f - ((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)^2 - 2*((a^2 +
 b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x + c) - ((a^2 + b^
2)*d*f^2*x + (a^2 + b^2)*d*e*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b + 1) + 6*(b^2*d*f^2*x + b^2*d*e*f - a*b*f^2 - (b^2*d*f^2*x + b^2*d*e
*f - a*b*f^2)*cosh(d*x + c)^2 - 2*(b^2*d*f^2*x + b^2*d*e*f - a*b*f^2)*cosh(
d*x + c)*sinh(d*x + c) - (b^2*d*f^2*x + b^2*d*e*f - a*b*f^2)*sinh(d*x + c)^
2)*dilog(cosh(d*x + c) + sinh(d*x + c)) + 6*(b^2*d*f^2*x + b^2*d*e*f + a*b*
f^2 - (b^2*d*f^2*x + b^2*d*e*f + a*b*f^2)*cosh(d*x + c)^2 - 2*(b^2*d*f^2*x
+ b^2*d*e*f + a*b*f^2)*cosh(d*x + c)*sinh(d*x + c) - (b^2*d*f^2*x + b^2*d*e
*f + a*b*f^2)*sinh(d*x + c)^2)*dilog(-cosh(d*x + c) - sinh(d*x + c)) - 3*((
a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2 - ((a^2 +
b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2
 - 2*((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*co
sh(d*x + c)*sinh(d*x + c) - ((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f +
(a^2 + b^2)*c^2*f^2)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x
+ c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 3*((a^2 + b^2)*d^2*e^2 - 2*(a^2 +
 b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2 - ((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*
c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^2*e^2 - 2
*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) - (
(a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*sinh(d*x
 + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b
^2) + 2*a) - 3*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2
+ b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2 - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 +
b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)
^2 - 2*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c
*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) - ((a^2 + b^2)*d^
2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c
^2*f^2)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(
d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 3*((a^2 + b^2)*
d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)
*c^2*f^2 - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^
2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^2*f^2*
x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2
)*cosh(d*x + c)*sinh(d*x + c) - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^
2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*sinh(d*x + c)^2)*log
(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*
sqrt((a^2 + b^2)/b^2) - b)/b) + 3*(b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b*d*
e*f - (b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b*d*e*f + 2*(b^2*d^2*e*f + a*b*d
*f^2)*x)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b*d*e*f +
 2*(b^2*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - (b^2*d^2*f^2*
x^2 + b^2*d^2*e^2 + 2*a*b*d*e*f + 2*(b^2*d^2*e*f + a*b*d*f^2)*x)*sinh(d*x +
```

```
 c)^2 + 2*(b^2*d^2*e*f + a*b*d*f^2)*x)*log(cosh(d*x + c) + sinh(d*x + c) +
1) + 3*(b^2*d^2*e^2 - 2*(b^2*c + a*b)*d*e*f + (b^2*c^2 + 2*a*b*c)*f^2 - (b^
2*d^2*e^2 - 2*(b^2*c + a*b)*d*e*f + (b^2*c^2 + 2*a*b*c)*f^2)*cosh(d*x + c)^
2 - 2*(b^2*d^2*e^2 - 2*(b^2*c + a*b)*d*e*f + (b^2*c^2 + 2*a*b*c)*f^2)*cosh(
d*x + c)*sinh(d*x + c) - (b^2*d^2*e^2 - 2*(b^2*c + a*b)*d*e*f + (b^2*c^2 +
2*a*b*c)*f^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1) + 3*(
b^2*d^2*f^2*x^2 + 2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c)*f^2 - (b^2*d^2*f^2*x^
2 + 2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c)*f^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x
)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^2*x^2 + 2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c
)*f^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - (b^2*d
^2*f^2*x^2 + 2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c)*f^2 + 2*(b^2*d^2*e*f - a*b
*d*f^2)*x)*sinh(d*x + c)^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x)*log(-cosh(d*x +
 c) - sinh(d*x + c) + 1) - 6*((a^2 + b^2)*f^2*cosh(d*x + c)^2 + 2*(a^2 + b^
2)*f^2*cosh(d*x + c)*sinh(d*x + c) + (a^2 + b^2)*f^2*sinh(d*x + c)^2 - (a^2
 + b^2)*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*((a^2 + b^2)*f^2*cosh(d
*x + c)^2 + 2*(a^2 + b^2)*f^2*cosh(d*x + c)*sinh(d*x + c) + (a^2 + b^2)*f^2
*sinh(d*x + c)^2 - (a^2 + b^2)*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*
x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*
(b^2*f^2*cosh(d*x + c)^2 + 2*b^2*f^2*cosh(d*x + c)*sinh(d*x + c) + b^2*f^2*
sinh(d*x + c)^2 - b^2*f^2)*polylog(3, cosh(d*x + c) + sinh(d*x + c)) + 6*(b
^2*f^2*cosh(d*x + c)^2 + 2*b^2*f^2*cosh(d*x + c)*sinh(d*x + c) + b^2*f^2*si
nh(d*x + c)^2 - b^2*f^2)*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) - 2*(3*
a*b*d^2*f^2*x^2 + 6*a*b*d^2*e*f*x + 3*a*b*d^2*e^2 + (a^2*d^3*f^2*x^3 + 3*a^
2*d^3*e*f*x^2 + 3*a^2*d^3*e^2*x + 6*a^2*c*d^2*e^2 - 6*a^2*c^2*d*e*f + 2*a^2
*c^3*f^2)*cosh(d*x + c))*sinh(d*x + c))/(a^2*b*d^3*cosh(d*x + c)^2 + 2*a^2*
b*d^3*cosh(d*x + c)*sinh(d*x + c) + a^2*b*d^3*sinh(d*x + c)^2 - a^2*b*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.78, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \cosh \left(dx+c\right) \left(\coth^{2}\left(dx+c\right)\right)}{a+b\sinh \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e^2\left(\frac{dx+c}{bd}+\frac{2\,e^{(-dx-c)}}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}-\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^2d}-\frac{b\log\left(e^{(-dx-c)}-1\right)}{a^2d}+\frac{\left(a^2+b^2\right)\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,d}\right.}{a^2bd}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] e^2*((d*x + c)/(b*d) + 2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) - b*log(
e^(-d*x - c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d) + (a^2 + b^2)*l
og(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a^2*b*d)) - 1/3*(a*d*f^2*x^
3 + 3*a*d*e*f*x^2 - (a*d*f^2*x^3*e^(2*c) + 3*a*d*e*f*x^2*e^(2*c))*e^(2*d*x)
 + 6*(b*f^2*x^2*e^c + 2*b*e*f*x*e^c)*e^(d*x))/(a*b*d*e^(2*d*x + 2*c) - a*b*
d) - 2*e*f*log(e^(d*x + c) + 1)/(a*d^2) + 2*e*f*log(e^(d*x + c) - 1)/(a*d^2
) - (d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3
, -e^(d*x + c)))*b*f^2/(a^2*d^3) - (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*d
ilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*b*f^2/(a^2*d^3) - 2*(b*d*e*f
 + a*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^2*d^3) - 2*(b
*d*e*f - a*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^2*d^3)
+ 1/3*(b*d^3*f^2*x^3 + 3*(b*d*e*f + a*f^2)*d^2*x^2)/(a^2*d^3) + 1/3*(b*d^3*
f^2*x^3 + 3*(b*d*e*f - a*f^2)*d^2*x^2)/(a^2*d^3) - integrate(-2*((a^2*b*f^2
 + b^3*f^2)*x^2 + 2*(a^2*b*e*f + b^3*e*f)*x - ((a^3*f^2*e^c + a*b^2*f^2*e^c
)*x^2 + 2*(a^3*e*f*e^c + a*b^2*e*f*e^c)*x)*e^(d*x))/(a^2*b^2*e^(2*d*x + 2*c
) + 2*a^3*b*e^(d*x + c) - a^2*b^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cosh\left(c+d\,x\right)\,\mathrm{coth}\left(c+d\,x\right)^2\,{\left(e+f\,x\right)}^2}{a+b\,\mathrm{sinh}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*coth(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*coth(c + d*x)^2*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2\cosh\left(c+dx\right)\coth^2\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cosh(d*x+c)*coth(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*cosh(c + d*x)*coth(c + d*x)**2/(a + b*sinh(c + d*x)),
 x)
```

3.461 $\int \frac{(e+fx)\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=324

$$\frac{f\left(a^2+b^2\right)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd^2}+\frac{f\left(a^2+b^2\right)\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2bd^2}+\frac{\left(a^2+b^2\right)(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{a^2bd}+\frac{\left(a^2+b^2\right)(e-}{}$$

```
[Out] 1/2*b*(f*x+e)^2/a^2/f-1/2*(a^2+b^2)*(f*x+e)^2/a^2/b/f-f*arctanh(cosh(d*x+c)
)/a/d^2-(f*x+e)*csch(d*x+c)/a/d-b*(f*x+e)*ln(1-exp(2*d*x+2*c))/a^2/d+(a^2+b
^2)*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/b/d+(a^2+b^2)*(f*x+e
)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/b/d-1/2*b*f*polylog(2,exp(2*d*
x+2*c))/a^2/d^2+(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^
2/b/d^2+(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/b/d^2
```

Rubi [A] time = 0.74, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {5585, 5450, 3296, 2638, 5452, 3770, 5446, 2635, 8, 3716, 2190, 2279, 2391, 5565, 5561}

$$\frac{f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2bd^2}+\frac{f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2bd^2}-\frac{bf\text{PolyLog}\left(2,e^{2(c+dx)}\right)}{2a^2d^2}+\frac{\left(a^2+b^2\right)(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cosh[c + d*x]*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(e + f*x)^2)/(2*a^2*f) - ((a^2 + b^2)*(e + f*x)^2)/(2*a^2*b*f) - (f*ArcT
anh[Cosh[c + d*x]])/(a*d^2) - ((e + f*x)*Csch[c + d*x])/(a*d) + ((a^2 + b^2
)*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^2*b*d) + ((a
^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^2*b*
d) - (b*(e + f*x)*Log[1 - E^(2*(c + d*x))])/(a^2*d) + ((a^2 + b^2)*f*PolyLo
g[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*b*d^2) + ((a^2 + b^2)*
f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*b*d^2) - (b*f*
PolyLog[2, E^(2*(c + d*x))])/(2*a^2*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
```

```
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\cosh(c+dx)\coth^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cosh^2(c+dx)\coth(c}{a+b\sinh(c+dx)}}{a}$$

$$= \frac{\int (e+fx)\cosh(c+dx)\,dx}{a} + \frac{\int (e+fx)\coth(c+dx)\operatorname{csch}(c+dx)\,dx}{a}$$

$$= -\frac{(e+fx)\operatorname{csch}(c+dx)}{ad} + \frac{(e+fx)\sinh(c+dx)}{ad} - \frac{\int (e+fx)\cosh(c}{a}$$

$$= \frac{b(e+fx)^2}{2a^2f} - \frac{\left(a^2+b^2\right)(e+fx)^2}{2a^2bf} - \frac{f\tanh^{-1}(\cosh(c+dx))}{ad^2} - \frac{f\cosh}{}$$

$$= \frac{b(e+fx)^2}{2a^2f} - \frac{\left(a^2+b^2\right)(e+fx)^2}{2a^2bf} - \frac{f\tanh^{-1}(\cosh(c+dx))}{ad^2} - \frac{(e+f}{}$$

$$= \frac{b(e+fx)^2}{2a^2f} - \frac{\left(a^2+b^2\right)(e+fx)^2}{2a^2bf} - \frac{f\tanh^{-1}(\cosh(c+dx))}{ad^2} - \frac{(e+f}{}$$

$$= \frac{b(e+fx)^2}{2a^2f} - \frac{\left(a^2+b^2\right)(e+fx)^2}{2a^2bf} - \frac{f\tanh^{-1}(\cosh(c+dx))}{ad^2} - \frac{(e+f}{}$$

Mathematica [A] time = 2.38, size = 313, normalized size = 0.97

$$\frac{2\left(a^2+b^2\right)\left(f\operatorname{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+f\operatorname{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)+de\log(a+b\sinh(c+dx))-cf\log(a+b\sinh(c}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cosh[c + d*x]*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (-(a*d*(e + f*x)*Coth[(c + d*x)/2]) - 2*b*d*e*Log[Sinh[c + d*x]] + 2*b*c*f*
Log[Sinh[c + d*x]] + 2*a*f*Log[Tanh[(c + d*x)/2]] + b*f*(-((c + d*x)*(c + d
*x + 2*Log[1 - E^(-2*(c + d*x))])) + PolyLog[2, E^(-2*(c + d*x))]) + (2*(a^
```

```
2 + b^2)*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - S
qrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
)] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c + d*x]] + f*PolyLo
g[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2]))]]))/b + a*d*(e + f*x)*Tanh[(c + d*x)/2])/(2*a^2*d^
2)
```

fricas **[B]** time = 0.94, size = 1735, normalized size = 5.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] 1/2*(a^2*d^2*f*x^2 + 2*a^2*d^2*e*x + 4*a^2*c*d*e - 2*a^2*c^2*f - (a^2*d^2*f
*x^2 + 2*a^2*d^2*e*x + 4*a^2*c*d*e - 2*a^2*c^2*f)*cosh(d*x + c)^2 - (a^2*d^
2*f*x^2 + 2*a^2*d^2*e*x + 4*a^2*c*d*e - 2*a^2*c^2*f)*sinh(d*x + c)^2 - 4*(a
*b*d*f*x + a*b*d*e)*cosh(d*x + c) + 2*((a^2 + b^2)*f*cosh(d*x + c)^2 + 2*(a
^2 + b^2)*f*cosh(d*x + c)*sinh(d*x + c) + (a^2 + b^2)*f*sinh(d*x + c)^2 - (
a^2 + b^2)*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) +
 b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*((a^2 + b^2)*f*cosh
(d*x + c)^2 + 2*(a^2 + b^2)*f*cosh(d*x + c)*sinh(d*x + c) + (a^2 + b^2)*f*s
inh(d*x + c)^2 - (a^2 + b^2)*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) -
(b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(
b^2*f*cosh(d*x + c)^2 + 2*b^2*f*cosh(d*x + c)*sinh(d*x + c) + b^2*f*sinh(d*
x + c)^2 - b^2*f)*dilog(cosh(d*x + c) + sinh(d*x + c)) - 2*(b^2*f*cosh(d*x
+ c)^2 + 2*b^2*f*cosh(d*x + c)*sinh(d*x + c) + b^2*f*sinh(d*x + c)^2 - b^2*
f)*dilog(-cosh(d*x + c) - sinh(d*x + c)) - 2*((a^2 + b^2)*d*e - (a^2 + b^2)
*c*f - ((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c)^2 - 2*((a^2 + b^2)
*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c) - ((a^2 + b^2)*d*e - (a
^2 + b^2)*c*f)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) +
 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*((a^2 + b^2)*d*e - (a^2 + b^2)*c*f -
((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d*e -
(a^2 + b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c) - ((a^2 + b^2)*d*e - (a^2 + b^
2)*c*f)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sq
rt((a^2 + b^2)/b^2) + 2*a) - 2*((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f - ((a^2
 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d*f*x + (
a^2 + b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c) - ((a^2 + b^2)*d*f*x + (a^2 + b
^2)*c*f)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*((a^2 + b^2)
*d*f*x + (a^2 + b^2)*c*f - ((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x +
 c)^2 - 2*((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)
 - ((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*sinh(d*x + c)^2)*log(-(a*cosh(d*x
+ c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^
```

```
2)/b^2) - b)/b) + 2*(b^2*d*f*x + b^2*d*e + a*b*f - (b^2*d*f*x + b^2*d*e + a
*b*f)*cosh(d*x + c)^2 - 2*(b^2*d*f*x + b^2*d*e + a*b*f)*cosh(d*x + c)*sinh(
d*x + c) - (b^2*d*f*x + b^2*d*e + a*b*f)*sinh(d*x + c)^2)*log(cosh(d*x + c)
 + sinh(d*x + c) + 1) + 2*(b^2*d*e - (b^2*d*e - (b^2*c + a*b)*f)*cosh(d*x +
 c)^2 - 2*(b^2*d*e - (b^2*c + a*b)*f)*cosh(d*x + c)*sinh(d*x + c) - (b^2*d*
e - (b^2*c + a*b)*f)*sinh(d*x + c)^2 - (b^2*c + a*b)*f)*log(cosh(d*x + c) +
 sinh(d*x + c) - 1) + 2*(b^2*d*f*x + b^2*c*f - (b^2*d*f*x + b^2*c*f)*cosh(d
*x + c)^2 - 2*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)*sinh(d*x + c) - (b^2*d*f*
x + b^2*c*f)*sinh(d*x + c)^2)*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 2*(
2*a*b*d*f*x + 2*a*b*d*e + (a^2*d^2*f*x^2 + 2*a^2*d^2*e*x + 4*a^2*c*d*e - 2*
a^2*c^2*f)*cosh(d*x + c))*sinh(d*x + c))/(a^2*b*d^2*cosh(d*x + c)^2 + 2*a^2
*b*d^2*cosh(d*x + c)*sinh(d*x + c) + a^2*b*d^2*sinh(d*x + c)^2 - a^2*b*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [B] time = 0.32, size = 938, normalized size = 2.90

$$-\frac{f\,x^{2}}{2b}+\frac{bfc\ln\left(e^{dx+c}-1\right)}{d^{2}a^{2}}-\frac{bf\ln\left(e^{dx+c}+1\right)x}{d\,a^{2}}+\frac{ex}{b}+\frac{bf\ln\left(\frac{-b\,e^{dx+c}+\sqrt{a^{2}+b^{2}}-a}{-a+\sqrt{a^{2}+b^{2}}}\right)c}{d^{2}a^{2}}-\frac{bfc\ln\left(b\,e^{2dx+2c}+2a\,e^{dx+c}-b\right)}{d^{2}a^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/2*f*x^2/b+1/d^2/a^2*b*f*c*ln(exp(d*x+c)-1)-1/d/a^2*b*f*ln(exp(d*x+c)+1)*
x+e*x/b+1/d^2/a^2*b*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1
/2)))*c-1/d^2/a^2*b*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+1/d/a^2*b*f*l
n((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2/a^2*b*f*ln(
(b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/d/a^2*b*f*ln((-b*
exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2/b*f*c^2+1/d/b*e
*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-2/d/b*e*ln(exp(d*x+c))+1/d^2/b*f*dil
og((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/d^2/b*f*dilog((-
b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-2/d*(f*x+e)/a*exp(d*x
+c)/(exp(2*d*x+2*c)-1)-2/d/b*f*c*x-1/d^2/b*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(
d*x+c)-b)+2/d^2/b*f*c*ln(exp(d*x+c))+1/d/b*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1
/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d^2/b*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-
```

```
a)/(-a+(a^2+b^2)^(1/2)))*c+1/d/b*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(
a^2+b^2)^(1/2)))*x+1/d^2/b*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^
2)^(1/2)))*c-1/d^2/a*f*ln(exp(d*x+c)+1)+1/d^2/a*f*ln(exp(d*x+c)-1)+1/d^2/a^
2*b*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d^2/a
^2*b*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/d/a^2*
b*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-1/d/a^2*b*e*ln(exp(d*x+c)+1)-1/d/
a^2*b*e*ln(exp(d*x+c)-1)-1/d^2/a^2*b*f*dilog(exp(d*x+c)+1)+1/d^2/a^2*b*f*di
log(exp(d*x+c))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(2\,bd\int\frac{x}{a^2de^{(dx+c)}+a^2d}\,dx-2\,bd\int\frac{x}{a^2de^{(dx+c)}-a^2d}\,dx+2\,a\left(\frac{dx+c}{a^2d^2}-\frac{\log\left(e^{(dx+c)}+1\right)}{a^2d^2}\right)-2\,a\left(\frac{dx+c}{a^2d^2}-\frac{\log\right.}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] 1/2*(2*b*d*integrate(x/(a^2*d*e^(d*x + c) + a^2*d), x) - 2*b*d*integrate(x/
(a^2*d*e^(d*x + c) - a^2*d), x) + 2*a*((d*x + c)/(a^2*d^2) - log(e^(d*x + c
) + 1)/(a^2*d^2)) - 2*a*((d*x + c)/(a^2*d^2) - log(e^(d*x + c) - 1)/(a^2*d^
2)) + (a*d*x^2*e^(2*d*x + 2*c) - a*d*x^2 - 4*b*x*e^(d*x + c))/(a*b*d*e^(2*d
*x + 2*c) - a*b*d) - integrate(4*((a^3*e^c + a*b^2*e^c)*x*e^(d*x) - (a^2*b
+ b^3)*x)/(a^2*b^2*e^(2*d*x + 2*c) + 2*a^3*b*e^(d*x + c) - a^2*b^2), x))*f
+ e*((d*x + c)/(b*d) + 2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) - b*log(
e^(-d*x - c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d) + (a^2 + b^2)*l
og(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a^2*b*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\cosh\left(c+d\,x\right)\,\mathrm{coth}\left(c+d\,x\right)^2\,\left(e+f\,x\right)}{a+b\,\mathrm{sinh}\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*coth(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((cosh(c + d*x)*coth(c + d*x)^2*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(e+fx)\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cosh(d*x+c)*coth(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)*cosh(c + d*x)*coth(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.462 $\int \frac{\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=59

$$\frac{(a^2+b^2)\log(a+b\sinh(c+dx))}{a^2bd}-\frac{b\log(\sinh(c+dx))}{a^2d}-\frac{\operatorname{csch}(c+dx)}{ad}$$

```
[Out] -csch(d*x+c)/a/d-b*ln(sinh(d*x+c))/a^2/d+(a^2+b^2)*ln(a+b*sinh(d*x+c))/a^2/
b/d
```

Rubi [A] time = 0.12, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2837, 12, 894}

$$\frac{(a^2+b^2)\log(a+b\sinh(c+dx))}{a^2bd}-\frac{b\log(\sinh(c+dx))}{a^2d}-\frac{\operatorname{csch}(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cosh[c + d*x]*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(Csch[c + d*x]/(a*d)) - (b*Log[Sinh[c + d*x]])/(a^2*d) + ((a^2 + b^2)*Log[
a + b*Sinh[c + d*x]])/(a^2*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\operatorname{Subst}\left(\int \frac{b^2(-b^2-x^2)}{x^2(a+x)}\,dx, x, b\sinh(c+dx)\right)}{b^3 d}$$
$$= -\frac{\operatorname{Subst}\left(\int \frac{-b^2-x^2}{x^2(a+x)}\,dx, x, b\sinh(c+dx)\right)}{bd}$$
$$= -\frac{\operatorname{Subst}\left(\int \left(-\frac{b^2}{ax^2}+\frac{b^2}{a^2x}+\frac{-a^2-b^2}{a^2(a+x)}\right)dx, x, b\sinh(c+dx)\right)}{bd}$$
$$= -\frac{\operatorname{csch}(c+dx)}{ad}-\frac{b\log(\sinh(c+dx))}{a^2d}+\frac{(a^2+b^2)\log(a+b\sinh(c+dx))}{a^2bd}$$

Mathematica [A] time = 0.08, size = 52, normalized size = 0.88

$$\frac{(a^2+b^2)\log(a+b\sinh(c+dx)) - ab\operatorname{csch}(c+dx) + b^2(-\log(\sinh(c+dx)))}{a^2bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cosh[c + d*x]*Coth[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-(a*b*Csch[c + d*x]) - b^2*Log[Sinh[c + d*x]] + (a^2 + b^2)*Log[a + b*Sinh
[c + d*x]])/(a^2*b*d)
```

fricas [B] time = 0.64, size = 299, normalized size = 5.07

$$-\frac{a^2dx\cosh(dx+c)^2 + a^2dx\sinh(dx+c)^2 - a^2dx + 2ab\cosh(dx+c) - \left((a^2+b^2)\cosh(dx+c)^2 + 2(a^2+b^2)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -(a^2*d*x*cosh(d*x + c)^2 + a^2*d*x*sinh(d*x + c)^2 - a^2*d*x + 2*a*b*cosh(
d*x + c) - ((a^2 + b^2)*cosh(d*x + c)^2 + 2*(a^2 + b^2)*cosh(d*x + c)*sinh(
d*x + c) + (a^2 + b^2)*sinh(d*x + c)^2 - a^2 - b^2)*log(2*(b*sinh(d*x + c)
+ a)/(cosh(d*x + c) - sinh(d*x + c))) + (b^2*cosh(d*x + c)^2 + 2*b^2*cosh(d
*x + c)*sinh(d*x + c) + b^2*sinh(d*x + c)^2 - b^2)*log(2*sinh(d*x + c)/(cos
h(d*x + c) - sinh(d*x + c))) + 2*(a^2*d*x*cosh(d*x + c) + a*b)*sinh(d*x + c
```

```
))/(a^2*b*d*cosh(d*x + c)^2 + 2*a^2*b*d*cosh(d*x + c)*sinh(d*x + c) + a^2*b
*d*sinh(d*x + c)^2 - a^2*b*d)
```

giac [A] time = 0.22, size = 113, normalized size = 1.92

$$-\frac{\frac{dx}{b}+\frac{b\log\left(e^{(dx+c)}+1\right)}{a^2}+\frac{b\log\left(\left|e^{(dx+c)}-1\right|\right)}{a^2}-\frac{\left(a^2+b^2\right)\log\left(\left|be^{(2\,dx+2\,c)}+2\,ae^{(dx+c)}-b\right|\right)}{a^2b}+\frac{2\,e^{(dx+c)}}{a\left(e^{(dx+c)}+1\right)\left(e^{(dx+c)}-1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -(d*x/b + b*log(e^(d*x + c) + 1)/a^2 + b*log(abs(e^(d*x + c) - 1))/a^2 - (a
^2 + b^2)*log(abs(b*e^(2*d*x + 2*c) + 2*a*e^(d*x + c) - b))/(a^2*b) + 2*e^(
d*x + c)/(a*(e^(d*x + c) + 1)*(e^(d*x + c) - 1)))/d
```

maple [B] time = 0.00, size = 172, normalized size = 2.92

$$\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}{db}-\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{db}+\frac{\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right.}{db}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2/d/a*tanh(1/2*d*x+1/2*c)-1/d/b*ln(tanh(1/2*d*x+1/2*c)-1)-1/d/b*ln(tanh(1
/2*d*x+1/2*c)+1)+1/d/b*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a
)+1/d/a^2*b*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)-1/2/d/a/t
anh(1/2*d*x+1/2*c)-1/d/a^2*b*ln(tanh(1/2*d*x+1/2*c))
```

maxima [B] time = 0.33, size = 131, normalized size = 2.22

$$\frac{dx+c}{bd}+\frac{2\,e^{(-dx-c)}}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}-\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^2d}-\frac{b\log\left(e^{(-dx-c)}-1\right)}{a^2d}+\frac{\left(a^2+b^2\right)\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-\right.}{a^2bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] (d*x + c)/(b*d) + 2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) - b*log(e^(-d
*x - c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d) + (a^2 + b^2)*log(-2
*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a^2*b*d)
```

mupad [B] time = 0.47, size = 356, normalized size = 6.03

$$\frac{2\,\mathrm{e}^{c+d\,x}}{a\,d-a\,d\,\mathrm{e}^{2\,c+2\,d\,x}}-\frac{x}{b}+\frac{\ln\left(8\,a^5\,\mathrm{e}^{d\,x}\,\mathrm{e}^{c}-16\,b^5-16\,a^2\,b^3-4\,a^4\,b+16\,b^5\,\mathrm{e}^{2\,c}\,\mathrm{e}^{2\,d\,x}+4\,a^4\,b\,\mathrm{e}^{2\,c}\,\mathrm{e}^{2\,d\,x}+32\,a^3\,b^2\,\mathrm{e}^{d\,x}\,\mathrm{e}^{c}\right.}{b\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*coth(c + d*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] (2*exp(c + d*x))/(a*d - a*d*exp(2*c + 2*d*x)) - x/b + log(8*a^5*exp(d*x)*ex
p(c) - 16*b^5 - 16*a^2*b^3 - 4*a^4*b + 16*b^5*exp(2*c)*exp(2*d*x) + 4*a^4*b
*exp(2*c)*exp(2*d*x) + 32*a^3*b^2*exp(d*x)*exp(c) + 16*a^2*b^3*exp(2*c)*exp
(2*d*x) + 32*a*b^4*exp(d*x)*exp(c))/(b*d) + (b*log(8*a^5*exp(d*x)*exp(c) -
16*b^5 - 16*a^2*b^3 - 4*a^4*b + 16*b^5*exp(2*c)*exp(2*d*x) + 4*a^4*b*exp(2*
c)*exp(2*d*x) + 32*a^3*b^2*exp(d*x)*exp(c) + 16*a^2*b^3*exp(2*c)*exp(2*d*x)
 + 32*a*b^4*exp(d*x)*exp(c)))/(a^2*d) - (b*log(4*a^6 + 16*b^6 + 32*a^2*b^4
+ 20*a^4*b^2 - 4*a^6*exp(2*c)*exp(2*d*x) - 16*b^6*exp(2*c)*exp(2*d*x) - 32*
a^2*b^4*exp(2*c)*exp(2*d*x) - 20*a^4*b^2*exp(2*c)*exp(2*d*x)))/(a^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh\left(c+dx\right)\coth^{2}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(cosh(c + d*x)*coth(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.463 $\int \frac{\cosh(c+dx)\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\mathrm{Int}\left(\frac{\cosh(c+dx)\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(cosh(d*x+c)*coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cosh(c+dx)\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Cosh[c + d*x]*Coth[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Cosh[c + d*x]*Coth[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\cosh(c+dx)\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\cosh(c+dx)\coth^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Cosh[c + d*x]*Coth[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.98, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\cosh(dx+c)\coth(dx+c)^2}{afx+ae+(bfx+be)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(cosh(d*x + c)*coth(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 1.26, size = 0, normalized size = 0.00

$$\int \frac{\cosh(dx+c)\left(\coth^2(dx+c)\right)}{\left(fx+e\right)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cosh(d*x+c)*coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(cosh(d*x+c)*coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\,e^{(dx+c)}}{adfx+ade-\left(adfxe^{(2\,c)}+adee^{(2\,c)}\right)e^{(2\,dx)}}+\frac{\log\left(fx+e\right)}{bf}-\frac{1}{2}\int-\frac{2\left(bdfx+bde+af\right)}{a^2df^2x^2+2\,a^2defx+a^2de^2-\left(a^2df^2x^2e^c+2\,a^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] 2*e^(d*x + c)/(a*d*f*x + a*d*e - (a*d*f*x*e^(2*c) + a*d*e*e^(2*c))*e^(2*d*x
)) + log(f*x + e)/(b*f) - 1/2*integrate(-2*(b*d*f*x + b*d*e + a*f)/(a^2*d*f
^2*x^2 + 2*a^2*d*e*f*x + a^2*d*e^2 - (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f*x*e^c
 + a^2*d*e^2*e^c)*e^(d*x)), x) + 1/2*integrate(2*(b*d*f*x + b*d*e - a*f)/(a
^2*d*f^2*x^2 + 2*a^2*d*e*f*x + a^2*d*e^2 + (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f
*x*e^c + a^2*d*e^2*e^c)*e^(d*x)), x) - 1/2*integrate(4*(a^2*b + b^3 - (a^3*
```

```
e^c + a*b^2*e^c)*e^(d*x))/(a^2*b^2*f*x + a^2*b^2*e - (a^2*b^2*f*x*e^(2*c) +
 a^2*b^2*e*e^(2*c))*e^(2*d*x) - 2*(a^3*b*f*x*e^c + a^3*b*e*e^c)*e^(d*x)), x
)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cosh(c+d\,x)\,\coth(c+d\,x)^2}{\left(e+f\,x\right)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cosh(c + d*x)*coth(c + d*x)^2)/((e + f*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((cosh(c + d*x)*coth(c + d*x)^2)/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cosh(c+dx)\coth^2(c+dx)}{\left(a+b\sinh(c+dx)\right)\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cosh(d*x+c)*coth(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(cosh(c + d*x)*coth(c + d*x)**2/((a + b*sinh(c + d*x))*(e + f*x)),
x)
```

3.464 $\int \frac{(e+fx)^3\mathbf{csch}^2(c+dx)\mathbf{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1428

$$\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{a^2\left(a^2+b^2\right)d}+\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{a^2\left(a^2+b^2\right)d}-\frac{(e+fx)^3\log\left(1+e^{2(c+dx)}\right)b^3}{a^2\left(a^2+b^2\right)d}+\frac{3f(e+fx)^2\mathrm{Li}_2}{a^2\left(a^2+\right.}$$

```
[Out] -b^3*(f*x+e)^3*ln(1+exp(2*d*x+2*c))/a^2/(a^2+b^2)/d+b^3*(f*x+e)^3*ln(1+b*ex
p(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d+b^3*(f*x+e)^3*ln(1+b*exp(d*x+
c)/(a+(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d+6*b^3*f^3*polylog(4,-b*exp(d*x+c)/(
a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d^4+6*b^3*f^3*polylog(4,-b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d^4+2*b^2*(f*x+e)^3*arctan(exp(d*x+c))/a/(a
^2+b^2)/d+3/2*b*f*(f*x+e)^2*polylog(2,-exp(2*d*x+2*c))/a^2/d^2-3/2*b*f^2*(f
*x+e)*polylog(3,-exp(2*d*x+2*c))/a^2/d^3+6*I*f^3*polylog(4,-I*exp(d*x+c))/a
/d^4-3/4*b^3*f^3*polylog(4,-exp(2*d*x+2*c))/a^2/(a^2+b^2)/d^4-3*I*f*(f*x+e)
^2*polylog(2,I*exp(d*x+c))/a/d^2-6*I*f^2*(f*x+e)*polylog(3,-I*exp(d*x+c))/a
/d^3-3/2*b*f*(f*x+e)^2*polylog(2,exp(2*d*x+2*c))/a^2/d^2+3/2*b*f^2*(f*x+e)*
polylog(3,exp(2*d*x+2*c))/a^2/d^3+3*I*f*(f*x+e)^2*polylog(2,-I*exp(d*x+c))/
a/d^2-3/2*b^3*f*(f*x+e)^2*polylog(2,-exp(2*d*x+2*c))/a^2/(a^2+b^2)/d^2+6*I*
f^2*(f*x+e)*polylog(3,I*exp(d*x+c))/a/d^3+3/2*b^3*f^2*(f*x+e)*polylog(3,-ex
p(2*d*x+2*c))/a^2/(a^2+b^2)/d^3-6*I*b^2*f^3*polylog(4,-I*exp(d*x+c))/a/(a^2
+b^2)/d^4+2*b*(f*x+e)^3*arctanh(exp(2*d*x+2*c))/a^2/d+3/4*b*f^3*polylog(4,-
exp(2*d*x+2*c))/a^2/d^4-6*I*f^3*polylog(4,I*exp(d*x+c))/a/d^4-6*f*(f*x+e)^2
*arctanh(exp(d*x+c))/a/d^2-6*f^2*(f*x+e)*polylog(2,-exp(d*x+c))/a/d^3+6*f^2
*(f*x+e)*polylog(2,exp(d*x+c))/a/d^3-3/4*b*f^3*polylog(4,exp(2*d*x+2*c))/a^
2/d^4+6*I*b^2*f^3*polylog(4,I*exp(d*x+c))/a/(a^2+b^2)/d^4-3*I*b^2*f*(f*x+e)
^2*polylog(2,-I*exp(d*x+c))/a/(a^2+b^2)/d^2-6*I*b^2*f^2*(f*x+e)*polylog(3,I
*exp(d*x+c))/a/(a^2+b^2)/d^3-(f*x+e)^3*csch(d*x+c)/a/d+6*f^3*polylog(3,-exp
(d*x+c))/a/d^4-6*f^3*polylog(3,exp(d*x+c))/a/d^4-2*(f*x+e)^3*arctan(exp(d*x
+c))/a/d+3*I*b^2*f*(f*x+e)^2*polylog(2,I*exp(d*x+c))/a/(a^2+b^2)/d^2+6*I*b^
2*f^2*(f*x+e)*polylog(3,-I*exp(d*x+c))/a/(a^2+b^2)/d^3+3*b^3*f*(f*x+e)^2*po
lylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d^2+3*b^3*f*(f*x+e
)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d^2-6*b^3*f^
2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d^3-6*
b^3*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/
d^3
```

Rubi [A] time = 2.28, antiderivative size = 1428, normalized size of antiderivative = 1.00, number of steps used = 64, number of rules used = 20, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.588, Rules used = {5589, 2621, 321, 207, 5462, 6741, 12, 6742, 5205, 4180, 2531, 6609, 2282, 6589, 4182, 5461, 5573, 5561, 2190, 3718}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csch[c + d*x]^2*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)^3*ArcTan[E^(c + d*x)])/(a*d) + (2*b^2*(e + f*x)^3*ArcTan[E^(c
 + d*x)])/(a*(a^2 + b^2)*d) - (6*f*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d^2
) + (2*b*(e + f*x)^3*ArcTanh[E^(2*c + 2*d*x)])/(a^2*d) - ((e + f*x)^3*Csch[
c + d*x])/(a*d) + (b^3*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
b^2])])/(a^2*(a^2 + b^2)*d) + (b^3*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2])])/(a^2*(a^2 + b^2)*d) - (b^3*(e + f*x)^3*Log[1 + E^(2*(c
+ d*x))])/(a^2*(a^2 + b^2)*d) - (6*f^2*(e + f*x)*PolyLog[2, -E^(c + d*x)])/
(a*d^3) + ((3*I)*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^2) - ((3*
I)*b^2*f*(e + f*x)^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*(a^2 + b^2)*d^2) - ((
3*I)*f*(e + f*x)^2*PolyLog[2, I*E^(c + d*x)])/(a*d^2) + ((3*I)*b^2*f*(e + f
*x)^2*PolyLog[2, I*E^(c + d*x)])/(a*(a^2 + b^2)*d^2) + (6*f^2*(e + f*x)*Pol
yLog[2, E^(c + d*x)])/(a*d^3) + (3*b^3*f*(e + f*x)^2*PolyLog[2, -((b*E^(c +
 d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^2)*d^2) + (3*b^3*f*(e + f*x)^
2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^2)*d^
2) - (3*b^3*f*(e + f*x)^2*PolyLog[2, -E^(2*(c + d*x))])/(2*a^2*(a^2 + b^2)*
d^2) + (3*b*f*(e + f*x)^2*PolyLog[2, -E^(2*c + 2*d*x)])/(2*a^2*d^2) - (3*b*
f*(e + f*x)^2*PolyLog[2, E^(2*c + 2*d*x)])/(2*a^2*d^2) + (6*f^3*PolyLog[3,
-E^(c + d*x)])/(a*d^4) - ((6*I)*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])
/(a*d^3) + ((6*I)*b^2*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/(a*(a^2 +
 b^2)*d^3) + ((6*I)*f^2*(e + f*x)*PolyLog[3, I*E^(c + d*x)])/(a*d^3) - ((6*
I)*b^2*f^2*(e + f*x)*PolyLog[3, I*E^(c + d*x)])/(a*(a^2 + b^2)*d^3) - (6*f^
3*PolyLog[3, E^(c + d*x)])/(a*d^4) - (6*b^3*f^2*(e + f*x)*PolyLog[3, -((b*E
^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^2)*d^3) - (6*b^3*f^2*(e
+ f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^
2)*d^3) + (3*b^3*f^2*(e + f*x)*PolyLog[3, -E^(2*(c + d*x))])/(2*a^2*(a^2 +
b^2)*d^3) - (3*b*f^2*(e + f*x)*PolyLog[3, -E^(2*c + 2*d*x)])/(2*a^2*d^3) +
(3*b*f^2*(e + f*x)*PolyLog[3, E^(2*c + 2*d*x)])/(2*a^2*d^3) + ((6*I)*f^3*Po
lyLog[4, (-I)*E^(c + d*x)])/(a*d^4) - ((6*I)*b^2*f^3*PolyLog[4, (-I)*E^(c +
 d*x)])/(a*(a^2 + b^2)*d^4) - ((6*I)*f^3*PolyLog[4, I*E^(c + d*x)])/(a*d^4)
 + ((6*I)*b^2*f^3*PolyLog[4, I*E^(c + d*x)])/(a*(a^2 + b^2)*d^4) + (6*b^3*f
^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^2)*d
^4) + (6*b^3*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2
*(a^2 + b^2)*d^4) - (3*b^3*f^3*PolyLog[4, -E^(2*(c + d*x))])/(4*a^2*(a^2 +
b^2)*d^4) + (3*b*f^3*PolyLog[4, -E^(2*c + 2*d*x)])/(4*a^2*d^4) - (3*b*f^3*P
olyLog[4, E^(2*c + 2*d*x)])/(4*a^2*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5205

```
Int[((a_.) + ArcTan[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcTan[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/(1 + u^2), x], x], x]
/; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x] &&
  !FunctionOfQ[(c + d*x)^(m + 1), u, x] && FalseQ[PowerVariableExpn[u, m +
1, x]]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{csch}^2(c+dx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\text{csch}^2(c+dx)\text{sech}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\text{csch}(c+dx)\text{sech}(c+}{a+b\sinh(c+dx)}}{a}$$

$$= -\frac{(e+fx)^3\tan^{-1}(\sinh(c+dx))}{ad} - \frac{(e+fx)^3\text{csch}(c+dx)}{ad} - \frac{b\int (e+f}{}$$

$$= -\frac{(e+fx)^3\tan^{-1}(\sinh(c+dx))}{ad} - \frac{(e+fx)^3\text{csch}(c+dx)}{ad} - \frac{(2b)\int (e}{}$$

$$= -\frac{b^3(e+fx)^4}{4a^2\left(a^2+b^2\right)f} - \frac{(e+fx)^3\tan^{-1}(\sinh(c+dx))}{ad} + \frac{2b(e+fx)^3\tan}{a^2d}$$

$$= -\frac{b^3(e+fx)^4}{4a^2\left(a^2+b^2\right)f} - \frac{(e+fx)^3\tan^{-1}(\sinh(c+dx))}{ad} + \frac{2b(e+fx)^3\tan}{a^2d}$$

$$= \frac{2b^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{(e+fx)^3\tan^{-1}(\sinh(c+dx))}{ad} + \frac{2b(e+}{}$$

$$= \frac{2b^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{6f(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{2b(e+f}{}$$

$$= \frac{2b^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{6f(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{2b(e+f}{}$$

$$= -\frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{6f(e+fx}{}$$

$$= -\frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{6f(e+fx}{}$$

$$= -\frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{6f(e+fx}{}$$

$$= -\frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{6f(e+fx}{}$$

$$= -\frac{2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{6f(e+fx}{}$$

Mathematica [B] time = 17.19, size = 4010, normalized size = 2.81

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csch[c + d*x]^2*Sech[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (-8*b*d^4*e^3*E^(2*c)*x - 12*b*d^4*e^2*E^(2*c)*f*x^2 - 8*b*d^4*e*E^(2*c)*f^
2*x^3 - 2*b*d^4*E^(2*c)*f^3*x^4 - 8*a*d^3*e^3*ArcTan[E^(c + d*x)] - 8*a*d^3
*e^3*E^(2*c)*ArcTan[E^(c + d*x)] - (12*I)*a*d^3*e^2*f*x*Log[1 - I*E^(c + d*
x)] - (12*I)*a*d^3*e^2*E^(2*c)*f*x*Log[1 - I*E^(c + d*x)] - (12*I)*a*d^3*e*
f^2*x^2*Log[1 - I*E^(c + d*x)] - (12*I)*a*d^3*e*E^(2*c)*f^2*x^2*Log[1 - I*E
^(c + d*x)] - (4*I)*a*d^3*f^3*x^3*Log[1 - I*E^(c + d*x)] - (4*I)*a*d^3*E^(2
*c)*f^3*x^3*Log[1 - I*E^(c + d*x)] + (12*I)*a*d^3*e^2*f*x*Log[1 + I*E^(c +
d*x)] + (12*I)*a*d^3*e^2*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] + (12*I)*a*d^3*
e*f^2*x^2*Log[1 + I*E^(c + d*x)] + (12*I)*a*d^3*e*E^(2*c)*f^2*x^2*Log[1 + I
*E^(c + d*x)] + (4*I)*a*d^3*f^3*x^3*Log[1 + I*E^(c + d*x)] + (4*I)*a*d^3*E^
(2*c)*f^3*x^3*Log[1 + I*E^(c + d*x)] + 4*b*d^3*e^3*Log[1 + E^(2*(c + d*x))]
 + 4*b*d^3*e^3*E^(2*c)*Log[1 + E^(2*(c + d*x))] + 12*b*d^3*e^2*f*x*Log[1 +
E^(2*(c + d*x))] + 12*b*d^3*e^2*E^(2*c)*f*x*Log[1 + E^(2*(c + d*x))] + 12*b
*d^3*e*f^2*x^2*Log[1 + E^(2*(c + d*x))] + 12*b*d^3*e*E^(2*c)*f^2*x^2*Log[1
+ E^(2*(c + d*x))] + 4*b*d^3*f^3*x^3*Log[1 + E^(2*(c + d*x))] + 4*b*d^3*E^(
2*c)*f^3*x^3*Log[1 + E^(2*(c + d*x))] + (12*I)*a*d^2*(1 + E^(2*c))*f*(e + f
*x)^2*PolyLog[2, (-I)*E^(c + d*x)] - (12*I)*a*d^2*(1 + E^(2*c))*f*(e + f*x)
^2*PolyLog[2, I*E^(c + d*x)] + 6*b*d^2*e^2*f*PolyLog[2, -E^(2*(c + d*x))] +
 6*b*d^2*e^2*E^(2*c)*f*PolyLog[2, -E^(2*(c + d*x))] + 12*b*d^2*e*f^2*x*Poly
Log[2, -E^(2*(c + d*x))] + 12*b*d^2*e*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(c + d
*x))] + 6*b*d^2*f^3*x^2*PolyLog[2, -E^(2*(c + d*x))] + 6*b*d^2*E^(2*c)*f^3*
x^2*PolyLog[2, -E^(2*(c + d*x))] - (24*I)*a*d*e*f^2*PolyLog[3, (-I)*E^(c +
d*x)] - (24*I)*a*d*e*E^(2*c)*f^2*PolyLog[3, (-I)*E^(c + d*x)] - (24*I)*a*d*
f^3*x*PolyLog[3, (-I)*E^(c + d*x)] - (24*I)*a*d*E^(2*c)*f^3*x*PolyLog[3, (-
I)*E^(c + d*x)] + (24*I)*a*d*e*f^2*PolyLog[3, I*E^(c + d*x)] + (24*I)*a*d*e
*E^(2*c)*f^2*PolyLog[3, I*E^(c + d*x)] + (24*I)*a*d*f^3*x*PolyLog[3, I*E^(c
 + d*x)] + (24*I)*a*d*E^(2*c)*f^3*x*PolyLog[3, I*E^(c + d*x)] - 6*b*d*e*f^2
*PolyLog[3, -E^(2*(c + d*x))] - 6*b*d*e*E^(2*c)*f^2*PolyLog[3, -E^(2*(c + d
*x))] - 6*b*d*f^3*x*PolyLog[3, -E^(2*(c + d*x))] - 6*b*d*E^(2*c)*f^3*x*Poly
Log[3, -E^(2*(c + d*x))] + (24*I)*a*f^3*PolyLog[4, (-I)*E^(c + d*x)] + (24*
I)*a*E^(2*c)*f^3*PolyLog[4, (-I)*E^(c + d*x)] - (24*I)*a*f^3*PolyLog[4, I*E
^(c + d*x)] - (24*I)*a*E^(2*c)*f^3*PolyLog[4, I*E^(c + d*x)] + 3*b*f^3*Poly
Log[4, -E^(2*(c + d*x))] + 3*b*E^(2*c)*f^3*PolyLog[4, -E^(2*(c + d*x))])/(4
*(a^2 + b^2)*d^4*(1 + E^(2*c))) - (b^3*(4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*x
^2 + 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*f^3*x^4 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*
E^(2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d)
```

+ (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (2*e^3*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))])/d - (2*e^3*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4)/(2*a^2*(a^2 + b^2)*(-1 + E^(2*c))) + ((b*(e + f*x)^4*(-1 + Coth[c]))/(2*f) + (2*e^2*(b*d*e - 3*a*f)*(d*x - Log[1 - Cosh[c + d*x] - Sinh[c + d*x]]))/d^2 - (6*e*f*(b*d*e + 2*a*f)*x*Log[1 + Cosh[c + d*x] - Sinh[c + d*x]])/d^2 - (6*f^2*(b*d*e + a*f)*x^2*Log[1 + Cosh[c + d*x] - Sinh[c + d*x]])/d^2 - (2*b*f^3*x^3*Log[1 + Cosh[c + d*x] - Sinh[c + d*x]])/d - (6*e*f*(b*d*e - 2*a*f)*x*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]])/d^2 + (6*f^2*(-(b*d*e) + a*f)*x^2*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]])/d^2 - (2*b*f^3*x^3*Log[1 - Cosh[c + d*x] + Sinh[c + d*x]])/d + (2*e^2*(b*d*e + 3*a*f)*(d*x - Log[1 + Cosh[c + d*x] + Sinh[c + d*x]]))/d^2 + (6*e*f*(b*d*e - 2*a*f)*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]])/d^3 + (6*e*f*(b*d*e + 2*a*f)*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]])/d^3 + (12*f^2*(b*d*e - a*f)*(d*x*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]]

```
+ PolyLog[3, Cosh[c + d*x] - Sinh[c + d*x]]))/d^4 + (12*f^2*(b*d*e + a*f)*(
d*x*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + PolyLog[3, -Cosh[c + d*x]
+ Sinh[c + d*x]]))/d^4 + (6*b*f^3*(d^2*x^2*PolyLog[2, Cosh[c + d*x] - Sinh[
c + d*x]] + 2*(d*x*PolyLog[3, Cosh[c + d*x] - Sinh[c + d*x]] + PolyLog[4, C
osh[c + d*x] - Sinh[c + d*x]])))/d^4 + (6*b*f^3*(d^2*x^2*PolyLog[2, -Cosh[c
 + d*x] + Sinh[c + d*x]] + 2*(d*x*PolyLog[3, -Cosh[c + d*x] + Sinh[c + d*x]
] + PolyLog[4, -Cosh[c + d*x] + Sinh[c + d*x]])))/d^4)/(2*a^2) + ((-4*a*b*d
*e^3*x - 6*a*b*d*e^2*f*x^2 - 4*a*b*d*e*f^2*x^3 - a*b*d*f^3*x^4 - 4*a^2*e^3*
Cosh[c] - 4*b^2*e^3*Cosh[c] - 12*a^2*e^2*f*x*Cosh[c] - 12*b^2*e^2*f*x*Cosh[
c] - 12*a^2*e*f^2*x^2*Cosh[c] - 12*b^2*e*f^2*x^2*Cosh[c] - 4*a^2*f^3*x^3*Co
sh[c] - 4*b^2*f^3*x^3*Cosh[c])*Csch[c/2]*Sech[c/2]*Sech[c])/(8*a*(a^2 + b^2
)*d) + (Csch[c/2]*Csch[c/2 + (d*x)/2]*(e^3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(
d*x)/2] + 3*e*f^2*x^2*Sinh[(d*x)/2] + f^3*x^3*Sinh[(d*x)/2]))/(2*a*d) + (Se
ch[c/2]*Sech[c/2 + (d*x)/2]*(e^3*Sinh[(d*x)/2] + 3*e^2*f*x*Sinh[(d*x)/2] +
3*e*f^2*x^2*Sinh[(d*x)/2] + f^3*x^3*Sinh[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 1.02, size = 9779, normalized size = 6.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -(2*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 + a
*b^2)*d^3*e^2*f*x + (a^3 + a*b^2)*d^3*e^3)*cosh(d*x + c) + 3*(b^3*d^2*f^3*x
^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f - (b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2
*x + b^3*d^2*e^2*f)*cosh(d*x + c)^2 - 2*(b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*
x + b^3*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d^2*f^3*x^2 + 2*b^3*d
^2*e*f^2*x + b^3*d^2*e^2*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sin
h(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)
/b + 1) + 3*(b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f - (b^3*d^2
*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*cosh(d*x + c)^2 - 2*(b^3*d^2*
f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) -
(b^3*d^2*f^3*x^2 + 2*b^3*d^2*e*f^2*x + b^3*d^2*e^2*f)*sinh(d*x + c)^2)*dilo
g((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*
sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 3*((a^2*b + b^3)*d^2*f^3*x^2 + (a^2*b +
 b^3)*d^2*e^2*f - 2*(a^3 + a*b^2)*d*e*f^2 - ((a^2*b + b^3)*d^2*f^3*x^2 + (a
^2*b + b^3)*d^2*e^2*f - 2*(a^3 + a*b^2)*d*e*f^2 + 2*((a^2*b + b^3)*d^2*e*f^
2 - (a^3 + a*b^2)*d*f^3)*x)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^2*f^3*x^2
+ (a^2*b + b^3)*d^2*e^2*f - 2*(a^3 + a*b^2)*d*e*f^2 + 2*((a^2*b + b^3)*d^2*
e*f^2 - (a^3 + a*b^2)*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3
)*d^2*f^3*x^2 + (a^2*b + b^3)*d^2*e^2*f - 2*(a^3 + a*b^2)*d*e*f^2 + 2*((a^2
*b + b^3)*d^2*e*f^2 - (a^3 + a*b^2)*d*f^3)*x)*sinh(d*x + c)^2 + 2*((a^2*b +
 b^3)*d^2*e*f^2 - (a^3 + a*b^2)*d*f^3)*x)*dilog(cosh(d*x + c) + sinh(d*x +
```

c)) - (3*I*a^3*d^2*f^3*x^2 - 3*a^2*b*d^2*f^3*x^2 + 6*I*a^3*d^2*e*f^2*x - 6*
a^2*b*d^2*e*f^2*x + 3*I*a^3*d^2*e^2*f - 3*a^2*b*d^2*e^2*f + (-3*I*a^3*d^2*f
^3*x^2 + 3*a^2*b*d^2*f^3*x^2 - 6*I*a^3*d^2*e*f^2*x + 6*a^2*b*d^2*e*f^2*x -
3*I*a^3*d^2*e^2*f + 3*a^2*b*d^2*e^2*f)*cosh(d*x + c)^2 + (-6*I*a^3*d^2*f^3*
x^2 + 6*a^2*b*d^2*f^3*x^2 - 12*I*a^3*d^2*e*f^2*x + 12*a^2*b*d^2*e*f^2*x - 6
*I*a^3*d^2*e^2*f + 6*a^2*b*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c) + (-3*I*a
^3*d^2*f^3*x^2 + 3*a^2*b*d^2*f^3*x^2 - 6*I*a^3*d^2*e*f^2*x + 6*a^2*b*d^2*e*
f^2*x - 3*I*a^3*d^2*e^2*f + 3*a^2*b*d^2*e^2*f)*sinh(d*x + c)^2)*dilog(I*cos
h(d*x + c) + I*sinh(d*x + c)) - (-3*I*a^3*d^2*f^3*x^2 - 3*a^2*b*d^2*f^3*x^2
 - 6*I*a^3*d^2*e*f^2*x - 6*a^2*b*d^2*e*f^2*x - 3*I*a^3*d^2*e^2*f - 3*a^2*b*
d^2*e^2*f + (3*I*a^3*d^2*f^3*x^2 + 3*a^2*b*d^2*f^3*x^2 + 6*I*a^3*d^2*e*f^2*
x + 6*a^2*b*d^2*e*f^2*x + 3*I*a^3*d^2*e^2*f + 3*a^2*b*d^2*e^2*f)*cosh(d*x +
 c)^2 + (6*I*a^3*d^2*f^3*x^2 + 6*a^2*b*d^2*f^3*x^2 + 12*I*a^3*d^2*e*f^2*x +
 12*a^2*b*d^2*e*f^2*x + 6*I*a^3*d^2*e^2*f + 6*a^2*b*d^2*e^2*f)*cosh(d*x + c
)*sinh(d*x + c) + (3*I*a^3*d^2*f^3*x^2 + 3*a^2*b*d^2*f^3*x^2 + 6*I*a^3*d^2*
e*f^2*x + 6*a^2*b*d^2*e*f^2*x + 3*I*a^3*d^2*e^2*f + 3*a^2*b*d^2*e^2*f)*sinh
(d*x + c)^2)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) - 3*((a^2*b + b^3)*d
^2*f^3*x^2 + (a^2*b + b^3)*d^2*e^2*f + 2*(a^3 + a*b^2)*d*e*f^2 - ((a^2*b +
b^3)*d^2*f^3*x^2 + (a^2*b + b^3)*d^2*e^2*f + 2*(a^3 + a*b^2)*d*e*f^2 + 2*((
a^2*b + b^3)*d^2*e*f^2 + (a^3 + a*b^2)*d*f^3)*x)*cosh(d*x + c)^2 - 2*((a^2*
b + b^3)*d^2*f^3*x^2 + (a^2*b + b^3)*d^2*e^2*f + 2*(a^3 + a*b^2)*d*e*f^2 +
2*((a^2*b + b^3)*d^2*e*f^2 + (a^3 + a*b^2)*d*f^3)*x)*cosh(d*x + c)*sinh(d*x
 + c) - ((a^2*b + b^3)*d^2*f^3*x^2 + (a^2*b + b^3)*d^2*e^2*f + 2*(a^3 + a*b
^2)*d*e*f^2 + 2*((a^2*b + b^3)*d^2*e*f^2 + (a^3 + a*b^2)*d*f^3)*x)*sinh(d*x
 + c)^2 + 2*((a^2*b + b^3)*d^2*e*f^2 + (a^3 + a*b^2)*d*f^3)*x)*dilog(-cosh(
d*x + c) - sinh(d*x + c)) + (b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*
e*f^2 - b^3*c^3*f^3 - (b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2
- b^3*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3
*c^2*d*e*f^2 - b^3*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d^3*e^3 - 3*
b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*sinh(d*x + c)^2)*log(2*b
*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^
3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3 - (b^3*d^3*
e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*cosh(d*x + c)^2
- 2*(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*cos
h(d*x + c)*sinh(d*x + c) - (b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e
*f^2 - b^3*c^3*f^3)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x +
 c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2
*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*
f^3 - (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*
d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^3*d^3*f
^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^
3*c^2*d*e*f^2 + b^3*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d^3*f^3*x^3
 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*
d*e*f^2 + b^3*c^3*f^3)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x
+ c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) +

```
(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^
2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3 - (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*
x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f
^3)*cosh(d*x + c)^2 - 2*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*
e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*cosh(d*x + c
)*sinh(d*x + c) - (b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*
x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*sinh(d*x + c)^2)*l
og(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c)
)*sqrt((a^2 + b^2)/b^2) - b)/b) - ((a^2*b + b^3)*d^3*f^3*x^3 + (a^2*b + b^3
)*d^3*e^3 + 3*(a^3 + a*b^2)*d^2*e^2*f + 3*((a^2*b + b^3)*d^3*e*f^2 + (a^3 +
 a*b^2)*d^2*f^3)*x^2 - ((a^2*b + b^3)*d^3*f^3*x^3 + (a^2*b + b^3)*d^3*e^3 +
 3*(a^3 + a*b^2)*d^2*e^2*f + 3*((a^2*b + b^3)*d^3*e*f^2 + (a^3 + a*b^2)*d^2
*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f + 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*cosh
(d*x + c)^2 - 2*((a^2*b + b^3)*d^3*f^3*x^3 + (a^2*b + b^3)*d^3*e^3 + 3*(a^3
 + a*b^2)*d^2*e^2*f + 3*((a^2*b + b^3)*d^3*e*f^2 + (a^3 + a*b^2)*d^2*f^3)*x
^2 + 3*((a^2*b + b^3)*d^3*e^2*f + 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*cosh(d*x +
c)*sinh(d*x + c) - ((a^2*b + b^3)*d^3*f^3*x^3 + (a^2*b + b^3)*d^3*e^3 + 3*(
a^3 + a*b^2)*d^2*e^2*f + 3*((a^2*b + b^3)*d^3*e*f^2 + (a^3 + a*b^2)*d^2*f^3
)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f + 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*sinh(d*x
 + c)^2 + 3*((a^2*b + b^3)*d^3*e^2*f + 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*log(co
sh(d*x + c) + sinh(d*x + c) + 1) - (I*a^3*d^3*e^3 - a^2*b*d^3*e^3 - 3*I*a^3
*c*d^2*e^2*f + 3*a^2*b*c*d^2*e^2*f + 3*I*a^3*c^2*d*e*f^2 - 3*a^2*b*c^2*d*e*
f^2 - I*a^3*c^3*f^3 + a^2*b*c^3*f^3 + (-I*a^3*d^3*e^3 + a^2*b*d^3*e^3 + 3*I
*a^3*c*d^2*e^2*f - 3*a^2*b*c*d^2*e^2*f - 3*I*a^3*c^2*d*e*f^2 + 3*a^2*b*c^2*
d*e*f^2 + I*a^3*c^3*f^3 - a^2*b*c^3*f^3)*cosh(d*x + c)^2 + (-2*I*a^3*d^3*e^
3 + 2*a^2*b*d^3*e^3 + 6*I*a^3*c*d^2*e^2*f - 6*a^2*b*c*d^2*e^2*f - 6*I*a^3*c
^2*d*e*f^2 + 6*a^2*b*c^2*d*e*f^2 + 2*I*a^3*c^3*f^3 - 2*a^2*b*c^3*f^3)*cosh(
d*x + c)*sinh(d*x + c) + (-I*a^3*d^3*e^3 + a^2*b*d^3*e^3 + 3*I*a^3*c*d^2*e^
2*f - 3*a^2*b*c*d^2*e^2*f - 3*I*a^3*c^2*d*e*f^2 + 3*a^2*b*c^2*d*e*f^2 + I*a
^3*c^3*f^3 - a^2*b*c^3*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x +
 c) + I) - (-I*a^3*d^3*e^3 - a^2*b*d^3*e^3 + 3*I*a^3*c*d^2*e^2*f + 3*a^2*b*
c*d^2*e^2*f - 3*I*a^3*c^2*d*e*f^2 - 3*a^2*b*c^2*d*e*f^2 + I*a^3*c^3*f^3 + a
^2*b*c^3*f^3 + (I*a^3*d^3*e^3 + a^2*b*d^3*e^3 - 3*I*a^3*c*d^2*e^2*f - 3*a^2
*b*c*d^2*e^2*f + 3*I*a^3*c^2*d*e*f^2 + 3*a^2*b*c^2*d*e*f^2 - I*a^3*c^3*f^3
 - a^2*b*c^3*f^3)*cosh(d*x + c)^2 + (2*I*a^3*d^3*e^3 + 2*a^2*b*d^3*e^3 - 6*I
*a^3*c*d^2*e^2*f - 6*a^2*b*c*d^2*e^2*f + 6*I*a^3*c^2*d*e*f^2 + 6*a^2*b*c^2*
d*e*f^2 - 2*I*a^3*c^3*f^3 - 2*a^2*b*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c) +
(I*a^3*d^3*e^3 + a^2*b*d^3*e^3 - 3*I*a^3*c*d^2*e^2*f - 3*a^2*b*c*d^2*e^2*f
+ 3*I*a^3*c^2*d*e*f^2 + 3*a^2*b*c^2*d*e*f^2 - I*a^3*c^3*f^3 - a^2*b*c^3*f^3
)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - I) - ((a^2*b + b^3)*
d^3*e^3 - 3*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d^2*e^2*f + 3*((a^2*b + b^3)*c^
2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 - ((a^2*b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*
f^3 - ((a^2*b + b^3)*d^3*e^3 - 3*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d^2*e^2*f
+ 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 - ((a^2*b + b^3)*c^3 +
3*(a^3 + a*b^2)*c^2)*f^3)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^3*e^3 - 3*(a
```

```
^3 + a*b^2 + (a^2*b + b^3)*c)*d^2*e^2*f + 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a
*b^2)*c)*d*e*f^2 - ((a^2*b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3)*cosh(d*x
 + c)*sinh(d*x + c) - ((a^2*b + b^3)*d^3*e^3 - 3*(a^3 + a*b^2 + (a^2*b + b^3
)*c)*d^2*e^2*f + 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 - ((a^2*
b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3)*sinh(d*x + c)^2)*log(cosh(d*x + c)
 + sinh(d*x + c) - 1) - (-I*a^3*d^3*f^3*x^3 - a^2*b*d^3*f^3*x^3 - 3*I*a^3*d
^3*e*f^2*x^2 - 3*a^2*b*d^3*e*f^2*x^2 - 3*I*a^3*d^3*e^2*f*x - 3*a^2*b*d^3*e^
2*f*x - 3*I*a^3*c*d^2*e^2*f - 3*a^2*b*c*d^2*e^2*f + 3*I*a^3*c^2*d*e*f^2 + 3
*a^2*b*c^2*d*e*f^2 - I*a^3*c^3*f^3 - a^2*b*c^3*f^3 + (I*a^3*d^3*f^3*x^3 + a
^2*b*d^3*f^3*x^3 + 3*I*a^3*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e*f^2*x^2 + 3*I*a^3*
d^3*e^2*f*x + 3*a^2*b*d^3*e^2*f*x + 3*I*a^3*c*d^2*e^2*f + 3*a^2*b*c*d^2*e^2
*f - 3*I*a^3*c^2*d*e*f^2 - 3*a^2*b*c^2*d*e*f^2 + I*a^3*c^3*f^3 + a^2*b*c^3*
f^3)*cosh(d*x + c)^2 + (2*I*a^3*d^3*f^3*x^3 + 2*a^2*b*d^3*f^3*x^3 + 6*I*a^3
*d^3*e*f^2*x^2 + 6*a^2*b*d^3*e*f^2*x^2 + 6*I*a^3*d^3*e^2*f*x + 6*a^2*b*d^3*
e^2*f*x + 6*I*a^3*c*d^2*e^2*f + 6*a^2*b*c*d^2*e^2*f - 6*I*a^3*c^2*d*e*f^2 -
 6*a^2*b*c^2*d*e*f^2 + 2*I*a^3*c^3*f^3 + 2*a^2*b*c^3*f^3)*cosh(d*x + c)*sin
h(d*x + c) + (I*a^3*d^3*f^3*x^3 + a^2*b*d^3*f^3*x^3 + 3*I*a^3*d^3*e*f^2*x^2
 + 3*a^2*b*d^3*e*f^2*x^2 + 3*I*a^3*d^3*e^2*f*x + 3*a^2*b*d^3*e^2*f*x + 3*I*
a^3*c*d^2*e^2*f + 3*a^2*b*c*d^2*e^2*f - 3*I*a^3*c^2*d*e*f^2 - 3*a^2*b*c^2*d
*e*f^2 + I*a^3*c^3*f^3 + a^2*b*c^3*f^3)*sinh(d*x + c)^2)*log(I*cosh(d*x + c
) + I*sinh(d*x + c) + 1) - (I*a^3*d^3*f^3*x^3 - a^2*b*d^3*f^3*x^3 + 3*I*a^3
*d^3*e*f^2*x^2 - 3*a^2*b*d^3*e*f^2*x^2 + 3*I*a^3*d^3*e^2*f*x - 3*a^2*b*d^3*
e^2*f*x + 3*I*a^3*c*d^2*e^2*f - 3*a^2*b*c*d^2*e^2*f - 3*I*a^3*c^2*d*e*f^2 +
 3*a^2*b*c^2*d*e*f^2 + I*a^3*c^3*f^3 - a^2*b*c^3*f^3 + (-I*a^3*d^3*f^3*x^3
+ a^2*b*d^3*f^3*x^3 - 3*I*a^3*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e*f^2*x^2 - 3*I*a
^3*d^3*e^2*f*x + 3*a^2*b*d^3*e^2*f*x - 3*I*a^3*c*d^2*e^2*f + 3*a^2*b*c*d^2*
e^2*f + 3*I*a^3*c^2*d*e*f^2 - 3*a^2*b*c^2*d*e*f^2 - I*a^3*c^3*f^3 + a^2*b*c
^3*f^3)*cosh(d*x + c)^2 + (-2*I*a^3*d^3*f^3*x^3 + 2*a^2*b*d^3*f^3*x^3 - 6*I
*a^3*d^3*e*f^2*x^2 + 6*a^2*b*d^3*e*f^2*x^2 - 6*I*a^3*d^3*e^2*f*x + 6*a^2*b*
d^3*e^2*f*x - 6*I*a^3*c*d^2*e^2*f + 6*a^2*b*c*d^2*e^2*f + 6*I*a^3*c^2*d*e*f
^2 - 6*a^2*b*c^2*d*e*f^2 - 2*I*a^3*c^3*f^3 + 2*a^2*b*c^3*f^3)*cosh(d*x + c)
*sinh(d*x + c) + (-I*a^3*d^3*f^3*x^3 + a^2*b*d^3*f^3*x^3 - 3*I*a^3*d^3*e*f^
2*x^2 + 3*a^2*b*d^3*e*f^2*x^2 - 3*I*a^3*d^3*e^2*f*x + 3*a^2*b*d^3*e^2*f*x -
 3*I*a^3*c*d^2*e^2*f + 3*a^2*b*c*d^2*e^2*f + 3*I*a^3*c^2*d*e*f^2 - 3*a^2*b*
c^2*d*e*f^2 - I*a^3*c^3*f^3 + a^2*b*c^3*f^3)*sinh(d*x + c)^2)*log(-I*cosh(d
*x + c) - I*sinh(d*x + c) + 1) - ((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^
3)*c*d^2*e^2*f - 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 + ((a^2*
b + b^3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^3
 + a*b^2)*d^2*f^3)*x^2 - ((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*c*d^2
*e^2*f - 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 + ((a^2*b + b^3)
*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^3 + a*b^2
)*d^2*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^3 + a*b^2)*d^2*e*f^2)*x)
*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*c*d^2*e^2
*f - 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 + ((a^2*b + b^3)*c^3
 + 3*(a^3 + a*b^2)*c^2)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^3 + a*b^2)*d^
```

```
2*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^3 + a*b^2)*d^2*e*f^2)*x)*cos
h(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d^3*f^3*x^3 + 3*(a^2*b + b^3)*c*d
^2*e^2*f - 3*((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*d*e*f^2 + ((a^2*b + b^
3)*c^3 + 3*(a^3 + a*b^2)*c^2)*f^3 + 3*((a^2*b + b^3)*d^3*e*f^2 - (a^3 + a*b
^2)*d^2*f^3)*x^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^3 + a*b^2)*d^2*e*f^2)*
x)*sinh(d*x + c)^2 + 3*((a^2*b + b^3)*d^3*e^2*f - 2*(a^3 + a*b^2)*d^2*e*f^2
)*x)*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 6*(b^3*f^3*cosh(d*x + c)^2 +
 2*b^3*f^3*cosh(d*x + c)*sinh(d*x + c) + b^3*f^3*sinh(d*x + c)^2 - b^3*f^3)
*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(
d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*(b^3*f^3*cosh(d*x + c)^2 + 2*b^3*f^
3*cosh(d*x + c)*sinh(d*x + c) + b^3*f^3*sinh(d*x + c)^2 - b^3*f^3)*polylog(
4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))
*sqrt((a^2 + b^2)/b^2))/b) + 6*((a^2*b + b^3)*f^3*cosh(d*x + c)^2 + 2*(a^2*
b + b^3)*f^3*cosh(d*x + c)*sinh(d*x + c) + (a^2*b + b^3)*f^3*sinh(d*x + c)^
2 - (a^2*b + b^3)*f^3)*polylog(4, cosh(d*x + c) + sinh(d*x + c)) - (6*I*a^3
*f^3 - 6*a^2*b*f^3 - 6*(I*a^3*f^3 - a^2*b*f^3)*cosh(d*x + c)^2 - 12*(I*a^3*
f^3 - a^2*b*f^3)*cosh(d*x + c)*sinh(d*x + c) - 6*(I*a^3*f^3 - a^2*b*f^3)*si
nh(d*x + c)^2)*polylog(4, I*cosh(d*x + c) + I*sinh(d*x + c)) - (-6*I*a^3*f^
3 - 6*a^2*b*f^3 - 6*(-I*a^3*f^3 - a^2*b*f^3)*cosh(d*x + c)^2 - 12*(-I*a^3*f
^3 - a^2*b*f^3)*cosh(d*x + c)*sinh(d*x + c) - 6*(-I*a^3*f^3 - a^2*b*f^3)*si
nh(d*x + c)^2)*polylog(4, -I*cosh(d*x + c) - I*sinh(d*x + c)) + 6*((a^2*b +
 b^3)*f^3*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f^3*cosh(d*x + c)*sinh(d*x + c)
 + (a^2*b + b^3)*f^3*sinh(d*x + c)^2 - (a^2*b + b^3)*f^3)*polylog(4, -cosh(
d*x + c) - sinh(d*x + c)) - 6*(b^3*d*f^3*x + b^3*d*e*f^2 - (b^3*d*f^3*x + b
^3*d*e*f^2)*cosh(d*x + c)^2 - 2*(b^3*d*f^3*x + b^3*d*e*f^2)*cosh(d*x + c)*s
inh(d*x + c) - (b^3*d*f^3*x + b^3*d*e*f^2)*sinh(d*x + c)^2)*polylog(3, (a*c
osh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((
a^2 + b^2)/b^2))/b) - 6*(b^3*d*f^3*x + b^3*d*e*f^2 - (b^3*d*f^3*x + b^3*d*e
*f^2)*cosh(d*x + c)^2 - 2*(b^3*d*f^3*x + b^3*d*e*f^2)*cosh(d*x + c)*sinh(d*
x + c) - (b^3*d*f^3*x + b^3*d*e*f^2)*sinh(d*x + c)^2)*polylog(3, (a*cosh(d*
x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
b^2)/b^2))/b) + 6*((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 - (a^3 + a
*b^2)*f^3 - ((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 - (a^3 + a*b^2)*
f^3)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 - (
a^3 + a*b^2)*f^3)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d*f^3*x + (a
^2*b + b^3)*d*e*f^2 - (a^3 + a*b^2)*f^3)*sinh(d*x + c)^2)*polylog(3, cosh(d
*x + c) + sinh(d*x + c)) - (-6*I*a^3*d*f^3*x + 6*a^2*b*d*f^3*x - 6*I*a^3*d*
e*f^2 + 6*a^2*b*d*e*f^2 + (6*I*a^3*d*f^3*x - 6*a^2*b*d*f^3*x + 6*I*a^3*d*e*
f^2 - 6*a^2*b*d*e*f^2)*cosh(d*x + c)^2 + (12*I*a^3*d*f^3*x - 12*a^2*b*d*f^3
*x + 12*I*a^3*d*e*f^2 - 12*a^2*b*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c) + (6*
I*a^3*d*f^3*x - 6*a^2*b*d*f^3*x + 6*I*a^3*d*e*f^2 - 6*a^2*b*d*e*f^2)*sinh(d
*x + c)^2)*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) - (6*I*a^3*d*f^3*x
 + 6*a^2*b*d*f^3*x + 6*I*a^3*d*e*f^2 + 6*a^2*b*d*e*f^2 + (-6*I*a^3*d*f^3*x
- 6*a^2*b*d*f^3*x - 6*I*a^3*d*e*f^2 - 6*a^2*b*d*e*f^2)*cosh(d*x + c)^2 + (-
12*I*a^3*d*f^3*x - 12*a^2*b*d*f^3*x - 12*I*a^3*d*e*f^2 - 12*a^2*b*d*e*f^2)*
```

```
cosh(d*x + c)*sinh(d*x + c) + (-6*I*a^3*d*f^3*x - 6*a^2*b*d*f^3*x - 6*I*a^3
*d*e*f^2 - 6*a^2*b*d*e*f^2)*sinh(d*x + c)^2)*polylog(3, -I*cosh(d*x + c) -
I*sinh(d*x + c)) + 6*((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 + (a^3
+ a*b^2)*f^3 - ((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2 + (a^3 + a*b^
2)*f^3)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d*f^3*x + (a^2*b + b^3)*d*e*f^2
+ (a^3 + a*b^2)*f^3)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d*f^3*x +
 (a^2*b + b^3)*d*e*f^2 + (a^3 + a*b^2)*f^3)*sinh(d*x + c)^2)*polylog(3, -co
sh(d*x + c) - sinh(d*x + c)) + 2*((a^3 + a*b^2)*d^3*f^3*x^3 + 3*(a^3 + a*b^
2)*d^3*e*f^2*x^2 + 3*(a^3 + a*b^2)*d^3*e^2*f*x + (a^3 + a*b^2)*d^3*e^3)*sin
h(d*x + c))/((a^4 + a^2*b^2)*d^4*cosh(d*x + c)^2 + 2*(a^4 + a^2*b^2)*d^4*co
sh(d*x + c)*sinh(d*x + c) + (a^4 + a^2*b^2)*d^4*sinh(d*x + c)^2 - (a^4 + a^
2*b^2)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 4.93, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{csch}\left(dx+c\right)^{2} \operatorname{sech}\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] (b^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + a^2*b^2)*d) +
2*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + b*log(e^(-2*d*x - 2*c) + 1)/((a^
2 + b^2)*d) + 2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) - b*log(e^(-d*x -
```

```
 c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d))*e^3 - 2*(f^3*x^3*e^c +
3*e*f^2*x^2*e^c + 3*e^2*f*x*e^c)*e^(d*x)/(a*d*e^(2*d*x + 2*c) - a*d) - 3*e^
2*f*log(e^(d*x + c) + 1)/(a*d^2) + 3*e^2*f*log(e^(d*x + c) - 1)/(a*d^2) - (
d^3*x^3*log(e^(d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylo
g(3, -e^(d*x + c)) + 6*polylog(4, -e^(d*x + c)))*b*f^3/(a^2*d^4) - (d^3*x^3
*log(-e^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^
(d*x + c)) + 6*polylog(4, e^(d*x + c)))*b*f^3/(a^2*d^4) - 3*(b*d*e^2*f + 2*
a*e*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^2*d^3) - 3*(b*
d*e^2*f - 2*a*e*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^2*
d^3) - 3*(b*d*e*f^2 + a*f^3)*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e
^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))/(a^2*d^4) - 3*(b*d*e*f^2 - a*f^3)
*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e
^(d*x + c)))/(a^2*d^4) + 1/4*(b*d^4*f^3*x^4 + 4*(b*d*e*f^2 + a*f^3)*d^3*x^3
 + 6*(b*d^2*e^2*f + 2*a*d*e*f^2)*d^2*x^2)/(a^2*d^4) + 1/4*(b*d^4*f^3*x^4 +
4*(b*d*e*f^2 - a*f^3)*d^3*x^3 + 6*(b*d^2*e^2*f - 2*a*d*e*f^2)*d^2*x^2)/(a^2
*d^4) - integrate(2*(b^4*f^3*x^3 + 3*b^4*e*f^2*x^2 + 3*b^4*e^2*f*x - (a*b^3
*f^3*x^3*e^c + 3*a*b^3*e*f^2*x^2*e^c + 3*a*b^3*e^2*f*x*e^c)*e^(d*x))/(a^4*b
 + a^2*b^3 - (a^4*b*e^(2*c) + a^2*b^3*e^(2*c))*e^(2*d*x) - 2*(a^5*e^c + a^3
*b^2*e^c)*e^(d*x)), x) - integrate(2*(b*f^3*x^3 + 3*b*e*f^2*x^2 + 3*b*e^2*f
*x + (a*f^3*x^3*e^c + 3*a*e*f^2*x^2*e^c + 3*a*e^2*f*x*e^c)*e^(d*x))/(a^2 +
b^2 + (a^2*e^(2*c) + b^2*e^(2*c))*e^(2*d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e+f\,x)^3}{\cosh(c+d\,x)\,\sinh(c+d\,x)^2\,(a+b\sinh(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cosh(c + d*x)*sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^3/(cosh(c + d*x)*sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csch(d*x+c)**2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.465 $\int \frac{(e+fx)^2\operatorname{csch}^2(c+dx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=982

$$\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{a^2\left(a^2+b^2\right)d}+\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{a^2\left(a^2+b^2\right)d}-\frac{(e+fx)^2\log\left(1+e^{2(c+dx)}\right)b^3}{a^2\left(a^2+b^2\right)d}+\frac{2f(e+fx)\mathrm{Li}_2\left(\right.}{a^2\left(a^2+\right.}$$

```
[Out] -b^3*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/a^2/(a^2+b^2)/d+b^3*(f*x+e)^2*ln(1+b*ex
p(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d+b^3*(f*x+e)^2*ln(1+b*exp(d*x+
c)/(a+(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d-2*b^3*f^2*polylog(3,-b*exp(d*x+c)/(
a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d^3-2*b^3*f^2*polylog(3,-b*exp(d*x+c)/(a+
(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d^3+2*b^2*(f*x+e)^2*arctan(exp(d*x+c))/a/(a
^2+b^2)/d+b*f*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/a^2/d^2-b*f*(f*x+e)*polylo
g(2,exp(2*d*x+2*c))/a^2/d^2+2*I*f^2*polylog(3,I*exp(d*x+c))/a/d^3+1/2*b^3*f
^2*polylog(3,-exp(2*d*x+2*c))/a^2/(a^2+b^2)/d^3-2*I*f*(f*x+e)*polylog(2,I*e
xp(d*x+c))/a/d^2+2*I*f*(f*x+e)*polylog(2,-I*exp(d*x+c))/a/d^2-b^3*f*(f*x+e)
*polylog(2,-exp(2*d*x+2*c))/a^2/(a^2+b^2)/d^2-2*I*b^2*f^2*polylog(3,I*exp(d
*x+c))/a/(a^2+b^2)/d^3+2*b*(f*x+e)^2*arctanh(exp(2*d*x+2*c))/a^2/d-1/2*b*f^
2*polylog(3,-exp(2*d*x+2*c))/a^2/d^3-2*I*f^2*polylog(3,-I*exp(d*x+c))/a/d^3
-4*f*(f*x+e)*arctanh(exp(d*x+c))/a/d^2+1/2*b*f^2*polylog(3,exp(2*d*x+2*c))/
a^2/d^3+2*I*b^2*f^2*polylog(3,-I*exp(d*x+c))/a/(a^2+b^2)/d^3-2*I*b^2*f*(f*x
+e)*polylog(2,-I*exp(d*x+c))/a/(a^2+b^2)/d^2+2*f^2*polylog(2,exp(d*x+c))/a/
d^3-(f*x+e)^2*csch(d*x+c)/a/d-2*f^2*polylog(2,-exp(d*x+c))/a/d^3-2*(f*x+e)^
2*arctan(exp(d*x+c))/a/d+2*I*b^2*f*(f*x+e)*polylog(2,I*exp(d*x+c))/a/(a^2+b
^2)/d^2+2*b^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(a
^2+b^2)/d^2+2*b^3*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^
2/(a^2+b^2)/d^2
```

Rubi [A] time = 1.67, antiderivative size = 982, normalized size of antiderivative = 1.00, number of steps used = 53, number of rules used = 21, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.618, Rules used = {5589, 2621, 321, 207, 5462, 6741, 12, 6742, 5205, 4180, 2531, 2282, 6589, 4182, 2279, 2391, 5461, 5573, 5561, 2190, 3718}

$$\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^3}{a^2\left(a^2+b^2\right)d}+\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^3}{a^2\left(a^2+b^2\right)d}-\frac{(e+fx)^2\log\left(1+e^{2(c+dx)}\right)b^3}{a^2\left(a^2+b^2\right)d}+\frac{2f(e+fx)\mathrm{Poly}}{a^2\left(\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]^2*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)^2*ArcTan[E^(c + d*x)])/(a*d) + (2*b^2*(e + f*x)^2*ArcTan[E^(c
 + d*x)])/(a*(a^2 + b^2)*d) - (4*f*(e + f*x)*ArcTanh[E^(c + d*x)])/(a*d^2)
```

```
+ (2*b*(e + f*x)^2*ArcTanh[E^(2*c + 2*d*x)])/(a^2*d) - ((e + f*x)^2*Csch[c
+ d*x])/(a*d) + (b^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^
2])])/(a^2*(a^2 + b^2)*d) + (b^3*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + S
qrt[a^2 + b^2])])/(a^2*(a^2 + b^2)*d) - (b^3*(e + f*x)^2*Log[1 + E^(2*(c +
d*x))])/(a^2*(a^2 + b^2)*d) - (2*f^2*PolyLog[2, -E^(c + d*x)])/(a*d^3) + ((
2*I)*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^2) - ((2*I)*b^2*f*(e +
f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(a*(a^2 + b^2)*d^2) - ((2*I)*f*(e + f*x)
*PolyLog[2, I*E^(c + d*x)])/(a*d^2) + ((2*I)*b^2*f*(e + f*x)*PolyLog[2, I*E
^(c + d*x)])/(a*(a^2 + b^2)*d^2) + (2*f^2*PolyLog[2, E^(c + d*x)])/(a*d^3)
+ (2*b^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/
(a^2*(a^2 + b^2)*d^2) + (2*b^3*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a
+ Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^2)*d^2) - (b^3*f*(e + f*x)*PolyLog[2, -
E^(2*(c + d*x))])/(a^2*(a^2 + b^2)*d^2) + (b*f*(e + f*x)*PolyLog[2, -E^(2*c
 + 2*d*x)])/(a^2*d^2) - (b*f*(e + f*x)*PolyLog[2, E^(2*c + 2*d*x)])/(a^2*d^
2) - ((2*I)*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(a*d^3) + ((2*I)*b^2*f^2*Poly
Log[3, (-I)*E^(c + d*x)])/(a*(a^2 + b^2)*d^3) + ((2*I)*f^2*PolyLog[3, I*E^(
c + d*x)])/(a*d^3) - ((2*I)*b^2*f^2*PolyLog[3, I*E^(c + d*x)])/(a*(a^2 + b^
2)*d^3) - (2*b^3*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/
(a^2*(a^2 + b^2)*d^3) - (2*b^3*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a
^2 + b^2]))])/(a^2*(a^2 + b^2)*d^3) + (b^3*f^2*PolyLog[3, -E^(2*(c + d*x))]
)/(2*a^2*(a^2 + b^2)*d^3) - (b*f^2*PolyLog[3, -E^(2*c + 2*d*x)])/(2*a^2*d^3
) + (b*f^2*PolyLog[3, E^(2*c + 2*d*x)])/(2*a^2*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5205

```
Int[((a_.) + ArcTan[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcTan[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/(1 + u^2), x], x], x]
/; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x] &&
  !FunctionOfQ[(c + d*x)^(m + 1), u, x] && FalseQ[PowerVariableExpn[u, m +
1, x]]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
```

```
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{csch}^2(c+dx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{csch}^2(c+dx)\text{sech}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\text{csch}(c+dx)\text{sech}(c}{a+b\sinh(c+dx)}}{a}$$

$$= -\frac{(e+fx)^2\tan^{-1}(\sinh(c+dx))}{ad} - \frac{(e+fx)^2\text{csch}(c+dx)}{ad} - \frac{b\int (e+}{}$$

$$= -\frac{(e+fx)^2\tan^{-1}(\sinh(c+dx))}{ad} - \frac{(e+fx)^2\text{csch}(c+dx)}{ad} - \frac{(2b)\int (}{}$$

$$= -\frac{b^3(e+fx)^3}{3a^2\left(a^2+b^2\right)f} - \frac{(e+fx)^2\tan^{-1}(\sinh(c+dx))}{ad} + \frac{2b(e+fx)^2\,\text{ta}}{a^2}$$

$$= -\frac{b^3(e+fx)^3}{3a^2\left(a^2+b^2\right)f} - \frac{(e+fx)^2\tan^{-1}(\sinh(c+dx))}{ad} + \frac{2b(e+fx)^2\,\text{ta}}{a^2}$$

$$= \frac{2b^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{(e+fx)^2\tan^{-1}(\sinh(c+dx))}{ad} + \frac{2b(e}{}$$

$$= \frac{2b^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{2b(e+f}{}$$

$$= \frac{2b^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{4f(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^2} + \frac{2b(e+f}{}$$

$$= -\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{4f(e+f}{}$$

$$= -\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{4f(e+f}{}$$

$$= -\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{4f(e+f}{}$$

$$= -\frac{2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} - \frac{4f(e+f}{}$$

Mathematica [B] time = 11.77, size = 1971, normalized size = 2.01

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]^2*Sech[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] -1/6*(12*b*d^3*e^2*E^(2*c)*x - 12*b*d^3*e^2*(1 + E^(2*c))*x - 12*b*d^3*e*f*
x^2 - 4*b*d^3*f^2*x^3 + 12*a*d^2*e^2*(1 + E^(2*c))*ArcTan[E^(c + d*x)] + 6*
b*d^2*e^2*(1 + E^(2*c))*(2*d*x - Log[1 + E^(2*(c + d*x))]) + (12*I)*a*d*e*(
1 + E^(2*c))*f*(d*x*(Log[1 - I*E^(c + d*x)] - Log[1 + I*E^(c + d*x)]) - Pol
yLog[2, (-I)*E^(c + d*x)] + PolyLog[2, I*E^(c + d*x)]) + 6*b*d*e*(1 + E^(2*
c))*f*(2*d*x*(d*x - Log[1 + E^(2*(c + d*x))]) - PolyLog[2, -E^(2*(c + d*x))
]) + (6*I)*a*(1 + E^(2*c))*f^2*(d^2*x^2*Log[1 - I*E^(c + d*x)] - d^2*x^2*Lo
g[1 + I*E^(c + d*x)] - 2*d*x*PolyLog[2, (-I)*E^(c + d*x)] + 2*d*x*PolyLog[2
, I*E^(c + d*x)] + 2*PolyLog[3, (-I)*E^(c + d*x)] - 2*PolyLog[3, I*E^(c + d
*x)]) + b*(1 + E^(2*c))*f^2*(2*d^2*x^2*(2*d*x - 3*Log[1 + E^(2*(c + d*x))])
 - 6*d*x*PolyLog[2, -E^(2*(c + d*x))] + 3*PolyLog[3, -E^(2*(c + d*x))]))/((
a^2 + b^2)*d^3*(1 + E^(2*c))) - (b^3*(6*d^3*e^2*E^(2*c)*x + 6*d^3*e*E^(2*c)
*f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*d^2*e^2*Log[b - 2*a*E^(c + d*x) - b*E^(2
*(c + d*x))] - 3*d^2*e^2*E^(2*c)*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x)
)] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c
)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b
^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2
 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c
 - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E
^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c +
d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*
c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[
1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d*(-1 + E^(2
*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E
^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/
(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x)
)/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(
2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E
^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog
[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))]))/(3*a^2*(a^2
 + b^2)*d^3*(-1 + E^(2*c))) + (b*d^3*(e + f*x)^3*(-1 + Coth[c]) + 3*d*e*f*(
b*d*e - 2*a*f)*(d*x - Log[1 - Cosh[c + d*x] - Sinh[c + d*x]]) - 6*d*f^2*(b*
d*e + a*f)*x*Log[1 + Cosh[c + d*x] - Sinh[c + d*x]] - 3*b*d^2*f^3*x^2*Log[1
 + Cosh[c + d*x] - Sinh[c + d*x]] - 6*d*f^2*(b*d*e - a*f)*x*Log[1 - Cosh[c
+ d*x] + Sinh[c + d*x]] - 3*b*d^2*f^3*x^2*Log[1 - Cosh[c + d*x] + Sinh[c +
d*x]] + 3*d*e*f*(b*d*e + 2*a*f)*(d*x - Log[1 + Cosh[c + d*x] + Sinh[c + d*x
```

```
]]) + 6*f^2*(b*d*e - a*f)*PolyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + 6*f^2
*(b*d*e + a*f)*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + 6*b*f^3*(d*x*Po
lyLog[2, Cosh[c + d*x] - Sinh[c + d*x]] + PolyLog[3, Cosh[c + d*x] - Sinh[c
 + d*x]]) + 6*b*f^3*(d*x*PolyLog[2, -Cosh[c + d*x] + Sinh[c + d*x]] + PolyL
og[3, -Cosh[c + d*x] + Sinh[c + d*x]]))/(3*a^2*d^3*f) + ((-3*a*b*d*e^2*x -
3*a*b*d*e*f*x^2 - a*b*d*f^2*x^3 - 3*a^2*e^2*Cosh[c] - 3*b^2*e^2*Cosh[c] - 6
*a^2*e*f*x*Cosh[c] - 6*b^2*e*f*x*Cosh[c] - 3*a^2*f^2*x^2*Cosh[c] - 3*b^2*f^
2*x^2*Cosh[c])*Csch[c/2]*Sech[c/2]*Sech[c])/(6*a*(a^2 + b^2)*d) + (Csch[c/2
]*Csch[c/2 + (d*x)/2]*(e^2*Sinh[(d*x)/2] + 2*e*f*x*Sinh[(d*x)/2] + f^2*x^2*
Sinh[(d*x)/2]))/(2*a*d) + (Sech[c/2]*Sech[c/2 + (d*x)/2]*(e^2*Sinh[(d*x)/2]
 + 2*e*f*x*Sinh[(d*x)/2] + f^2*x^2*Sinh[(d*x)/2]))/(2*a*d)
```

<u>fricas</u> [C] time = 0.63, size = 5666, normalized size = 5.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -(2*((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*d^2*e*f*x + (a^3 + a*b^2)*
d^2*e^2)*cosh(d*x + c) + 2*(b^3*d*f^2*x + b^3*d*e*f - (b^3*d*f^2*x + b^3*d*
e*f)*cosh(d*x + c)^2 - 2*(b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)*sinh(d*x +
 c) - (b^3*d*f^2*x + b^3*d*e*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a
*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b + 1) + 2*(b^3*d*f^2*x + b^3*d*e*f - (b^3*d*f^2*x + b^3*d*e*f)*cosh(d
*x + c)^2 - 2*(b^3*d*f^2*x + b^3*d*e*f)*cosh(d*x + c)*sinh(d*x + c) - (b^3*
d*f^2*x + b^3*d*e*f)*sinh(d*x + c)^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x +
 c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1)
 - 2*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*d*e*f - (a^3 + a*b^2)*f^2 - ((a
^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*d*e*f - (a^3 + a*b^2)*f^2)*cosh(d*x + c
)^2 - 2*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*d*e*f - (a^3 + a*b^2)*f^2)*c
osh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*d*e*f -
 (a^3 + a*b^2)*f^2)*sinh(d*x + c)^2)*dilog(cosh(d*x + c) + sinh(d*x + c)) -
 (2*I*a^3*d*f^2*x - 2*a^2*b*d*f^2*x + 2*I*a^3*d*e*f - 2*a^2*b*d*e*f + (-2*I
*a^3*d*f^2*x + 2*a^2*b*d*f^2*x - 2*I*a^3*d*e*f + 2*a^2*b*d*e*f)*cosh(d*x +
c)^2 + (-4*I*a^3*d*f^2*x + 4*a^2*b*d*f^2*x - 4*I*a^3*d*e*f + 4*a^2*b*d*e*f)
*cosh(d*x + c)*sinh(d*x + c) + (-2*I*a^3*d*f^2*x + 2*a^2*b*d*f^2*x - 2*I*a^
3*d*e*f + 2*a^2*b*d*e*f)*sinh(d*x + c)^2)*dilog(I*cosh(d*x + c) + I*sinh(d*
x + c)) - (-2*I*a^3*d*f^2*x - 2*a^2*b*d*f^2*x - 2*I*a^3*d*e*f - 2*a^2*b*d*e
*f + (2*I*a^3*d*f^2*x + 2*a^2*b*d*f^2*x + 2*I*a^3*d*e*f + 2*a^2*b*d*e*f)*co
sh(d*x + c)^2 + (4*I*a^3*d*f^2*x + 4*a^2*b*d*f^2*x + 4*I*a^3*d*e*f + 4*a^2*
b*d*e*f)*cosh(d*x + c)*sinh(d*x + c) + (2*I*a^3*d*f^2*x + 2*a^2*b*d*f^2*x +
 2*I*a^3*d*e*f + 2*a^2*b*d*e*f)*sinh(d*x + c)^2)*dilog(-I*cosh(d*x + c) - I
*sinh(d*x + c)) - 2*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*d*e*f + (a^3 + a
```

*b^2)*f^2 - ((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*d*e*f + (a^3 + a*b^2)*f^
2)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d*f^2*x + (a^2*b + b^3)*d*e*f + (a^3
+ a*b^2)*f^2)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d*f^2*x + (a^2*b
+ b^3)*d*e*f + (a^3 + a*b^2)*f^2)*sinh(d*x + c)^2)*dilog(-cosh(d*x + c) -
sinh(d*x + c)) + (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2 - (b^3*d^2*e^2
- 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^3*d^2*e^2 - 2*b^3*c*d
*e*f + b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d^2*e^2 - 2*b^3*c*d*
e*f + b^3*c^2*f^2)*sinh(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x +
c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*
c^2*f^2 - (b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)^2 - 2*(
b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) - (b
^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*sinh(d*x + c)^2)*log(2*b*cosh(d*x
+ c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^3*d^2*f^2
*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2 - (b^3*d^2*f^2*x^2 + 2
*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^3*d^2*
f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)*sinh
(d*x + c) - (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^
2)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (b^3*d^2*f^2*x^2 + 2
*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2 - (b^3*d^2*f^2*x^2 + 2*b^3*d^2
*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^3*d^2*f^2*x^2
+ 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c
) - (b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sinh(
d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*
sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - ((a^2*b + b^3)*d^2*f^2*x^2 +
(a^2*b + b^3)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f - ((a^2*b + b^3)*d^2*f^2*x^2
+ (a^2*b + b^3)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f
+ (a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^2*f^2*x^2 +
(a^2*b + b^3)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^2*b + b^3)*d^2*e*f +
(a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d^2*f
^2*x^2 + (a^2*b + b^3)*d^2*e^2 + 2*(a^3 + a*b^2)*d*e*f + 2*((a^2*b + b^3)*d
^2*e*f + (a^3 + a*b^2)*d*f^2)*x)*sinh(d*x + c)^2 + 2*((a^2*b + b^3)*d^2*e*f
+ (a^3 + a*b^2)*d*f^2)*x)*log(cosh(d*x + c) + sinh(d*x + c) + 1) - (I*a^3*
d^2*e^2 - a^2*b*d^2*e^2 - 2*I*a^3*c*d*e*f + 2*a^2*b*c*d*e*f + I*a^3*c^2*f^2
- a^2*b*c^2*f^2 + (-I*a^3*d^2*e^2 + a^2*b*d^2*e^2 + 2*I*a^3*c*d*e*f - 2*a^
2*b*c*d*e*f - I*a^3*c^2*f^2 + a^2*b*c^2*f^2)*cosh(d*x + c)^2 + (-2*I*a^3*d^
2*e^2 + 2*a^2*b*d^2*e^2 + 4*I*a^3*c*d*e*f - 4*a^2*b*c*d*e*f - 2*I*a^3*c^2*f
^2 + 2*a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (-I*a^3*d^2*e^2 + a^2*b
*d^2*e^2 + 2*I*a^3*c*d*e*f - 2*a^2*b*c*d*e*f - I*a^3*c^2*f^2 + a^2*b*c^2*f^
2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) + I) - (-I*a^3*d^2*e^
2 - a^2*b*d^2*e^2 + 2*I*a^3*c*d*e*f + 2*a^2*b*c*d*e*f - I*a^3*c^2*f^2 - a^2
*b*c^2*f^2 + (I*a^3*d^2*e^2 + a^2*b*d^2*e^2 - 2*I*a^3*c*d*e*f - 2*a^2*b*c*d
*e*f + I*a^3*c^2*f^2 + a^2*b*c^2*f^2)*cosh(d*x + c)^2 + (2*I*a^3*d^2*e^2 +
2*a^2*b*d^2*e^2 - 4*I*a^3*c*d*e*f - 4*a^2*b*c*d*e*f + 2*I*a^3*c^2*f^2 + 2*a
^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (I*a^3*d^2*e^2 + a^2*b*d^2*e^2

- 2*I*a^3*c*d*e*f - 2*a^2*b*c*d*e*f + I*a^3*c^2*f^2 + a^2*b*c^2*f^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - I) - ((a^2*b + b^3)*d^2*e^2 - 2*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d*e*f + ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2 - ((a^2*b + b^3)*d^2*e^2 - 2*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d*e*f + ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^2*e^2 - 2*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d*e*f + ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d^2*e^2 - 2*(a^3 + a*b^2 + (a^2*b + b^3)*c)*d*e*f + ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1) - (-I*a^3*d^2*f^2*x^2 - a^2*b*d^2*f^2*x^2 - 2*I*a^3*d^2*e*f*x - 2*a^2*b*d^2*e*f*x - 2*I*a^3*c*d*e*f - 2*a^2*b*c*d*e*f + I*a^3*c^2*f^2 + a^2*b*c^2*f^2 + (I*a^3*d^2*f^2*x^2 + a^2*b*d^2*f^2*x^2 + 2*I*a^3*d^2*e*f*x + 2*a^2*b*d^2*e*f*x + 2*I*a^3*c*d*e*f + 2*a^2*b*c*d*e*f - I*a^3*c^2*f^2 - a^2*b*c^2*f^2)*cosh(d*x + c)^2 + (2*I*a^3*d^2*f^2*x^2 + 2*a^2*b*d^2*f^2*x^2 + 4*I*a^3*d^2*e*f*x + 4*a^2*b*d^2*e*f*x + 4*I*a^3*c*d*e*f + 4*a^2*b*c*d*e*f - 2*I*a^3*c^2*f^2 - 2*a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (I*a^3*d^2*f^2*x^2 + a^2*b*d^2*f^2*x^2 + 2*I*a^3*d^2*e*f*x + 2*a^2*b*d^2*e*f*x + 2*I*a^3*c*d*e*f + 2*a^2*b*c*d*e*f - I*a^3*c^2*f^2 - a^2*b*c^2*f^2)*sinh(d*x + c)^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) - (I*a^3*d^2*f^2*x^2 - a^2*b*d^2*f^2*x^2 + 2*I*a^3*d^2*e*f*x - 2*a^2*b*d^2*e*f*x + 2*I*a^3*c*d*e*f - 2*a^2*b*c*d*e*f - I*a^3*c^2*f^2 + a^2*b*c^2*f^2 + (-I*a^3*d^2*f^2*x^2 + a^2*b*d^2*f^2*x^2 - 2*I*a^3*d^2*e*f*x + 2*a^2*b*d^2*e*f*x - 2*I*a^3*c*d*e*f + 2*a^2*b*c*d*e*f + I*a^3*c^2*f^2 - a^2*b*c^2*f^2)*cosh(d*x + c)^2 + (-2*I*a^3*d^2*f^2*x^2 + 2*a^2*b*d^2*f^2*x^2 - 4*I*a^3*d^2*e*f*x + 4*a^2*b*d^2*e*f*x - 4*I*a^3*c*d*e*f + 4*a^2*b*c*d*e*f + 2*I*a^3*c^2*f^2 - 2*a^2*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c) + (-I*a^3*d^2*f^2*x^2 + a^2*b*d^2*f^2*x^2 - 2*I*a^3*d^2*e*f*x + 2*a^2*b*d^2*e*f*x - 2*I*a^3*c*d*e*f + 2*a^2*b*c*d*e*f + I*a^3*c^2*f^2 - a^2*b*c^2*f^2)*sinh(d*x + c)^2)*log(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) - ((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*c*d*e*f - ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2 - ((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*c*d*e*f - ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*c*d*e*f - ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d^2*f^2*x^2 + 2*(a^2*b + b^3)*c*d*e*f - ((a^2*b + b^3)*c^2 + 2*(a^3 + a*b^2)*c)*f^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x)*sinh(d*x + c)^2 + 2*((a^2*b + b^3)*d^2*e*f - (a^3 + a*b^2)*d*f^2)*x)*log(-cosh(d*x + c) - sinh(d*x + c) + 1) + 2*(b^3*f^2*cosh(d*x + c)^2 + 2*b^3*f^2*cosh(d*x + c)*sinh(d*x + c) + b^3*f^2*sinh(d*x + c)^2 - b^3*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 2*(b^3*f^2*cosh(d*x + c)^2 + 2*b^3*f^2*cosh(d*x + c)*sinh(d*x + c) + b^3*f^2*sinh(d*x + c)^2 - b^3*f^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2*((a^2*b + b^3)*f^2*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f^2*cosh(d*x + c)*sinh(d*x + c) + (a^2*b + b^3)*f^2*sinh(d*

```
x + c)^2 - (a^2*b + b^3)*f^2)*polylog(3, cosh(d*x + c) + sinh(d*x + c)) - (
-2*I*a^3*f^2 + 2*a^2*b*f^2 - 2*(-I*a^3*f^2 + a^2*b*f^2)*cosh(d*x + c)^2 - 4
*(-I*a^3*f^2 + a^2*b*f^2)*cosh(d*x + c)*sinh(d*x + c) - 2*(-I*a^3*f^2 + a^2
*b*f^2)*sinh(d*x + c)^2)*polylog(3, I*cosh(d*x + c) + I*sinh(d*x + c)) + 2*
(-I*a^3*f^2 - a^2*b*f^2 + (I*a^3*f^2 + a^2*b*f^2)*cosh(d*x + c)^2 + 2*(I*a^
3*f^2 + a^2*b*f^2)*cosh(d*x + c)*sinh(d*x + c) + (I*a^3*f^2 + a^2*b*f^2)*si
nh(d*x + c)^2)*polylog(3, -I*cosh(d*x + c) - I*sinh(d*x + c)) - 2*((a^2*b +
 b^3)*f^2*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f^2*cosh(d*x + c)*sinh(d*x + c)
 + (a^2*b + b^3)*f^2*sinh(d*x + c)^2 - (a^2*b + b^3)*f^2)*polylog(3, -cosh(
d*x + c) - sinh(d*x + c)) + 2*((a^3 + a*b^2)*d^2*f^2*x^2 + 2*(a^3 + a*b^2)*
d^2*e*f*x + (a^3 + a*b^2)*d^2*e^2)*sinh(d*x + c))/((a^4 + a^2*b^2)*d^3*cosh
(d*x + c)^2 + 2*(a^4 + a^2*b^2)*d^3*cosh(d*x + c)*sinh(d*x + c) + (a^4 + a^
2*b^2)*d^3*sinh(d*x + c)^2 - (a^4 + a^2*b^2)*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.84, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{csch}\left(dx+c\right)^{2} \operatorname{sech}\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(\frac{b^{3} \log\left(-2\, ae^{(-dx-c)} + be^{(-2\, dx-2\, c)} - b\right)}{\left(a^{4} + a^{2}b^{2}\right)d} + \frac{2\, a \arctan\left(e^{(-dx-c)}\right)}{\left(a^{2} + b^{2}\right)d} + \frac{b \log\left(e^{(-2\, dx-2\, c)} + 1\right)}{\left(a^{2} + b^{2}\right)d} + \frac{2\, e^{(-dx-c)}}{\left(ae^{(-2\, dx-2\, c)} - a\right)d} - \frac{b \log}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] (b^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + a^2*b^2)*d) +
2*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + b*log(e^(-2*d*x - 2*c) + 1)/((a^
2 + b^2)*d) + 2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) - b*log(e^(-d*x -
 c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d))*e^2 - 2*(f^2*x^2*e^c +
2*e*f*x*e^c)*e^(d*x)/(a*d*e^(2*d*x + 2*c) - a*d) - 2*e*f*log(e^(d*x + c) +
1)/(a*d^2) + 2*e*f*log(e^(d*x + c) - 1)/(a*d^2) - (d^2*x^2*log(e^(d*x + c)
+ 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*b*f^2/(a^2*d
^3) - (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog
(3, e^(d*x + c)))*b*f^2/(a^2*d^3) - 2*(b*d*e*f + a*f^2)*(d*x*log(e^(d*x + c
) + 1) + dilog(-e^(d*x + c)))/(a^2*d^3) - 2*(b*d*e*f - a*f^2)*(d*x*log(-e^(
d*x + c) + 1) + dilog(e^(d*x + c)))/(a^2*d^3) + 1/3*(b*d^3*f^2*x^3 + 3*(b*d
*e*f + a*f^2)*d^2*x^2)/(a^2*d^3) + 1/3*(b*d^3*f^2*x^3 + 3*(b*d*e*f - a*f^2)
*d^2*x^2)/(a^2*d^3) - integrate(2*(b^4*f^2*x^2 + 2*b^4*e*f*x - (a*b^3*f^2*x
^2*e^c + 2*a*b^3*e*f*x*e^c)*e^(d*x))/(a^4*b + a^2*b^3 - (a^4*b*e^(2*c) + a^
2*b^3*e^(2*c))*e^(2*d*x) - 2*(a^5*e^c + a^3*b^2*e^c)*e^(d*x)), x) - integra
te(2*(b*f^2*x^2 + 2*b*e*f*x + (a*f^2*x^2*e^c + 2*a*e*f*x*e^c)*e^(d*x))/(a^2
 + b^2 + (a^2*e^(2*c) + b^2*e^(2*c))*e^(2*d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^2}{\mathrm{cosh}\left(c+d\,x\right)\,{\mathrm{sinh}\left(c+d\,x\right)}^2\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cosh(c + d*x)*sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^2/(cosh(c + d*x)*sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)**2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.466 $\int \frac{(e+fx)\mathbf{csch}^2(c+dx)\mathbf{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=591

$$-\frac{ib^2f\text{Li}_2\left(-ie^{c+dx}\right)}{ad^2\left(a^2+b^2\right)}+\frac{ib^2f\text{Li}_2\left(ie^{c+dx}\right)}{ad^2\left(a^2+b^2\right)}+\frac{2b^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{ad\left(a^2+b^2\right)}+\frac{b^3f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2\left(a^2+b^2\right)}+\frac{b^3f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^2\left(a^2+b^2\right)}-\frac{b^3f}{2a}$$

```
[Out] -2*f*x*arctan(exp(d*x+c))/a/d+2*b^2*(f*x+e)*arctan(exp(d*x+c))/a/(a^2+b^2)/
d+f*x*arctan(sinh(d*x+c))/a/d-(f*x+e)*arctan(sinh(d*x+c))/a/d+2*b*(f*x+e)*a
rctanh(exp(2*d*x+2*c))/a^2/d-f*arctanh(cosh(d*x+c))/a/d^2-(f*x+e)*csch(d*x+
c)/a/d-b^3*(f*x+e)*ln(1+exp(2*d*x+2*c))/a^2/(a^2+b^2)/d+b^3*(f*x+e)*ln(1+b*
exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d+b^3*(f*x+e)*ln(1+b*exp(d*x+
c)/(a+(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d-I*f*polylog(2,I*exp(d*x+c))/a/d^2+I
*b^2*f*polylog(2,I*exp(d*x+c))/a/(a^2+b^2)/d^2-I*b^2*f*polylog(2,-I*exp(d*x
+c))/a/(a^2+b^2)/d^2+I*f*polylog(2,-I*exp(d*x+c))/a/d^2-1/2*b^3*f*polylog(2
,-exp(2*d*x+2*c))/a^2/(a^2+b^2)/d^2+1/2*b*f*polylog(2,-exp(2*d*x+2*c))/a^2/
d^2-1/2*b*f*polylog(2,exp(2*d*x+2*c))/a^2/d^2+b^3*f*polylog(2,-b*exp(d*x+c)
/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d^2+b^3*f*polylog(2,-b*exp(d*x+c)/(a+(a
^2+b^2)^(1/2)))/a^2/(a^2+b^2)/d^2
```

Rubi [A] time = 0.90, antiderivative size = 591, normalized size of antiderivative = 1.00, number of steps used = 37, number of rules used = 18, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.562, Rules used = {5589, 2621, 321, 207, 5462, 5203, 12, 4180, 2279, 2391, 3770, 5461, 4182, 5573, 5561, 2190, 6742, 3718}

$$\frac{b^3f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2\left(a^2+b^2\right)}+\frac{b^3f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^2\left(a^2+b^2\right)}-\frac{b^3f\text{PolyLog}\left(2,-e^{2(c+dx)}\right)}{2a^2d^2\left(a^2+b^2\right)}-\frac{ib^2f\text{PolyLog}\left(2,-ie^{c+dx}\right)}{ad^2\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]^2*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*f*x*ArcTan[E^(c + d*x)])/(a*d) + (2*b^2*(e + f*x)*ArcTan[E^(c + d*x)])/
(a*(a^2 + b^2)*d) + (f*x*ArcTan[Sinh[c + d*x]])/(a*d) - ((e + f*x)*ArcTan[S
inh[c + d*x]])/(a*d) + (2*b*(e + f*x)*ArcTanh[E^(2*c + 2*d*x)])/(a^2*d) - (
f*ArcTanh[Cosh[c + d*x]])/(a*d^2) - ((e + f*x)*Csch[c + d*x])/(a*d) + (b^3*
(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^2*(a^2 + b^2)*
d) + (b^3*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^2*(a
^2 + b^2)*d) - (b^3*(e + f*x)*Log[1 + E^(2*(c + d*x))])/(a^2*(a^2 + b^2)*d)
 + (I*f*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^2) - (I*b^2*f*PolyLog[2, (-I)*E^
(c + d*x)])/(a*(a^2 + b^2)*d^2) - (I*f*PolyLog[2, I*E^(c + d*x)])/(a*d^2) +
 (I*b^2*f*PolyLog[2, I*E^(c + d*x)])/(a*(a^2 + b^2)*d^2) + (b^3*f*PolyLog[2
```

```
, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^2)*d^2) + (b^3*f
*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^2)*d^2
) - (b^3*f*PolyLog[2, -E^(2*(c + d*x))])/(2*a^2*(a^2 + b^2)*d^2) + (b*f*Pol
yLog[2, -E^(2*c + 2*d*x)])/(2*a^2*d^2) - (b*f*PolyLog[2, E^(2*c + 2*d*x)])/
(2*a^2*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5203

```
Int[ArcTan[u_], x_Symbol] :> Simp[x*ArcTan[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/(1 + u^2), x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\text{csch}^2(c+dx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{csch}^2(c+dx)\text{sech}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\text{csch}(c+dx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}}{a}$$

$$= -\frac{(e+fx)\tan^{-1}(\sinh(c+dx))}{ad} - \frac{(e+fx)\text{csch}(c+dx)}{ad} - \frac{b\int (e+fx)}{}$$

$$= -\frac{(e+fx)\tan^{-1}(\sinh(c+dx))}{ad} - \frac{(e+fx)\text{csch}(c+dx)}{ad} - \frac{(2b)\int (e+f}{}$$

$$= -\frac{b^3(e+fx)^2}{2a^2\left(a^2+b^2\right)f} + \frac{fx\tan^{-1}(\sinh(c+dx))}{ad} - \frac{(e+fx)\tan^{-1}(\sinh(c+}{ad}$$

$$= -\frac{b^3(e+fx)^2}{2a^2\left(a^2+b^2\right)f} + \frac{fx\tan^{-1}(\sinh(c+dx))}{ad} - \frac{(e+fx)\tan^{-1}(\sinh(c+}{ad}$$

$$= -\frac{2fx\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} + \frac{fx\tan^{-1}(\sinh(c+}{ad}$$

$$= -\frac{2fx\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} + \frac{fx\tan^{-1}(\sinh(c+}{ad}$$

$$= -\frac{2fx\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} + \frac{fx\tan^{-1}(\sinh(c+}{ad}$$

$$= -\frac{2fx\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^2(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)d} + \frac{fx\tan^{-1}(\sinh(c+}{ad}$$

Mathematica [A] time = 6.43, size = 535, normalized size = 0.91

$$\frac{-4ade\tan^{-1}(\sinh(c+dx)+\cosh(c+dx))+2iaf\text{Li}_2(-i(\cosh(c+dx)+\sinh(c+dx)))-2iaf\text{Li}_2(i(\cosh(c+dx)+\sinh(c+dx)))-4adfx\tan^{-1}(\sinh(c+dx)+\cosh(c+}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]^2*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (-((d*(e + f*x)*Coth[(c + d*x)/2])/a) - (2*b*d*e*Log[Sinh[c + d*x]])/a^2 +
(2*b*c*f*Log[Sinh[c + d*x]])/a^2 + (2*f*Log[Tanh[(c + d*x)/2]])/a + (b*f*(-
((c + d*x)*(c + d*x + 2*Log[1 - E^(-2*(c + d*x))])) + PolyLog[2, E^(-2*(c +
 d*x))]))/a^2 + (2*b^3*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b*E^(c
+ d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + S
qrt[a^2 + b^2])] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c + d*
x]] + f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -
((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(a^2*(a^2 + b^2)) + (-2*b*c*d*e
+ b*c^2*f - 2*b*d^2*e*x - b*d^2*f*x^2 - 4*a*d*e*ArcTan[Cosh[c + d*x] + Sinh
[c + d*x]] - 4*a*d*f*x*ArcTan[Cosh[c + d*x] + Sinh[c + d*x]] + 2*b*d*e*Log[
1 + Cosh[2*(c + d*x)] + Sinh[2*(c + d*x)]] + 2*b*d*f*x*Log[1 + Cosh[2*(c +
d*x)] + Sinh[2*(c + d*x)]] + (2*I)*a*f*PolyLog[2, (-I)*(Cosh[c + d*x] + Sin
h[c + d*x])] - (2*I)*a*f*PolyLog[2, I*(Cosh[c + d*x] + Sinh[c + d*x])] + b*
f*PolyLog[2, -Cosh[2*(c + d*x)] - Sinh[2*(c + d*x)]])/(a^2 + b^2) + (d*(e +
 f*x)*Tanh[(c + d*x)/2])/a)/(2*d^2)
```

<u>fricas</u> [B] time = 0.67, size = 2591, normalized size = 4.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] -(2*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e)*cosh(d*x + c) - (b^3*f*cosh(d
*x + c)^2 + 2*b^3*f*cosh(d*x + c)*sinh(d*x + c) + b^3*f*sinh(d*x + c)^2 - b
^3*f)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(
d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^3*f*cosh(d*x + c)^2 + 2*b^
3*f*cosh(d*x + c)*sinh(d*x + c) + b^3*f*sinh(d*x + c)^2 - b^3*f)*dilog((a*c
osh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((
a^2 + b^2)/b^2) - b)/b + 1) + ((a^2*b + b^3)*f*cosh(d*x + c)^2 + 2*(a^2*b +
 b^3)*f*cosh(d*x + c)*sinh(d*x + c) + (a^2*b + b^3)*f*sinh(d*x + c)^2 - (a^
2*b + b^3)*f)*dilog(cosh(d*x + c) + sinh(d*x + c)) - (I*a^3*f - a^2*b*f + (
-I*a^3*f + a^2*b*f)*cosh(d*x + c)^2 - 2*(I*a^3*f - a^2*b*f)*cosh(d*x + c)*s
inh(d*x + c) + (-I*a^3*f + a^2*b*f)*sinh(d*x + c)^2)*dilog(I*cosh(d*x + c)
+ I*sinh(d*x + c)) - (-I*a^3*f - a^2*b*f + (I*a^3*f + a^2*b*f)*cosh(d*x + c
)^2 - 2*(-I*a^3*f - a^2*b*f)*cosh(d*x + c)*sinh(d*x + c) + (I*a^3*f + a^2*b
*f)*sinh(d*x + c)^2)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + ((a^2*b +
b^3)*f*cosh(d*x + c)^2 + 2*(a^2*b + b^3)*f*cosh(d*x + c)*sinh(d*x + c) + (a
^2*b + b^3)*f*sinh(d*x + c)^2 - (a^2*b + b^3)*f)*dilog(-cosh(d*x + c) - sin
h(d*x + c)) + (b^3*d*e - b^3*c*f - (b^3*d*e - b^3*c*f)*cosh(d*x + c)^2 - 2*
(b^3*d*e - b^3*c*f)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d*e - b^3*c*f)*sinh(
d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2
)/b^2) + 2*a) + (b^3*d*e - b^3*c*f - (b^3*d*e - b^3*c*f)*cosh(d*x + c)^2 -
2*(b^3*d*e - b^3*c*f)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d*e - b^3*c*f)*sin
```

```
h(d*x + c)^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b
^2)/b^2) + 2*a) + (b^3*d*f*x + b^3*c*f - (b^3*d*f*x + b^3*c*f)*cosh(d*x + c
)^2 - 2*(b^3*d*f*x + b^3*c*f)*cosh(d*x + c)*sinh(d*x + c) - (b^3*d*f*x + b^
3*c*f)*sinh(d*x + c)^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d
*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (b^3*d*f*x + b^3
*c*f - (b^3*d*f*x + b^3*c*f)*cosh(d*x + c)^2 - 2*(b^3*d*f*x + b^3*c*f)*cosh
(d*x + c)*sinh(d*x + c) - (b^3*d*f*x + b^3*c*f)*sinh(d*x + c)^2)*log(-(a*co
sh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2) - b)/b) - ((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e - ((a^2*b
 + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^3 + a*b^2)*f)*cosh(d*x + c)^2 - 2*((
a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^3 + a*b^2)*f)*cosh(d*x + c)*sin
h(d*x + c) - ((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*d*e + (a^3 + a*b^2)*f)*si
nh(d*x + c)^2 + (a^3 + a*b^2)*f)*log(cosh(d*x + c) + sinh(d*x + c) + 1) - (
I*a^3*d*e - a^2*b*d*e - I*a^3*c*f + a^2*b*c*f + (-I*a^3*d*e + a^2*b*d*e + I
*a^3*c*f - a^2*b*c*f)*cosh(d*x + c)^2 + (-2*I*a^3*d*e + 2*a^2*b*d*e + 2*I*a
^3*c*f - 2*a^2*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (-I*a^3*d*e + a^2*b*d*e
 + I*a^3*c*f - a^2*b*c*f)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh(d*x + c
) + I) - (-I*a^3*d*e - a^2*b*d*e + I*a^3*c*f + a^2*b*c*f + (I*a^3*d*e + a^2
*b*d*e - I*a^3*c*f - a^2*b*c*f)*cosh(d*x + c)^2 + (2*I*a^3*d*e + 2*a^2*b*d*
e - 2*I*a^3*c*f - 2*a^2*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (I*a^3*d*e + a
^2*b*d*e - I*a^3*c*f - a^2*b*c*f)*sinh(d*x + c)^2)*log(cosh(d*x + c) + sinh
(d*x + c) - I) - ((a^2*b + b^3)*d*e - ((a^2*b + b^3)*d*e - (a^3 + a*b^2 + (
a^2*b + b^3)*c)*f)*cosh(d*x + c)^2 - 2*((a^2*b + b^3)*d*e - (a^3 + a*b^2 +
(a^2*b + b^3)*c)*f)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)*d*e - (a^3
 + a*b^2 + (a^2*b + b^3)*c)*f)*sinh(d*x + c)^2 - (a^3 + a*b^2 + (a^2*b + b^
3)*c)*f)*log(cosh(d*x + c) + sinh(d*x + c) - 1) - (-I*a^3*d*f*x - a^2*b*d*f
*x - I*a^3*c*f - a^2*b*c*f + (I*a^3*d*f*x + a^2*b*d*f*x + I*a^3*c*f + a^2*b
*c*f)*cosh(d*x + c)^2 + (2*I*a^3*d*f*x + 2*a^2*b*d*f*x + 2*I*a^3*c*f + 2*a^
2*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (I*a^3*d*f*x + a^2*b*d*f*x + I*a^3*c
*f + a^2*b*c*f)*sinh(d*x + c)^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1)
 - (I*a^3*d*f*x - a^2*b*d*f*x + I*a^3*c*f - a^2*b*c*f + (-I*a^3*d*f*x + a^2
*b*d*f*x - I*a^3*c*f + a^2*b*c*f)*cosh(d*x + c)^2 + (-2*I*a^3*d*f*x + 2*a^2
*b*d*f*x - 2*I*a^3*c*f + 2*a^2*b*c*f)*cosh(d*x + c)*sinh(d*x + c) + (-I*a^3
*d*f*x + a^2*b*d*f*x - I*a^3*c*f + a^2*b*c*f)*sinh(d*x + c)^2)*log(-I*cosh(
d*x + c) - I*sinh(d*x + c) + 1) - ((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*c*f
- ((a^2*b + b^3)*d*f*x + (a^2*b + b^3)*c*f)*cosh(d*x + c)^2 - 2*((a^2*b + b
^3)*d*f*x + (a^2*b + b^3)*c*f)*cosh(d*x + c)*sinh(d*x + c) - ((a^2*b + b^3)
*d*f*x + (a^2*b + b^3)*c*f)*sinh(d*x + c)^2)*log(-cosh(d*x + c) - sinh(d*x
+ c) + 1) + 2*((a^3 + a*b^2)*d*f*x + (a^3 + a*b^2)*d*e)*sinh(d*x + c))/((a^
4 + a^2*b^2)*d^2*cosh(d*x + c)^2 + 2*(a^4 + a^2*b^2)*d^2*cosh(d*x + c)*sinh
(d*x + c) + (a^4 + a^2*b^2)*d^2*sinh(d*x + c)^2 - (a^4 + a^2*b^2)*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [B] time = 0.39, size = 1529, normalized size = 2.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/d^2/a^2*b*f*c*ln(exp(d*x+c)-1)-1/d/a^2*b*f*ln(exp(d*x+c)+1)*x+1/d*e*b/a/(
a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d^2*f*c*
b/a/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-8/d*a
*e/(4*a^2+4*b^2)*arctan(exp(d*x+c))+4/d^2*b*f/(4*a^2+4*b^2)*dilog(1+I*exp(d
*x+c))+4/d^2*b*f/(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))+4/d*b*e/(4*a^2+4*b^2)*
ln(1+exp(2*d*x+2*c))-2/d*(f*x+e)/a*exp(d*x+c)/(exp(2*d*x+2*c)-1)-1/d^2/(a^2
+b^2)^(3/2)*f*b^3/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-b/d*e
/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a+1/d^2/
(a^2+b^2)^(3/2)*b^3*f*c/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))
-1/d^2/a*f*ln(exp(d*x+c)+1)+1/d^2/a*f*ln(exp(d*x+c)-1)+1/d/a^2*b^3*f/(a^2+b
^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d/a^2*b^
3*f/(a^2+b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/
d^2/a^2*b^3*f*c/(a^2+b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+1/d^2/a^2*b
^3*f/(a^2+b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c
+1/d^2/a^2*b^3*f/(a^2+b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)
^(1/2)))*c-4*I/d*a*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*x-1/d/a^2*b*e*ln(exp(
d*x+c)+1)-1/d/a^2*b*e*ln(exp(d*x+c)-1)-1/d^2/a^2*b*f*dilog(exp(d*x+c)+1)+1/
d^2/a^2*b*f*dilog(exp(d*x+c))+4/d*b*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*x+4/
d*b*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*x-4/d^2*b*f*c/(4*a^2+4*b^2)*ln(1+exp
(2*d*x+2*c))+4/d^2*b*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*c+4/d^2*b*f/(4*a^2+
4*b^2)*ln(1+I*exp(d*x+c))*c+1/d^2/a^2*b^3*f/(a^2+b^2)*dilog((b*exp(d*x+c)+(
a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/d^2/a^2*b^3*f/(a^2+b^2)*dilog((-b*
exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+8/d^2*a*f*c/(4*a^2+4*b^
2)*arctan(exp(d*x+c))+1/d^2/a*b*f/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+
c)+2*a)/(a^2+b^2)^(1/2))+1/d/a^2*b^3*e/(a^2+b^2)*ln(b*exp(2*d*x+2*c)+2*a*ex
p(d*x+c)-b)-4*I/d^2*a*f/(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))+4*I/d^2*a*f/(4*
a^2+4*b^2)*dilog(1+I*exp(d*x+c))+b/d^2*f*c/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b
*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a+4*I/d*a*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+
c))*x-4*I/d^2*a*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*c+4*I/d^2*a*f/(4*a^2+4*b
^2)*ln(1+I*exp(d*x+c))*c-1/d^2/(a^2+b^2)^(3/2)*a*f*b*arctanh(1/2*(2*b*exp(d
*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d/(a^2+b^2)^(3/2)*b^3*e/a*arctanh(1/2*(2*b*ex
p(d*x+c)+2*a)/(a^2+b^2)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(\frac{b^3 \log\left(-2\,ae^{(-dx-c)} + be^{(-2\,dx-2\,c)} - b\right)}{\left(a^4 + a^2b^2\right)d} + \frac{2\,a \arctan\left(e^{(-dx-c)}\right)}{\left(a^2 + b^2\right)d} + \frac{b \log\left(e^{(-2\,dx-2\,c)} + 1\right)}{\left(a^2 + b^2\right)d} + \frac{2\,e^{(-dx-c)}}{\left(ae^{(-2\,dx-2\,c)} - a\right)d} - \frac{b \log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] (b^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + a^2*b^2)*d) +
2*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + b*log(e^(-2*d*x - 2*c) + 1)/((a^
2 + b^2)*d) + 2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) - b*log(e^(-d*x -
 c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d))*e + (8*b*d*integrate(1/
8*x/(a^2*d*e^(d*x + c) + a^2*d), x) - 8*b*d*integrate(1/8*x/(a^2*d*e^(d*x +
 c) - a^2*d), x) + a*((d*x + c)/(a^2*d^2) - log(e^(d*x + c) + 1)/(a^2*d^2))
 - a*((d*x + c)/(a^2*d^2) - log(e^(d*x + c) - 1)/(a^2*d^2)) - 2*x*e^(d*x +
c)/(a*d*e^(2*d*x + 2*c) - a*d) - 8*integrate(-1/4*(a*b^3*x*e^(d*x + c) - b^
4*x)/(a^4*b + a^2*b^3 - (a^4*b*e^(2*c) + a^2*b^3*e^(2*c))*e^(2*d*x) - 2*(a^
5*e^c + a^3*b^2*e^c)*e^(d*x)), x) - 8*integrate(1/4*(a*x*e^(d*x + c) + b*x)
/(a^2 + b^2 + (a^2*e^(2*c) + b^2*e^(2*c))*e^(2*d*x)), x))*f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e + f\,x}{\cosh\left(c + d\,x\right)\,\sinh\left(c + d\,x\right)^2\,\left(a + b\sinh\left(c + d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)*sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)*sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)**2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.467 $\int \frac{\text{csch}^2(c+dx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=104

$$-\frac{a\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)}+\frac{b\log(\cosh(c+dx))}{d\left(a^2+b^2\right)}+\frac{b^3\log(a+b\sinh(c+dx))}{a^2d\left(a^2+b^2\right)}-\frac{b\log(\sinh(c+dx))}{a^2d}-\frac{\text{csch}(c+dx)}{ad}$$

```
[Out] -a*arctan(sinh(d*x+c))/(a^2+b^2)/d-csch(d*x+c)/a/d+b*ln(cosh(d*x+c))/(a^2+b
^2)/d-b*ln(sinh(d*x+c))/a^2/d+b^3*ln(a+b*sinh(d*x+c))/a^2/(a^2+b^2)/d
```

Rubi [A] time = 0.17, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2837, 12, 894, 635, 203, 260}

$$\frac{b^3\log(a+b\sinh(c+dx))}{a^2d\left(a^2+b^2\right)}-\frac{a\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)}+\frac{b\log(\cosh(c+dx))}{d\left(a^2+b^2\right)}-\frac{b\log(\sinh(c+dx))}{a^2d}-\frac{\text{csch}(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Csch[c + d*x]^2*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)*d)) - Csch[c + d*x]/(a*d) + (b*Log
[Cosh[c + d*x]])/((a^2 + b^2)*d) - (b*Log[Sinh[c + d*x]])/(a^2*d) + (b^3*Lo
g[a + b*Sinh[c + d*x]])/(a^2*(a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
```

```
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{b\,\text{Subst}\left(\int \frac{b^2}{x^2(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{b^3\,\text{Subst}\left(\int \frac{1}{x^2(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{b^3\,\text{Subst}\left(\int \left(-\frac{1}{ab^2x^2}+\frac{1}{a^2b^2x}-\frac{1}{a^2\left(a^2+b^2\right)(a+x)}+\frac{a-x}{b^2\left(a^2+b^2\right)\left(b^2+x^2\right)}\right)dx, x, b\sinh(c}{d}$$

$$= -\frac{\operatorname{csch}(c+dx)}{ad}-\frac{b\log(\sinh(c+dx))}{a^2d}+\frac{b^3\log(a+b\sinh(c+dx))}{a^2\left(a^2+b^2\right)d}-\frac{b\,\text{Subst}}{}$$

$$= -\frac{\operatorname{csch}(c+dx)}{ad}-\frac{b\log(\sinh(c+dx))}{a^2d}+\frac{b^3\log(a+b\sinh(c+dx))}{a^2\left(a^2+b^2\right)d}+\frac{b\,\text{Subst}}{}$$

$$= -\frac{a\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d}-\frac{\operatorname{csch}(c+dx)}{ad}+\frac{b\log(\cosh(c+dx))}{\left(a^2+b^2\right)d}-\frac{b\log(\sinh(}{a^2d}$$

Mathematica [A] time = 0.60, size = 160, normalized size = 1.54

$$-\frac{b^3\left(\frac{\log(\sinh(c+dx))}{a^2b^2}-\frac{\log(a+b\sinh(c+dx))}{a^2\left(a^2+b^2\right)}-\frac{\left(\frac{a}{\sqrt{-b^2}}+1\right)\log\left(\sqrt{-b^2}+b\sinh(c+dx)\right)}{2b^2\left(a^2+b^2\right)}-\frac{\left(a\sqrt{-b^2}+b^2\right)\log\left(\sqrt{-b^2}-b\sinh(c+dx)\right)}{2b^4\left(a^2+b^2\right)}+\frac{\operatorname{csch}(c+dx)}{ab^3}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Csch[c + d*x]^2*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((b^3*(Csch[c + d*x]/(a*b^3) + Log[Sinh[c + d*x]]/(a^2*b^2) - ((b^2 + a*Sq
rt[-b^2])*Log[Sqrt[-b^2] - b*Sinh[c + d*x]])/(2*b^4*(a^2 + b^2)) - Log[a +
b*Sinh[c + d*x]]/(a^2*(a^2 + b^2)) - ((1 + a/Sqrt[-b^2])*Log[Sqrt[-b^2] + b
*Sinh[c + d*x]])/(2*b^2*(a^2 + b^2))))/d)
```

fricas [B] time = 0.70, size = 441, normalized size = 4.24

$$-\frac{2\left(a^3\cosh(dx+c)^2+2a^3\cosh(dx+c)\sinh(dx+c)+a^3\sinh(dx+c)^2-a^3\right)\arctan\left(\cosh(dx+c)+\sinh(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -(2*(a^3*cosh(d*x + c)^2 + 2*a^3*cosh(d*x + c)*sinh(d*x + c) + a^3*sinh(d*x
 + c)^2 - a^3)*arctan(cosh(d*x + c) + sinh(d*x + c)) + 2*(a^3 + a*b^2)*cosh
(d*x + c) - (b^3*cosh(d*x + c)^2 + 2*b^3*cosh(d*x + c)*sinh(d*x + c) + b^3*
sinh(d*x + c)^2 - b^3)*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*
x + c))) - (a^2*b*cosh(d*x + c)^2 + 2*a^2*b*cosh(d*x + c)*sinh(d*x + c) + a
^2*b*sinh(d*x + c)^2 - a^2*b)*log(2*cosh(d*x + c)/(cosh(d*x + c) - sinh(d*x
 + c))) - (a^2*b + b^3 - (a^2*b + b^3)*cosh(d*x + c)^2 - 2*(a^2*b + b^3)*co
sh(d*x + c)*sinh(d*x + c) - (a^2*b + b^3)*sinh(d*x + c)^2)*log(2*sinh(d*x +
 c)/(cosh(d*x + c) - sinh(d*x + c))) + 2*(a^3 + a*b^2)*sinh(d*x + c))/((a^4
 + a^2*b^2)*d*cosh(d*x + c)^2 + 2*(a^4 + a^2*b^2)*d*cosh(d*x + c)*sinh(d*x
+ c) + (a^4 + a^2*b^2)*d*sinh(d*x + c)^2 - (a^4 + a^2*b^2)*d)
```

giac [A] time = 0.19, size = 200, normalized size = 1.92

$$\frac{\frac{2b^4\log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2a\right|\right)}{a^4b+a^2b^3}-\frac{\left(\pi+2\arctan\left(\frac{1}{2}\left(e^{(2dx+2c)}-1\right)e^{(-dx-c)}\right)\right)a}{a^2+b^2}+\frac{b\log\left(\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+4\right)}{a^2+b^2}-\frac{2b\log\left(\left|e^{(dx+c)}-e^{(-dx-c)}\right|\right)}{a^2}+\frac{2(}{}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(2*b^4*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/(a^4*b + a^2*b^3)
 - (pi + 2*arctan(1/2*(e^(2*d*x + 2*c) - 1)*e^(-d*x - c)))*a/(a^2 + b^2) +
b*log((e^(d*x + c) - e^(-d*x - c))^2 + 4)/(a^2 + b^2) - 2*b*log(abs(e^(d*x
+ c) - e^(-d*x - c)))/a^2 + 2*(b*(e^(d*x + c) - e^(-d*x - c)) - 2*a)/(a^2*(
e^(d*x + c) - e^(-d*x - c))))/d
```

maple [A] time = 0.00, size = 159, normalized size = 1.53

$$\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da}+\frac{b^3\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\,a^2\left(a^2+b^2\right)}-\frac{1}{2da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{b\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,a^2}+\frac{b\,\mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2/d/a*tanh(1/2*d*x+1/2*c)+1/d*b^3/a^2/(a^2+b^2)*ln(tanh(1/2*d*x+1/2*c)^2*
a-2*tanh(1/2*d*x+1/2*c)*b-a)-1/2/d/a/tanh(1/2*d*x+1/2*c)-1/d/a^2*b*ln(tanh(
1/2*d*x+1/2*c))+1/d/(a^2+b^2)*b*ln(tanh(1/2*d*x+1/2*c)^2+1)-2/d/(a^2+b^2)*a
*arctan(tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.42, size = 173, normalized size = 1.66

$$\frac{b^3\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^4+a^2b^2\right)d}+\frac{2\,a\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}+\frac{b\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}+\frac{2\,e^{(-dx-c)}}{\left(ae^{(-2\,dx-2\,c)}-a\right)d}-\frac{b\log\left(e^{(-}\right.}{a^{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] b^3*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^4 + a^2*b^2)*d) + 2
*a*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + b*log(e^(-2*d*x - 2*c) + 1)/((a^2
 + b^2)*d) + 2*e^(-d*x - c)/((a*e^(-2*d*x - 2*c) - a)*d) - b*log(e^(-d*x -
c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d)
```

mupad [B] time = 2.87, size = 142, normalized size = 1.37

$$\frac{\ln\left(\mathrm{e}^{c+d\,x}+1\mathrm{i}\right)}{b\,d+a\,d\,1\mathrm{i}}+\frac{b^3\,\ln\left(2\,a\,\mathrm{e}^{c+d\,x}-b+b\,\mathrm{e}^{2\,c+2\,d\,x}\right)}{d\,a^4+d\,a^2\,b^2}-\frac{2\,\mathrm{e}^{c+d\,x}}{a\,d\,\left(\mathrm{e}^{2\,c+2\,d\,x}-1\right)}-\frac{b\,\ln\left(\mathrm{e}^{2\,c+2\,d\,x}-1\right)}{a^2\,d}+\frac{\ln\left(1+\mathrm{e}^{c+d\,x}\,1\mathrm{i}\right)\,1\mathrm{i}}{a\,d+b\,d\,1\mathrm{i}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] log(exp(c + d*x) + 1i)/(a*d*1i + b*d) + (log(exp(c + d*x)*1i + 1)*1i)/(a*d
+ b*d*1i) + (b^3*log(2*a*exp(c + d*x) - b + b*exp(2*c + 2*d*x)))/(a^4*d + a
^2*b^2*d) - (2*exp(c + d*x))/(a*d*(exp(2*c + 2*d*x) - 1)) - (b*log(exp(2*c
+ 2*d*x) - 1))/(a^2*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.468 $\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\mathrm{Int}\left(\frac{\operatorname{csch}^2(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^2*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Csch[c + d*x]^2*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Csch[c + d*x]^2*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 76.15, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Csch[c + d*x]^2*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] Integrate[(Csch[c + d*x]^2*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
, x]
```

fricas [A] time = 12.19, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\operatorname{csch}(dx+c)^2\operatorname{sech}(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(csch(d*x + c)^2*sech(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 2.06, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx+c)^2 \operatorname{sech}(dx+c)}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^2*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\,e^{(dx+c)}}{adfx+ade-\left(adfxe^{(2c)}+adee^{(2c)}\right)e^{(2dx)}}-8\int -\frac{}{4\left(a^4be+a^2b^3e+\left(a^4bf+a^2b^3f\right)x-\left(a^4bee^{(2c)}+a^2b^3ee^{(2c)}+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] 2*e^(d*x + c)/(a*d*f*x + a*d*e - (a*d*f*x*e^(2*c) + a*d*e*e^(2*c))*e^(2*d*x
)) - 8*integrate(-1/4*(a*b^3*e^(d*x + c) - b^4)/(a^4*b*e + a^2*b^3*e + (a^4
*b*f + a^2*b^3*f)*x - (a^4*b*e*e^(2*c) + a^2*b^3*e*e^(2*c) + (a^4*b*f*e^(2*
c) + a^2*b^3*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^5*e*e^c + a^3*b^2*e*e^c + (a^5*
f*e^c + a^3*b^2*f*e^c)*x)*e^(d*x)), x) - 8*integrate(-1/8*(b*d*f*x + b*d*e
+ a*f)/(a^2*d*f^2*x^2 + 2*a^2*d*e*f*x + a^2*d*e^2 - (a^2*d*f^2*x^2*e^c + 2*
a^2*d*e*f*x*e^c + a^2*d*e^2*e^c)*e^(d*x)), x) + 8*integrate(1/8*(b*d*f*x +
```

```
b*d*e - a*f)/(a^2*d*f^2*x^2 + 2*a^2*d*e*f*x + a^2*d*e^2 + (a^2*d*f^2*x^2*e^
c + 2*a^2*d*e*f*x*e^c + a^2*d*e^2*e^c)*e^(d*x)), x) - 8*integrate(1/4*(a*e^
(d*x + c) + b)/(a^2*e + b^2*e + (a^2*f + b^2*f)*x + (a^2*e*e^(2*c) + b^2*e*
e^(2*c) + (a^2*f*e^(2*c) + b^2*f*e^(2*c))*x)*e^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+dx)\,\sinh(c+dx)^2\,\left(e+fx\right)\,\left(a+b\sinh(c+dx)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*sinh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)*sinh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.469 $\int \frac{(e+fx)^2\mathbf{csch}^2(c+dx)\mathbf{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=914

$$\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^4}{a^2\left(a^2+b^2\right)^{3/2}d}-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^4}{a^2\left(a^2+b^2\right)^{3/2}d}+\frac{2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b^4}{a^2\left(a^2+b^2\right)^{3/2}d^2}-\frac{2f(e+fx)\text{Li}_2}{a^2\left(a^2+\right.}$$

```
[Out] b^4*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^(3/2)/d-
b^4*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^(3/2)/d-
2*b^4*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^(3/2)/
d^3+2*b^4*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^(3
/2)/d^3+4*b*f*(f*x+e)*arctan(exp(d*x+c))/a^2/d^2-b^2*f^2*polylog(2,-exp(2*d
*x+2*c))/a/(a^2+b^2)/d^3+b^3*(f*x+e)^2*sech(d*x+c)/a^2/(a^2+b^2)/d+b^2*(f*x
+e)^2*tanh(d*x+c)/a/(a^2+b^2)/d-2*I*b*f^2*polylog(2,-I*exp(d*x+c))/a^2/d^3-
4*b^3*f*(f*x+e)*arctan(exp(d*x+c))/a^2/(a^2+b^2)/d^2+2*I*b*f^2*polylog(2,I*
exp(d*x+c))/a^2/d^3-2*I*b^3*f^2*polylog(2,I*exp(d*x+c))/a^2/(a^2+b^2)/d^3+b
^2*(f*x+e)^2/a/(a^2+b^2)/d-b*(f*x+e)^2*sech(d*x+c)/a^2/d+2*I*b^3*f^2*polylo
g(2,-I*exp(d*x+c))/a^2/(a^2+b^2)/d^3-2*(f*x+e)^2*coth(2*d*x+2*c)/a/d+1/2*f^
2*polylog(2,exp(4*d*x+4*c))/a/d^3+2*b*(f*x+e)^2*arctanh(exp(d*x+c))/a^2/d-2
*b*f^2*polylog(3,-exp(d*x+c))/a^2/d^3+2*b*f^2*polylog(3,exp(d*x+c))/a^2/d^3
+2*b*f*(f*x+e)*polylog(2,-exp(d*x+c))/a^2/d^2-2*b*f*(f*x+e)*polylog(2,exp(d
*x+c))/a^2/d^2-2*(f*x+e)^2/a/d-2*b^2*f*(f*x+e)*ln(1+exp(2*d*x+2*c))/a/(a^2+
b^2)/d^2+2*b^4*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(
a^2+b^2)^(3/2)/d^2-2*b^4*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/
2)))/a^2/(a^2+b^2)^(3/2)/d^2+2*f*(f*x+e)*ln(1-exp(4*d*x+4*c))/a/d^2
```

Rubi [A] time = 2.04, antiderivative size = 914, normalized size of antiderivative = 1.00, number of steps used = 51, number of rules used = 25, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.694, Rules used = {5589, 5461, 4184, 3716, 2190, 2279, 2391, 2622, 321, 207, 5462, 6741, 12, 6742, 6273, 4182, 2531, 2282, 6589, 4180, 5573, 3322, 2264, 3718, 5451}

$$\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^4}{a^2\left(a^2+b^2\right)^{3/2}d}-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^4}{a^2\left(a^2+b^2\right)^{3/2}d}+\frac{2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b^4}{a^2\left(a^2+b^2\right)^{3/2}d^2}-\frac{2f(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]^2*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)^2)/(a*d) + (b^2*(e + f*x)^2)/(a*(a^2 + b^2)*d) + (4*b*f*(e +
f*x)*ArcTan[E^(c + d*x)])/(a^2*d^2) - (4*b^3*f*(e + f*x)*ArcTan[E^(c + d*x)
])/(a^2*(a^2 + b^2)*d^2) + (2*b*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a^2*d) -
```

```
(2*(e + f*x)^2*Coth[2*c + 2*d*x])/(a*d) + (b^4*(e + f*x)^2*Log[1 + (b*E^(c
 + d*x))/(a - Sqrt[a^2 + b^2])])/(a^2*(a^2 + b^2)^(3/2)*d) - (b^4*(e + f*x)
^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^2*(a^2 + b^2)^(3/2)*d
) - (2*b^2*f*(e + f*x)*Log[1 + E^(2*(c + d*x))])/(a*(a^2 + b^2)*d^2) + (2*f
*(e + f*x)*Log[1 - E^(4*(c + d*x))])/(a*d^2) + (2*b*f*(e + f*x)*PolyLog[2,
-E^(c + d*x)])/(a^2*d^2) - ((2*I)*b*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(a^2*
d^3) + ((2*I)*b^3*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(a^2*(a^2 + b^2)*d^3) +
 ((2*I)*b*f^2*PolyLog[2, I*E^(c + d*x)])/(a^2*d^3) - ((2*I)*b^3*f^2*PolyLog
[2, I*E^(c + d*x)])/(a^2*(a^2 + b^2)*d^3) - (2*b*f*(e + f*x)*PolyLog[2, E^(
c + d*x)])/(a^2*d^2) + (2*b^4*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a -
 Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^2)^(3/2)*d^2) - (2*b^4*f*(e + f*x)*PolyL
og[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^2)^(3/2)*d^2
) - (b^2*f^2*PolyLog[2, -E^(2*(c + d*x))])/(a*(a^2 + b^2)*d^3) + (f^2*PolyL
og[2, E^(4*(c + d*x))])/(2*a*d^3) - (2*b*f^2*PolyLog[3, -E^(c + d*x)])/(a^2
*d^3) + (2*b*f^2*PolyLog[3, E^(c + d*x)])/(a^2*d^3) - (2*b^4*f^2*PolyLog[3,
 -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b^2)^(3/2)*d^3) + (
2*b^4*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^2*(a^2 +
 b^2)^(3/2)*d^3) - (b*(e + f*x)^2*Sech[c + d*x])/(a^2*d) + (b^3*(e + f*x)^2
*Sech[c + d*x])/(a^2*(a^2 + b^2)*d) + (b^2*(e + f*x)^2*Tanh[c + d*x])/(a*(a
^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6273

```
Int[((a_.) + ArcTanh[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*(a + b*ArcTanh[u]))/(d*(m + 1)), x] - Dist[b/(d*(m +
1)), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/(1 - u^2), x], x], x
] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x]
&&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] && FalseQ[PowerVariableExpn[u, m
```

```
+ 1, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{csch}^2(c+dx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{csch}^2(c+dx)\text{sech}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\text{csch}(c+dx)\text{sec}}{a+b\sinh(c+dx}}{a}$$

$$= \frac{4\int (e+fx)^2\text{csch}^2(2c+2dx)\,dx}{a} - \frac{b\int (e+fx)^2\text{csch}(c+dx)\text{sech}^2}{a^2}$$

$$= \frac{b(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{2(e+fx)^2\coth(2c+2dx)}{ad} - \frac{b}{}$$

$$= -\frac{2(e+fx)^2}{ad} + \frac{b(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{2(e+fx)^2\,\text{cotl}}{ad}$$

$$= -\frac{2(e+fx)^2}{ad} + \frac{b(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{2(e+fx)^2\,\text{cotl}}{ad}$$

$$= -\frac{2(e+fx)^2}{ad} + \frac{b(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{2(e+fx)^2\,\text{cotl}}{ad}$$

$$= -\frac{2(e+fx)^2}{ad} + \frac{b^2(e+fx)^2}{a\left(a^2+b^2\right)d} - \frac{4b^3f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)d^2} + \frac{b(e+}{}$$

$$= -\frac{2(e+fx)^2}{ad} + \frac{b^2(e+fx)^2}{a\left(a^2+b^2\right)d} + \frac{4bf(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{4b^3f(}{}$$

$$= -\frac{2(e+fx)^2}{ad} + \frac{b^2(e+fx)^2}{a\left(a^2+b^2\right)d} + \frac{4bf(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{4b^3f(}{}$$

$$= -\frac{2(e+fx)^2}{ad} + \frac{b^2(e+fx)^2}{a\left(a^2+b^2\right)d} + \frac{4bf(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{4b^3f(}{}$$

$$= -\frac{2(e+fx)^2}{ad} + \frac{b^2(e+fx)^2}{a\left(a^2+b^2\right)d} + \frac{4bf(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{4b^3f(}{}$$

$$= -\frac{2(e+fx)^2}{ad} + \frac{b^2(e+fx)^2}{a\left(a^2+b^2\right)d} + \frac{4bf(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{4b^3f(}{}$$

$$= -\frac{2(e+fx)^2}{ad} + \frac{b^2(e+fx)^2}{a\left(a^2+b^2\right)d} + \frac{4bf(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{4b^3f(}{}$$

Mathematica [B] time = 28.07, size = 2677, normalized size = 2.93

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]^2*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x
]),x]
```

```
[Out] 4*(((I/2)*a*(-(d*(e + f*x)*(d*(e + f*x) + (1 + I*E^(2*c))*f*Log[1 - E^(-c -
 d*x)] + (1 + I*E^(2*c))*f*Log[1 + I*E^(-c - d*x)])) + (1 + I*E^(2*c))*f^2*
PolyLog[2, (-I)*E^(-c - d*x)] + (1 + I*E^(2*c))*f^2*PolyLog[2, E^(-c - d*x)
]))/((a^2 + b^2)*d^3*(-I + E^(2*c))) - (b*(4*a*b*d^2*e*E^(2*c)*f*x + 2*a*b*
d^2*E^(2*c)*f^2*x^2 + 2*a^2*d^2*e^2*ArcTanh[E^(c + d*x)] + 2*b^2*d^2*e^2*Ar
cTanh[E^(c + d*x)] - 2*a^2*d^2*e^2*E^(2*c)*ArcTanh[E^(c + d*x)] - 2*b^2*d^2
*e^2*E^(2*c)*ArcTanh[E^(c + d*x)] - 2*a^2*d^2*e*f*x*Log[1 - E^(c + d*x)] -
2*b^2*d^2*e*f*x*Log[1 - E^(c + d*x)] + 2*a^2*d^2*e*E^(2*c)*f*x*Log[1 - E^(c
 + d*x)] + 2*b^2*d^2*e*E^(2*c)*f*x*Log[1 - E^(c + d*x)] - a^2*d^2*f^2*x^2*L
og[1 - E^(c + d*x)] - b^2*d^2*f^2*x^2*Log[1 - E^(c + d*x)] + a^2*d^2*E^(2*c
)*f^2*x^2*Log[1 - E^(c + d*x)] + b^2*d^2*E^(2*c)*f^2*x^2*Log[1 - E^(c + d*x
)] + 2*a^2*d^2*e*f*x*Log[1 + E^(c + d*x)] + 2*b^2*d^2*e*f*x*Log[1 + E^(c +
d*x)] - 2*a^2*d^2*e*E^(2*c)*f*x*Log[1 + E^(c + d*x)] - 2*b^2*d^2*e*E^(2*c)*
f*x*Log[1 + E^(c + d*x)] + a^2*d^2*f^2*x^2*Log[1 + E^(c + d*x)] + b^2*d^2*f
^2*x^2*Log[1 + E^(c + d*x)] - a^2*d^2*E^(2*c)*f^2*x^2*Log[1 + E^(c + d*x)]
- b^2*d^2*E^(2*c)*f^2*x^2*Log[1 + E^(c + d*x)] + 2*a*b*d*e*f*Log[1 - E^(2*(
c + d*x))] - 2*a*b*d*e*E^(2*c)*f*Log[1 - E^(2*(c + d*x))] + 2*a*b*d*f^2*x*L
og[1 - E^(2*(c + d*x))] - 2*a*b*d*E^(2*c)*f^2*x*Log[1 - E^(2*(c + d*x))] -
2*(a^2 + b^2)*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -E^(c + d*x)] + 2*(a^
2 + b^2)*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, E^(c + d*x)] + a*b*f^2*Pol
yLog[2, E^(2*(c + d*x))] - a*b*E^(2*c)*f^2*PolyLog[2, E^(2*(c + d*x))] - 2*
a^2*f^2*PolyLog[3, -E^(c + d*x)] - 2*b^2*f^2*PolyLog[3, -E^(c + d*x)] + 2*a
^2*E^(2*c)*f^2*PolyLog[3, -E^(c + d*x)] + 2*b^2*E^(2*c)*f^2*PolyLog[3, -E^(
c + d*x)] + 2*a^2*f^2*PolyLog[3, E^(c + d*x)] + 2*b^2*f^2*PolyLog[3, E^(c +
 d*x)] - 2*a^2*E^(2*c)*f^2*PolyLog[3, E^(c + d*x)] - 2*b^2*E^(2*c)*f^2*Poly
Log[3, E^(c + d*x)]))/(4*a^2*(a^2 + b^2)*d^3*(-1 + E^(2*c))) + (b^4*(-2*d^2
*e^2*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] + 2*d^2*e*f*x*Log[1 + (b*
E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2])] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + 2*d*
f*(e + f*x)*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 2*d*f*(e +
 f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 2*f^2*PolyLog[
3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*f^2*PolyLog[3, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))]))/(4*a^2*(a^2 + b^2)^(3/2)*d^3) + (a*e*f*Sech[
c/2]*(Cosh[c/2]*Log[Cosh[c/2]*Cosh[(d*x)/2] + Sinh[c/2]*Sinh[(d*x)/2]] - (d
*x*Sinh[c/2])/2))/(2*(a^2 + b^2)*d^2*(Cosh[c/2]^2 - Sinh[c/2]^2)) + (a*f^2*
```

```
Csch[c/2]*((d^2*x^2)/(4*E^ArcTanh[Coth[c/2]]) - (I*Coth[c/2]*(-1/2*(d*x*(-P
i + (2*I)*ArcTanh[Coth[c/2]])) - Pi*Log[1 + E^(d*x)] - 2*((I/2)*d*x + I*Arc
Tanh[Coth[c/2]])*Log[1 - E^((2*I)*((I/2)*d*x + I*ArcTanh[Coth[c/2]]))] + Pi
*Log[Cosh[(d*x)/2]] + (2*I)*ArcTanh[Coth[c/2]]*Log[I*Sinh[(d*x)/2 + ArcTanh
[Coth[c/2]]]] + I*PolyLog[2, E^((2*I)*((I/2)*d*x + I*ArcTanh[Coth[c/2]]))])
)/Sqrt[1 - Coth[c/2]^2])*Sech[c/2])/(2*(a^2 + b^2)*d^3*Sqrt[Csch[c/2]^2*(-C
osh[c/2]^2 + Sinh[c/2]^2)]) - (e*f*x*Csch[c/2]*Sech[c/2]*(a^2*Cosh[c] - b^2
*Cosh[c] + a^2*Cosh[2*c] - I*a^2*Sinh[c] - I*b^2*Sinh[c]))/(8*a*(a^2 + b^2)
*d*(Cosh[c/2] - I*Sinh[c/2])*(Cosh[c/2] + I*Sinh[c/2])*(Cosh[c] + I*Sinh[c]
)) - (f^2*x^2*Csch[c/2]*Sech[c/2]*(a^2*Cosh[c] - b^2*Cosh[c] + a^2*Cosh[2*c
] - I*a^2*Sinh[c] - I*b^2*Sinh[c]))/(16*a*(a^2 + b^2)*d*(Cosh[c/2] - I*Sinh
[c/2])*(Cosh[c/2] + I*Sinh[c/2])*(Cosh[c] + I*Sinh[c])) + (b*e*f*ArcTan[(Si
nh[c] + Cosh[c]*Tanh[(d*x)/2])/Sqrt[Cosh[c]^2 - Sinh[c]^2]])/((a^2 + b^2)*d
^2*Sqrt[Cosh[c]^2 - Sinh[c]^2]) - ((I/2)*a*f*(Cosh[c] + Sinh[c])*(((e + f*x
)^2*(Cosh[c] - Sinh[c]))/(2*f) + ((e + f*x)*Log[1 - I*Cosh[c + d*x] + I*Sin
h[c + d*x]]*(I + Cosh[c] - Sinh[c]))/d - (I*f*PolyLog[2, I*(Cosh[c + d*x] -
 Sinh[c + d*x])]*(Cosh[c] - Sinh[c])*(-I + Cosh[c] + Sinh[c]))/d^2))/((a^2
+ b^2)*d*(-I + Cosh[c] + Sinh[c])) + (b*f^2*(((-I)*Csch[c]*(I*(d*x + ArcTan
h[Coth[c]])*(Log[1 - E^(-(d*x) - ArcTanh[Coth[c]])] - Log[1 + E^(-(d*x) - A
rcTanh[Coth[c]])]) + I*(PolyLog[2, -E^(-(d*x) - ArcTanh[Coth[c]])] - PolyLo
g[2, E^(-(d*x) - ArcTanh[Coth[c]])])))/Sqrt[1 - Coth[c]^2] - (2*ArcTan[(Sin
h[c] + Cosh[c]*Tanh[(d*x)/2])/Sqrt[Cosh[c]^2 - Sinh[c]^2]]*ArcTanh[Coth[c]]
)/Sqrt[Cosh[c]^2 - Sinh[c]^2]))/(2*(a^2 + b^2)*d^3) + (Csch[2*c]*Csch[2*c +
 2*d*x]*(a*b*e^2*Cosh[c - d*x] + 2*a*b*e*f*x*Cosh[c - d*x] + a*b*f^2*x^2*Co
sh[c - d*x] - a*b*e^2*Cosh[3*c + d*x] - 2*a*b*e*f*x*Cosh[3*c + d*x] - a*b*f
^2*x^2*Cosh[3*c + d*x] - b^2*e^2*Sinh[2*c] - 2*b^2*e*f*x*Sinh[2*c] - b^2*f^
2*x^2*Sinh[2*c] + 2*a^2*e^2*Sinh[2*d*x] + b^2*e^2*Sinh[2*d*x] + 4*a^2*e*f*x
*Sinh[2*d*x] + 2*b^2*e*f*x*Sinh[2*d*x] + 2*a^2*f^2*x^2*Sinh[2*d*x] + b^2*f^
2*x^2*Sinh[2*d*x]))/(4*a*(a^2 + b^2)*d))
```

fricas [C] time = 1.33, size = 10467, normalized size = 11.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="fricas")
```

```
[Out] -1/2*(4*(2*a^5 + 3*a^3*b^2 + a*b^4)*d^2*e^2 - 8*(2*a^5 + 3*a^3*b^2 + a*b^4)
*c*d*e*f + 4*(2*a^5 + 3*a^3*b^2 + a*b^4)*c^2*f^2 + 4*((2*a^5 + 3*a^3*b^2 +
a*b^4)*d^2*f^2*x^2 + 2*(2*a^5 + 3*a^3*b^2 + a*b^4)*d^2*e*f*x + 2*(2*a^5 + 3
*a^3*b^2 + a*b^4)*c*d*e*f - (2*a^5 + 3*a^3*b^2 + a*b^4)*c^2*f^2)*cosh(d*x +
 c)^4 + 4*((2*a^5 + 3*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^5 + 3*a^3*b^2 +
 a*b^4)*d^2*e*f*x + 2*(2*a^5 + 3*a^3*b^2 + a*b^4)*c*d*e*f - (2*a^5 + 3*a^3*
b^2 + a*b^4)*c^2*f^2)*sinh(d*x + c)^4 + 4*((a^4*b + a^2*b^3)*d^2*f^2*x^2 +
```

```
2*(a^4*b + a^2*b^3)*d^2*e*f*x + (a^4*b + a^2*b^3)*d^2*e^2)*cosh(d*x + c)^3
+ 4*((a^4*b + a^2*b^3)*d^2*f^2*x^2 + 2*(a^4*b + a^2*b^3)*d^2*e*f*x + (a^4*b
 + a^2*b^3)*d^2*e^2 + 4*((2*a^5 + 3*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^5
 + 3*a^3*b^2 + a*b^4)*d^2*e*f*x + 2*(2*a^5 + 3*a^3*b^2 + a*b^4)*c*d*e*f - (
2*a^5 + 3*a^3*b^2 + a*b^4)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*((a^
3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(a^3*b^2 + a*b^4)*d^2*e*f*x + (a^3*b^2 + a*b
^4)*d^2*e^2)*cosh(d*x + c)^2 + 4*((a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(a^3*b^
2 + a*b^4)*d^2*e*f*x + (a^3*b^2 + a*b^4)*d^2*e^2 + 6*((2*a^5 + 3*a^3*b^2 +
a*b^4)*d^2*f^2*x^2 + 2*(2*a^5 + 3*a^3*b^2 + a*b^4)*d^2*e*f*x + 2*(2*a^5 + 3
*a^3*b^2 + a*b^4)*c*d*e*f - (2*a^5 + 3*a^3*b^2 + a*b^4)*c^2*f^2)*cosh(d*x +
 c)^2 + 3*((a^4*b + a^2*b^3)*d^2*f^2*x^2 + 2*(a^4*b + a^2*b^3)*d^2*e*f*x +
(a^4*b + a^2*b^3)*d^2*e^2)*cosh(d*x + c))*sinh(d*x + c)^2 + 4*(b^5*d*f^2*x
+ b^5*d*e*f - (b^5*d*f^2*x + b^5*d*e*f)*cosh(d*x + c)^4 - 4*(b^5*d*f^2*x +
b^5*d*e*f)*cosh(d*x + c)^3*sinh(d*x + c) - 6*(b^5*d*f^2*x + b^5*d*e*f)*cosh
(d*x + c)^2*sinh(d*x + c)^2 - 4*(b^5*d*f^2*x + b^5*d*e*f)*cosh(d*x + c)*sin
h(d*x + c)^3 - (b^5*d*f^2*x + b^5*d*e*f)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/
b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 4*(b^5*d*f^2*x + b^5*d*e*f - (
b^5*d*f^2*x + b^5*d*e*f)*cosh(d*x + c)^4 - 4*(b^5*d*f^2*x + b^5*d*e*f)*cosh
(d*x + c)^3*sinh(d*x + c) - 6*(b^5*d*f^2*x + b^5*d*e*f)*cosh(d*x + c)^2*sin
h(d*x + c)^2 - 4*(b^5*d*f^2*x + b^5*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 -
(b^5*d*f^2*x + b^5*d*e*f)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*dilog((a*c
osh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((
a^2 + b^2)/b^2) - b)/b + 1) - 2*(b^5*d^2*e^2 - 2*b^5*c*d*e*f + b^5*c^2*f^2
- (b^5*d^2*e^2 - 2*b^5*c*d*e*f + b^5*c^2*f^2)*cosh(d*x + c)^4 - 4*(b^5*d^2*
e^2 - 2*b^5*c*d*e*f + b^5*c^2*f^2)*cosh(d*x + c)^3*sinh(d*x + c) - 6*(b^5*d
^2*e^2 - 2*b^5*c*d*e*f + b^5*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*(
b^5*d^2*e^2 - 2*b^5*c*d*e*f + b^5*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 -
(b^5*d^2*e^2 - 2*b^5*c*d*e*f + b^5*c^2*f^2)*sinh(d*x + c)^4)*sqrt((a^2 + b^
2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^
2) + 2*a) + 2*(b^5*d^2*e^2 - 2*b^5*c*d*e*f + b^5*c^2*f^2 - (b^5*d^2*e^2 - 2
*b^5*c*d*e*f + b^5*c^2*f^2)*cosh(d*x + c)^4 - 4*(b^5*d^2*e^2 - 2*b^5*c*d*e*
f + b^5*c^2*f^2)*cosh(d*x + c)^3*sinh(d*x + c) - 6*(b^5*d^2*e^2 - 2*b^5*c*d
*e*f + b^5*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*(b^5*d^2*e^2 - 2*b^
5*c*d*e*f + b^5*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 - (b^5*d^2*e^2 - 2*b
^5*c*d*e*f + b^5*c^2*f^2)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*log(2*b*co
sh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(b^5
*d^2*f^2*x^2 + 2*b^5*d^2*e*f*x + 2*b^5*c*d*e*f - b^5*c^2*f^2 - (b^5*d^2*f^2
*x^2 + 2*b^5*d^2*e*f*x + 2*b^5*c*d*e*f - b^5*c^2*f^2)*cosh(d*x + c)^4 - 4*(
b^5*d^2*f^2*x^2 + 2*b^5*d^2*e*f*x + 2*b^5*c*d*e*f - b^5*c^2*f^2)*cosh(d*x +
 c)^3*sinh(d*x + c) - 6*(b^5*d^2*f^2*x^2 + 2*b^5*d^2*e*f*x + 2*b^5*c*d*e*f
- b^5*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*(b^5*d^2*f^2*x^2 + 2*b^5
*d^2*e*f*x + 2*b^5*c*d*e*f - b^5*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 - (
b^5*d^2*f^2*x^2 + 2*b^5*d^2*e*f*x + 2*b^5*c*d*e*f - b^5*c^2*f^2)*sinh(d*x +
 c)^4)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*c
```

osh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(b^5*d^2*
f^2*x^2 + 2*b^5*d^2*e*f*x + 2*b^5*c*d*e*f - b^5*c^2*f^2 - (b^5*d^2*f^2*x^2
+ 2*b^5*d^2*e*f*x + 2*b^5*c*d*e*f - b^5*c^2*f^2)*cosh(d*x + c)^4 - 4*(b^5*d
^2*f^2*x^2 + 2*b^5*d^2*e*f*x + 2*b^5*c*d*e*f - b^5*c^2*f^2)*cosh(d*x + c)^3
*sinh(d*x + c) - 6*(b^5*d^2*f^2*x^2 + 2*b^5*d^2*e*f*x + 2*b^5*c*d*e*f - b^5
*c^2*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*(b^5*d^2*f^2*x^2 + 2*b^5*d^2*
e*f*x + 2*b^5*c*d*e*f - b^5*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 - (b^5*d
^2*f^2*x^2 + 2*b^5*d^2*e*f*x + 2*b^5*c*d*e*f - b^5*c^2*f^2)*sinh(d*x + c)^4
)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d
*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + 4*(b^5*f^2*cosh(
d*x + c)^4 + 4*b^5*f^2*cosh(d*x + c)^3*sinh(d*x + c) + 6*b^5*f^2*cosh(d*x +
 c)^2*sinh(d*x + c)^2 + 4*b^5*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + b^5*f^2*s
inh(d*x + c)^4 - b^5*f^2)*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c)
 + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2))/b) - 4*(b^5*f^2*cosh(d*x + c)^4 + 4*b^5*f^2*cosh(d*x + c)^3*sinh(d*x +
 c) + 6*b^5*f^2*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*b^5*f^2*cosh(d*x + c)*s
inh(d*x + c)^3 + b^5*f^2*sinh(d*x + c)^4 - b^5*f^2)*sqrt((a^2 + b^2)/b^2)*p
olylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*
x + c))*sqrt((a^2 + b^2)/b^2))/b) - 4*((a^4*b + a^2*b^3)*d^2*f^2*x^2 + 2*(a
^4*b + a^2*b^3)*d^2*e*f*x + (a^4*b + a^2*b^3)*d^2*e^2)*cosh(d*x + c) - 4*((
a^4*b + 2*a^2*b^3 + b^5)*d*f^2*x - ((a^4*b + 2*a^2*b^3 + b^5)*d*f^2*x + (a^
4*b + 2*a^2*b^3 + b^5)*d*e*f - (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*cosh(d*x + c)
^4 - 4*((a^4*b + 2*a^2*b^3 + b^5)*d*f^2*x + (a^4*b + 2*a^2*b^3 + b^5)*d*e*f
 - (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*cosh(d*x + c)^3*sinh(d*x + c) - 6*((a^4*b
 + 2*a^2*b^3 + b^5)*d*f^2*x + (a^4*b + 2*a^2*b^3 + b^5)*d*e*f - (a^5 + 2*a^
3*b^2 + a*b^4)*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*((a^4*b + 2*a^2*b^3
 + b^5)*d*f^2*x + (a^4*b + 2*a^2*b^3 + b^5)*d*e*f - (a^5 + 2*a^3*b^2 + a*b^
4)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 - ((a^4*b + 2*a^2*b^3 + b^5)*d*f^2*x
+ (a^4*b + 2*a^2*b^3 + b^5)*d*e*f - (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*sinh(d*x
 + c)^4 + (a^4*b + 2*a^2*b^3 + b^5)*d*e*f - (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*
dilog(cosh(d*x + c) + sinh(d*x + c)) - ((4*(a^5 + a^3*b^2)*f^2 + 4*I*(a^4*b
 + a^2*b^3)*f^2)*cosh(d*x + c)^4 + (16*(a^5 + a^3*b^2)*f^2 + 16*I*(a^4*b +
a^2*b^3)*f^2)*cosh(d*x + c)^3*sinh(d*x + c) + (24*(a^5 + a^3*b^2)*f^2 + 24*
I*(a^4*b + a^2*b^3)*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 + (16*(a^5 + a^3*b
^2)*f^2 + 16*I*(a^4*b + a^2*b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*(a
^5 + a^3*b^2)*f^2 + 4*I*(a^4*b + a^2*b^3)*f^2)*sinh(d*x + c)^4 - 4*(a^5 + a
^3*b^2)*f^2 - 4*I*(a^4*b + a^2*b^3)*f^2)*dilog(I*cosh(d*x + c) + I*sinh(d*x
 + c)) - ((4*(a^5 + a^3*b^2)*f^2 - 4*I*(a^4*b + a^2*b^3)*f^2)*cosh(d*x + c)
^4 + (16*(a^5 + a^3*b^2)*f^2 - 16*I*(a^4*b + a^2*b^3)*f^2)*cosh(d*x + c)^3*
sinh(d*x + c) + (24*(a^5 + a^3*b^2)*f^2 - 24*I*(a^4*b + a^2*b^3)*f^2)*cosh(
d*x + c)^2*sinh(d*x + c)^2 + (16*(a^5 + a^3*b^2)*f^2 - 16*I*(a^4*b + a^2*b^
3)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*(a^5 + a^3*b^2)*f^2 - 4*I*(a^4*b
 + a^2*b^3)*f^2)*sinh(d*x + c)^4 - 4*(a^5 + a^3*b^2)*f^2 + 4*I*(a^4*b + a^2
*b^3)*f^2)*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + 4*((a^4*b + 2*a^2*b^
3 + b^5)*d*f^2*x - ((a^4*b + 2*a^2*b^3 + b^5)*d*f^2*x + (a^4*b + 2*a^2*b^3

+ b^5)*d*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*cosh(d*x + c)^4 - 4*((a^4*b + 2*a^2*b^3 + b^5)*d*f^2*x + (a^4*b + 2*a^2*b^3 + b^5)*d*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*cosh(d*x + c)^3*sinh(d*x + c) - 6*((a^4*b + 2*a^2*b^3 + b^5)*d*f^2*x + (a^4*b + 2*a^2*b^3 + b^5)*d*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*((a^4*b + 2*a^2*b^3 + b^5)*d*f^2*x + (a^4*b + 2*a^2*b^3 + b^5)*d*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 - ((a^4*b + 2*a^2*b^3 + b^5)*d*f^2*x + (a^4*b + 2*a^2*b^3 + b^5)*d*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*sinh(d*x + c)^4 + (a^4*b + 2*a^2*b^3 + b^5)*d*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*f^2)*dilog(-cosh(d*x + c) - sinh(d*x + c)) + 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2*f^2*x^2 + (a^4*b + 2*a^2*b^3 + b^5)*d^2*e^2 - ((a^4*b + 2*a^2*b^3 + b^5)*d^2*f^2*x^2 + (a^4*b + 2*a^2*b^3 + b^5)*d^2*e^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d*e*f + 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^4 - 4*((a^4*b + 2*a^2*b^3 + b^5)*d^2*f^2*x^2 + (a^4*b + 2*a^2*b^3 + b^5)*d^2*e^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d*e*f + 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^3*sinh(d*x + c) - 6*((a^4*b + 2*a^2*b^3 + b^5)*d^2*f^2*x^2 + (a^4*b + 2*a^2*b^3 + b^5)*d^2*e^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d*e*f + 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*((a^4*b + 2*a^2*b^3 + b^5)*d^2*f^2*x^2 + (a^4*b + 2*a^2*b^3 + b^5)*d^2*e^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d*e*f + 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c)^3 - ((a^4*b + 2*a^2*b^3 + b^5)*d^2*f^2*x^2 + (a^4*b + 2*a^2*b^3 + b^5)*d^2*e^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d*e*f + 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*d*f^2)*x)*sinh(d*x + c)^4 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d*e*f + 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e*f + (a^5 + 2*a^3*b^2 + a*b^4)*d*f^2)*x)*log(cosh(d*x + c) + sinh(d*x + c) + 1) - ((4*(a^5 + a^3*b^2)*d*e*f + 4*I*(a^4*b + a^2*b^3)*d*e*f - 4*(a^5 + a^3*b^2)*c*f^2 - 4*I*(a^4*b + a^2*b^3)*c*f^2)*cosh(d*x + c)^4 + (16*(a^5 + a^3*b^2)*d*e*f + 16*I*(a^4*b + a^2*b^3)*d*e*f - 16*(a^5 + a^3*b^2)*c*f^2 - 16*I*(a^4*b + a^2*b^3)*c*f^2)*cosh(d*x + c)^3*sinh(d*x + c) + (24*(a^5 + a^3*b^2)*d*e*f + 24*I*(a^4*b + a^2*b^3)*d*e*f - 24*(a^5 + a^3*b^2)*c*f^2 - 24*I*(a^4*b + a^2*b^3)*c*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 + (16*(a^5 + a^3*b^2)*d*e*f + 16*I*(a^4*b + a^2*b^3)*d*e*f - 16*(a^5 + a^3*b^2)*c*f^2 - 16*I*(a^4*b + a^2*b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*(a^5 + a^3*b^2)*d*e*f + 4*I*(a^4*b + a^2*b^3)*d*e*f - 4*(a^5 + a^3*b^2)*c*f^2 - 4*I*(a^4*b + a^2*b^3)*c*f^2)*sinh(d*x + c)^4 - 4*(a^5 + a^3*b^2)*d*e*f - 4*I*(a^4*b + a^2*b^3)*d*e*f + 4*(a^5 + a^3*b^2)*c*f^2 + 4*I*(a^4*b + a^2*b^3)*c*f^2)*log(cosh(d*x + c) + sinh(d*x + c) + I) - ((4*(a^5 + a^3*b^2)*d*e*f - 4*I*(a^4*b + a^2*b^3)*d*e*f - 4*(a^5 + a^3*b^2)*c*f^2 + 4*I*(a^4*b + a^2*b^3)*c*f^2)*cosh(d*x + c)^4 + (16*(a^5 + a^3*b^2)*d*e*f - 16*I*(a^4*b + a^2*b^3)*d*e*f - 16*(a^5 + a^3*b^2)*c*f^2 + 16*I*(a^4*b + a^2*b^3)*c*f^2)*cosh(d*x + c)^3*sinh(d*x + c) + (24*(a^5 + a^3*b^2)*d*e*f - 24*I*(a^4*b + a^2*b^3)*d*e*f - 24*(a^5 + a^3*b^2)*c*f^2 + 24*I*(a^4*b + a^2*b^3)*c*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 + (16*(a^5 + a^3*b^2)*d*e*f - 16*I*(a^4*b + a^2*b^3)*d*e*f - 16*(a^5 + a^3*b^2)

*c*f^2 + 16*I*(a^4*b + a^2*b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (4*(
a^5 + a^3*b^2)*d*e*f - 4*I*(a^4*b + a^2*b^3)*d*e*f - 4*(a^5 + a^3*b^2)*c*f^
2 + 4*I*(a^4*b + a^2*b^3)*c*f^2)*sinh(d*x + c)^4 - 4*(a^5 + a^3*b^2)*d*e*f
+ 4*I*(a^4*b + a^2*b^3)*d*e*f + 4*(a^5 + a^3*b^2)*c*f^2 - 4*I*(a^4*b + a^2*
b^3)*c*f^2)*log(cosh(d*x + c) + sinh(d*x + c) - I) - 2*((a^4*b + 2*a^2*b^3
+ b^5)*d^2*e^2 - ((a^4*b + 2*a^2*b^3 + b^5)*d^2*e^2 - 2*(a^5 + 2*a^3*b^2 +
a*b^4 + (a^4*b + 2*a^2*b^3 + b^5)*c)*d*e*f + ((a^4*b + 2*a^2*b^3 + b^5)*c^2
+ 2*(a^5 + 2*a^3*b^2 + a*b^4)*c)*f^2)*cosh(d*x + c)^4 - 4*((a^4*b + 2*a^2*
b^3 + b^5)*d^2*e^2 - 2*(a^5 + 2*a^3*b^2 + a*b^4 + (a^4*b + 2*a^2*b^3 + b^5)
*c)*d*e*f + ((a^4*b + 2*a^2*b^3 + b^5)*c^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*c)
*f^2)*cosh(d*x + c)^3*sinh(d*x + c) - 6*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e^2
- 2*(a^5 + 2*a^3*b^2 + a*b^4 + (a^4*b + 2*a^2*b^3 + b^5)*c)*d*e*f + ((a^4*b
+ 2*a^2*b^3 + b^5)*c^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*c)*f^2)*cosh(d*x + c)
^2*sinh(d*x + c)^2 - 4*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e^2 - 2*(a^5 + 2*a^3*
b^2 + a*b^4 + (a^4*b + 2*a^2*b^3 + b^5)*c)*d*e*f + ((a^4*b + 2*a^2*b^3 + b^
5)*c^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*c)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3
- ((a^4*b + 2*a^2*b^3 + b^5)*d^2*e^2 - 2*(a^5 + 2*a^3*b^2 + a*b^4 + (a^4*b
+ 2*a^2*b^3 + b^5)*c)*d*e*f + ((a^4*b + 2*a^2*b^3 + b^5)*c^2 + 2*(a^5 + 2*a
^3*b^2 + a*b^4)*c)*f^2)*sinh(d*x + c)^4 - 2*(a^5 + 2*a^3*b^2 + a*b^4 + (a^4
*b + 2*a^2*b^3 + b^5)*c)*d*e*f + ((a^4*b + 2*a^2*b^3 + b^5)*c^2 + 2*(a^5 +
2*a^3*b^2 + a*b^4)*c)*f^2)*log(cosh(d*x + c) + sinh(d*x + c) - 1) + (4*(a^5
+ a^3*b^2)*d*f^2*x - 4*I*(a^4*b + a^2*b^3)*d*f^2*x - (4*(a^5 + a^3*b^2)*d*
f^2*x - 4*I*(a^4*b + a^2*b^3)*d*f^2*x + 4*(a^5 + a^3*b^2)*c*f^2 - 4*I*(a^4*
b + a^2*b^3)*c*f^2)*cosh(d*x + c)^4 - (16*(a^5 + a^3*b^2)*d*f^2*x - 16*I*(a
^4*b + a^2*b^3)*d*f^2*x + 16*(a^5 + a^3*b^2)*c*f^2 - 16*I*(a^4*b + a^2*b^3)
*c*f^2)*cosh(d*x + c)^3*sinh(d*x + c) - (24*(a^5 + a^3*b^2)*d*f^2*x - 24*I*
(a^4*b + a^2*b^3)*d*f^2*x + 24*(a^5 + a^3*b^2)*c*f^2 - 24*I*(a^4*b + a^2*b^
3)*c*f^2)*cosh(d*x + c)^2*sinh(d*x + c)^2 - (16*(a^5 + a^3*b^2)*d*f^2*x - 1
6*I*(a^4*b + a^2*b^3)*d*f^2*x + 16*(a^5 + a^3*b^2)*c*f^2 - 16*I*(a^4*b + a^
2*b^3)*c*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 - (4*(a^5 + a^3*b^2)*d*f^2*x -
4*I*(a^4*b + a^2*b^3)*d*f^2*x + 4*(a^5 + a^3*b^2)*c*f^2 - 4*I*(a^4*b + a^2*
b^3)*c*f^2)*sinh(d*x + c)^4 + 4*(a^5 + a^3*b^2)*c*f^2 - 4*I*(a^4*b + a^2*b^
3)*c*f^2)*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) + (4*(a^5 + a^3*b^2)*d
*f^2*x + 4*I*(a^4*b + a^2*b^3)*d*f^2*x - (4*(a^5 + a^3*b^2)*d*f^2*x + 4*I*(
a^4*b + a^2*b^3)*d*f^2*x + 4*(a^5 + a^3*b^2)*c*f^2 + 4*I*(a^4*b + a^2*b^3)*
c*f^2)*cosh(d*x + c)^4 - (16*(a^5 + a^3*b^2)*d*f^2*x + 16*I*(a^4*b + a^2*b^
3)*d*f^2*x + 16*(a^5 + a^3*b^2)*c*f^2 + 16*I*(a^4*b + a^2*b^3)*c*f^2)*cosh(
d*x + c)^3*sinh(d*x + c) - (24*(a^5 + a^3*b^2)*d*f^2*x + 24*I*(a^4*b + a^2*
b^3)*d*f^2*x + 24*(a^5 + a^3*b^2)*c*f^2 + 24*I*(a^4*b + a^2*b^3)*c*f^2)*cos
h(d*x + c)^2*sinh(d*x + c)^2 - (16*(a^5 + a^3*b^2)*d*f^2*x + 16*I*(a^4*b +
a^2*b^3)*d*f^2*x + 16*(a^5 + a^3*b^2)*c*f^2 + 16*I*(a^4*b + a^2*b^3)*c*f^2)
*cosh(d*x + c)*sinh(d*x + c)^3 - (4*(a^5 + a^3*b^2)*d*f^2*x + 4*I*(a^4*b +
a^2*b^3)*d*f^2*x + 4*(a^5 + a^3*b^2)*c*f^2 + 4*I*(a^4*b + a^2*b^3)*c*f^2)*s
inh(d*x + c)^4 + 4*(a^5 + a^3*b^2)*c*f^2 + 4*I*(a^4*b + a^2*b^3)*c*f^2)*log
(-I*cosh(d*x + c) - I*sinh(d*x + c) + 1) - 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2

```
*f^2*x^2 + 2*(a^4*b + 2*a^2*b^3 + b^5)*c*d*e*f - ((a^4*b + 2*a^2*b^3 + b^5)
*d^2*f^2*x^2 + 2*(a^4*b + 2*a^2*b^3 + b^5)*c*d*e*f - ((a^4*b + 2*a^2*b^3 +
b^5)*c^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*c)*f^2 + 2*((a^4*b + 2*a^2*b^3 + b^5
)*d^2*e*f - (a^5 + 2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^4 - 4*((a^4*b
 + 2*a^2*b^3 + b^5)*d^2*f^2*x^2 + 2*(a^4*b + 2*a^2*b^3 + b^5)*c*d*e*f - ((a
^4*b + 2*a^2*b^3 + b^5)*c^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*c)*f^2 + 2*((a^4*
b + 2*a^2*b^3 + b^5)*d^2*e*f - (a^5 + 2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x
 + c)^3*sinh(d*x + c) - 6*((a^4*b + 2*a^2*b^3 + b^5)*d^2*f^2*x^2 + 2*(a^4*b
 + 2*a^2*b^3 + b^5)*c*d*e*f - ((a^4*b + 2*a^2*b^3 + b^5)*c^2 + 2*(a^5 + 2*a
^3*b^2 + a*b^4)*c)*f^2 + 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e*f - (a^5 + 2*a^
3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*((a^4*b + 2*a^
2*b^3 + b^5)*d^2*f^2*x^2 + 2*(a^4*b + 2*a^2*b^3 + b^5)*c*d*e*f - ((a^4*b +
2*a^2*b^3 + b^5)*c^2 + 2*(a^5 + 2*a^3*b^2 + a*b^4)*c)*f^2 + 2*((a^4*b + 2*a
^2*b^3 + b^5)*d^2*e*f - (a^5 + 2*a^3*b^2 + a*b^4)*d*f^2)*x)*cosh(d*x + c)*s
inh(d*x + c)^3 - ((a^4*b + 2*a^2*b^3 + b^5)*d^2*f^2*x^2 + 2*(a^4*b + 2*a^2*
b^3 + b^5)*c*d*e*f - ((a^4*b + 2*a^2*b^3 + b^5)*c^2 + 2*(a^5 + 2*a^3*b^2 +
a*b^4)*c)*f^2 + 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e*f - (a^5 + 2*a^3*b^2 + a
*b^4)*d*f^2)*x)*sinh(d*x + c)^4 - ((a^4*b + 2*a^2*b^3 + b^5)*c^2 + 2*(a^5 +
 2*a^3*b^2 + a*b^4)*c)*f^2 + 2*((a^4*b + 2*a^2*b^3 + b^5)*d^2*e*f - (a^5 +
2*a^3*b^2 + a*b^4)*d*f^2)*x)*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 4*((
a^4*b + 2*a^2*b^3 + b^5)*f^2*cosh(d*x + c)^4 + 4*(a^4*b + 2*a^2*b^3 + b^5)*
f^2*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^4*b + 2*a^2*b^3 + b^5)*f^2*cosh(d*
x + c)^2*sinh(d*x + c)^2 + 4*(a^4*b + 2*a^2*b^3 + b^5)*f^2*cosh(d*x + c)*si
nh(d*x + c)^3 + (a^4*b + 2*a^2*b^3 + b^5)*f^2*sinh(d*x + c)^4 - (a^4*b + 2*
a^2*b^3 + b^5)*f^2)*polylog(3, cosh(d*x + c) + sinh(d*x + c)) + 4*((a^4*b +
 2*a^2*b^3 + b^5)*f^2*cosh(d*x + c)^4 + 4*(a^4*b + 2*a^2*b^3 + b^5)*f^2*cos
h(d*x + c)^3*sinh(d*x + c) + 6*(a^4*b + 2*a^2*b^3 + b^5)*f^2*cosh(d*x + c)^
2*sinh(d*x + c)^2 + 4*(a^4*b + 2*a^2*b^3 + b^5)*f^2*cosh(d*x + c)*sinh(d*x
+ c)^3 + (a^4*b + 2*a^2*b^3 + b^5)*f^2*sinh(d*x + c)^4 - (a^4*b + 2*a^2*b^3
 + b^5)*f^2)*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) - 4*((a^4*b + a^2*b
^3)*d^2*f^2*x^2 + 2*(a^4*b + a^2*b^3)*d^2*e*f*x + (a^4*b + a^2*b^3)*d^2*e^2
 - 4*((2*a^5 + 3*a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(2*a^5 + 3*a^3*b^2 + a*b^
4)*d^2*e*f*x + 2*(2*a^5 + 3*a^3*b^2 + a*b^4)*c*d*e*f - (2*a^5 + 3*a^3*b^2 +
 a*b^4)*c^2*f^2)*cosh(d*x + c)^3 - 3*((a^4*b + a^2*b^3)*d^2*f^2*x^2 + 2*(a^
4*b + a^2*b^3)*d^2*e*f*x + (a^4*b + a^2*b^3)*d^2*e^2)*cosh(d*x + c)^2 - 2*(
(a^3*b^2 + a*b^4)*d^2*f^2*x^2 + 2*(a^3*b^2 + a*b^4)*d^2*e*f*x + (a^3*b^2 +
a*b^4)*d^2*e^2)*cosh(d*x + c))*sinh(d*x + c))/((a^6 + 2*a^4*b^2 + a^2*b^4)*
d^3*cosh(d*x + c)^4 + 4*(a^6 + 2*a^4*b^2 + a^2*b^4)*d^3*cosh(d*x + c)^3*sin
h(d*x + c) + 6*(a^6 + 2*a^4*b^2 + a^2*b^4)*d^3*cosh(d*x + c)^2*sinh(d*x + c
)^2 + 4*(a^6 + 2*a^4*b^2 + a^2*b^4)*d^3*cosh(d*x + c)*sinh(d*x + c)^3 + (a^
6 + 2*a^4*b^2 + a^2*b^4)*d^3*sinh(d*x + c)^4 - (a^6 + 2*a^4*b^2 + a^2*b^4)*
d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="giac")
```

```
[Out] Timed out
```

maple [F] time = 3.94, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \operatorname{csch}(dx+c)^2 \operatorname{sech}(dx+c)^2}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="maxima")
```

```
[Out] -2*a*e*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2 +
b^2)*d^2)) + 4*b*f^2*integrate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d
*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 4*a*f^2*integrate(x/(a^2*d*e^(2*d*x
 + 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) + (b^4*log((b*e^(-d*x
- c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((a^4 +
 a^2*b^2)*sqrt(a^2 + b^2)*d) - 2*(a*b*e^(-d*x - c) + b^2*e^(-2*d*x - 2*c) -
 a*b*e^(-3*d*x - 3*c) + 2*a^2 + b^2)/((a^3 + a*b^2 - (a^3 + a*b^2)*e^(-4*d*
x - 4*c))*d) + b*log(e^(-d*x - c) + 1)/(a^2*d) - b*log(e^(-d*x - c) - 1)/(a
^2*d))*e^2 - 4*e*f*x/(a*d) + 4*b*e*f*arctan(e^(d*x + c))/((a^2 + b^2)*d^2)
+ 2*((2*a^2*f^2 + b^2*f^2)*x^2 + 2*(2*a^2*e*f + b^2*e*f)*x + (a*b*f^2*x^2*e
^(3*c) + 2*a*b*e*f*x*e^(3*c))*e^(3*d*x) + (b^2*f^2*x^2*e^(2*c) + 2*b^2*e*f*
x*e^(2*c))*e^(2*d*x) - (a*b*f^2*x^2*e^c + 2*a*b*e*f*x*e^c)*e^(d*x))/(a^3*d
+ a*b^2*d - (a^3*d*e^(4*c) + a*b^2*d*e^(4*c))*e^(4*d*x)) + 2*e*f*log(e^(d*x
 + c) + 1)/(a*d^2) + 2*e*f*log(e^(d*x + c) - 1)/(a*d^2) + (d^2*x^2*log(e^(d
*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*b*f^
2/(a^2*d^3) - (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2
*polylog(3, e^(d*x + c)))*b*f^2/(a^2*d^3) + 2*(b*d*e*f + a*f^2)*(d*x*log(e^
(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^2*d^3) - 2*(b*d*e*f - a*f^2)*(d*x*
log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^2*d^3) - 1/3*(b*d^3*f^2*x^3
```

```
+ 3*(b*d*e*f + a*f^2)*d^2*x^2)/(a^2*d^3) + 1/3*(b*d^3*f^2*x^3 + 3*(b*d*e*f
- a*f^2)*d^2*x^2)/(a^2*d^3) + integrate(-2*(b^4*f^2*x^2*e^c + 2*b^4*e*f*x*e
^c)*e^(d*x)/(a^4*b + a^2*b^3 - (a^4*b*e^(2*c) + a^2*b^3*e^(2*c))*e^(2*d*x)
- 2*(a^5*e^c + a^3*b^2*e^c)*e^(d*x)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^2}{\mathrm{cosh}\left(c+d\,x\right)^2\,\mathrm{sinh}\left(c+d\,x\right)^2\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cosh(c + d*x)^2*sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^2/(cosh(c + d*x)^2*sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)**2*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.470 $\int \frac{(e+fx)\text{csch}^2(c+dx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=499

$$-\frac{b^2 f\log(\cosh(c+dx))}{ad^2\left(a^2+b^2\right)}+\frac{b^2(e+fx)\tanh(c+dx)}{ad\left(a^2+b^2\right)}+\frac{b^4 f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2\left(a^2+b^2\right)^{3/2}}-\frac{b^4 f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)}{a^2d^2\left(a^2+b^2\right)^{3/2}}+\frac{b^4(e+fx)\log\left(\cdots\right.}{a^2d\left(a^2+\cdots\right.}$$

```
[Out] b*f*arctan(sinh(d*x+c))/a^2/d^2-b^3*f*arctan(sinh(d*x+c))/a^2/(a^2+b^2)/d^2
+2*b*f*x*arctanh(exp(d*x+c))/a^2/d-b*f*x*arctanh(cosh(d*x+c))/a^2/d+b*(f*x+
e)*arctanh(cosh(d*x+c))/a^2/d-2*(f*x+e)*coth(2*d*x+2*c)/a/d-b^2*f*ln(cosh(d
*x+c))/a/(a^2+b^2)/d^2+f*ln(sinh(2*d*x+2*c))/a/d^2+b^4*(f*x+e)*ln(1+b*exp(d
*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^(3/2)/d-b^4*(f*x+e)*ln(1+b*exp(d*x
+c)/(a+(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^(3/2)/d+b*f*polylog(2,-exp(d*x+c))/a
^2/d^2-b*f*polylog(2,exp(d*x+c))/a^2/d^2+b^4*f*polylog(2,-b*exp(d*x+c)/(a-(
a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^(3/2)/d^2-b^4*f*polylog(2,-b*exp(d*x+c)/(a+(
a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^(3/2)/d^2-b*(f*x+e)*sech(d*x+c)/a^2/d+b^3*(f
*x+e)*sech(d*x+c)/a^2/(a^2+b^2)/d+b^2*(f*x+e)*tanh(d*x+c)/a/(a^2+b^2)/d
```

Rubi [A] time = 0.98, antiderivative size = 499, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 20, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.588, Rules used = {5589, 5461, 4184, 3475, 2622, 321, 207, 5462, 6271, 12, 4182, 2279, 2391, 3770, 5573, 3322, 2264, 2190, 6742, 5451}

$$\frac{b^4 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^2d^2\left(a^2+b^2\right)^{3/2}}-\frac{b^4 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^2d^2\left(a^2+b^2\right)^{3/2}}+\frac{bf\text{PolyLog}\left(2,-e^{c+dx}\right)}{a^2d^2}-\frac{bf\text{PolyLog}\left(2,e^{c+dx}\right)}{a^2d^2}-\frac{b^3 f\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]^2*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*f*ArcTan[Sinh[c + d*x]])/(a^2*d^2) - (b^3*f*ArcTan[Sinh[c + d*x]])/(a^2*
(a^2 + b^2)*d^2) + (2*b*f*x*ArcTanh[E^(c + d*x)])/(a^2*d) - (b*f*x*ArcTanh[
Cosh[c + d*x]])/(a^2*d) + (b*(e + f*x)*ArcTanh[Cosh[c + d*x]])/(a^2*d) - (2
*(e + f*x)*Coth[2*c + 2*d*x])/(a*d) + (b^4*(e + f*x)*Log[1 + (b*E^(c + d*x)
)/(a - Sqrt[a^2 + b^2])])/(a^2*(a^2 + b^2)^(3/2)*d) - (b^4*(e + f*x)*Log[1
+ (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^2*(a^2 + b^2)^(3/2)*d) - (b^2*
f*Log[Cosh[c + d*x]])/(a*(a^2 + b^2)*d^2) + (f*Log[Sinh[2*c + 2*d*x]])/(a*d
^2) + (b*f*PolyLog[2, -E^(c + d*x)])/(a^2*d^2) - (b*f*PolyLog[2, E^(c + d*x
)])/(a^2*d^2) + (b^4*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))]
)/(a^2*(a^2 + b^2)^(3/2)*d^2) - (b^4*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sq
rt[a^2 + b^2]))])/(a^2*(a^2 + b^2)^(3/2)*d^2) - (b*(e + f*x)*Sech[c + d*x])
```

```
/(a^2*d) + (b^3*(e + f*x)*Sech[c + d*x])/(a^2*(a^2 + b^2)*d) + (b^2*(e + f*
x)*Tanh[c + d*x])/(a*(a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
```

```
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6271

```
Int[ArcTanh[u_], x_Symbol] :> Simp[x*ArcTanh[u], x] - Int[SimplifyIntegrand
[(x*D[u, x])/(1 - u^2), x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\text{csch}^2(c+dx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{csch}^2(c+dx)\text{sech}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\text{csch}(c+dx)\text{sech}^2(c}{a+b\sinh(c+dx)}}{a}$$

$$= \frac{4\int (e+fx)\text{csch}^2(2c+2dx)\,dx}{a} - \frac{b\int (e+fx)\text{csch}(c+dx)\text{sech}^2(c}{a^2}$$

$$= \frac{b(e+fx)\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{2(e+fx)\coth(2c+2dx)}{ad} - \frac{b(e}{}$$

$$= \frac{b(e+fx)\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{2(e+fx)\coth(2c+2dx)}{ad} + \frac{f\,\text{lo}}{}$$

$$= \frac{bf\tan^{-1}(\sinh(c+dx))}{a^2d^2} - \frac{bfx\tanh^{-1}(\cosh(c+dx))}{a^2d} + \frac{b(e+fx)\,\text{ta}}{}$$

$$= \frac{bf\tan^{-1}(\sinh(c+dx))}{a^2d^2} - \frac{bfx\tanh^{-1}(\cosh(c+dx))}{a^2d} + \frac{b(e+fx)\,\text{ta}}{}$$

$$= \frac{bf\tan^{-1}(\sinh(c+dx))}{a^2d^2} - \frac{b^3f\tan^{-1}(\sinh(c+dx))}{a^2\left(a^2+b^2\right)d^2} + \frac{2bfx\tanh^{-1}}{a^2d}$$

$$= \frac{bf\tan^{-1}(\sinh(c+dx))}{a^2d^2} - \frac{b^3f\tan^{-1}(\sinh(c+dx))}{a^2\left(a^2+b^2\right)d^2} + \frac{2bfx\tanh^{-1}}{a^2d}$$

$$= \frac{bf\tan^{-1}(\sinh(c+dx))}{a^2d^2} - \frac{b^3f\tan^{-1}(\sinh(c+dx))}{a^2\left(a^2+b^2\right)d^2} + \frac{2bfx\tanh^{-1}}{a^2d}$$

Mathematica [C] time = 8.99, size = 1862, normalized size = 3.73

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]^2*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] 4*(-1/8*(f*(c + d*x))/((a + I*b)*d^2) + ((I/8)*((2 - I)*a^3*d*f + (3*I)*a^2
*b*d*f - I*a*b^2*d*f + I*b^3*d*f + a^2*b*c*d*f + I*a*b^2*c*d*f)*(c + d*x))/
(a*(a + I*b)*(a^2 + b^2)*d^3) - ((I/16)*b*f*(c + d*x)^2)/((a^2 + b^2)*d^2)
+ ((I/4)*f*ArcTan[(a*Cosh[(c + d*x)/2] - b*Cosh[(c + d*x)/2] + a*Sinh[(c +
d*x)/2] + b*Sinh[(c + d*x)/2])/(a*Cosh[(c + d*x)/2] + b*Cosh[(c + d*x)/2] -
 a*Sinh[(c + d*x)/2] + b*Sinh[(c + d*x)/2])])/((a + I*b)*d^2) - (a*f*ArcTan
h[1 - (2*I)*Tanh[(c + d*x)/2]])/(2*(a^2 + b^2)*d^2) - (b^2*f*ArcTanh[1 - (2
*I)*Tanh[(c + d*x)/2]])/(2*a*(a^2 + b^2)*d^2) - (b*c*f*ArcTanh[1 - (2*I)*Ta
nh[(c + d*x)/2]])/(2*(a^2 + b^2)*d^2) + ((-(d*e*Cosh[(c + d*x)/2]) + c*f*Co
sh[(c + d*x)/2] - f*(c + d*x)*Cosh[(c + d*x)/2])*Csch[(c + d*x)/2])/(8*a*d^
2) + (a*f*Log[Cosh[(c + d*x)/2]])/(4*(a^2 + b^2)*d^2) + (b^2*f*Log[Cosh[(c
+ d*x)/2]])/(4*a*(a^2 + b^2)*d^2) - (b*c*f*Log[Cosh[(c + d*x)/2]])/(4*(a^2
+ b^2)*d^2) + (f*Log[Cosh[c + d*x]])/(8*(a + I*b)*d^2) + (a*f*((-I)*(c + d*
x) + 2*ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]] + Log[-1 + Cosh[c + d*x] + I*Si
nh[c + d*x]]))/(4*(a^2 + b^2)*d^2) + ((I/8)*b*f*((-I)*(c + d*x) + 2*ArcTanh
[1 - (2*I)*Tanh[(c + d*x)/2]] + Log[-1 + Cosh[c + d*x] + I*Sinh[c + d*x]]))
/((a^2 + b^2)*d^2) + (b^2*f*((-I)*(c + d*x) + 2*ArcTanh[1 - (2*I)*Tanh[(c +
 d*x)/2]] + Log[-1 + Cosh[c + d*x] + I*Sinh[c + d*x]]))/(8*a*(a^2 + b^2)*d^
2) + (b*c*f*((-I)*(c + d*x) + 2*ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]] + Log[
-1 + Cosh[c + d*x] + I*Sinh[c + d*x]]))/(8*(a^2 + b^2)*d^2) - (b*e*Log[Tanh
[(c + d*x)/2]])/(4*(a^2 + b^2)*d) - (b^3*e*Log[Tanh[(c + d*x)/2]])/(4*a^2*(
a^2 + b^2)*d) + (b^3*c*f*Log[Tanh[(c + d*x)/2]])/(4*a^2*(a^2 + b^2)*d^2) +
((I/2)*b*f*((-1/8*I)*(c + d*x)^2 - (I/2)*(c + d*x)*Log[1 + E^(-c - d*x)] +
(I/2)*PolyLog[2, -E^(-c - d*x)]))/((a^2 + b^2)*d^2) - (b*f*((-1/2*I)*(c + d
*x)^2 + (I/4)*(3*Pi*(c + d*x) + (1 - I)*(c + d*x)^2 + 2*(Pi - (2*I)*(c + d*
x))*Log[1 + I*E^(-c - d*x)] - 4*Pi*Log[1 + E^(c + d*x)] - 2*Pi*Log[-Cos[(Pi
 + (2*I)*(c + d*x))/4]] + 4*Pi*Log[Cosh[(c + d*x)/2]] + (4*I)*PolyLog[2, (-
I)*E^(-c - d*x)])))/(4*(a^2 + b^2)*d^2) + ((I/4)*b^3*f*(I*(c + d*x)*(Log[1
- E^(-c - d*x)] - Log[1 + E^(-c - d*x)]) + I*(PolyLog[2, -E^(-c - d*x)] - P
olyLog[2, E^(-c - d*x)])))/(a^2*(a^2 + b^2)*d^2) - ((I/4)*b*f*((c + d*x)^2/
4 + (-3*Pi*(c + d*x) - (1 - I)*(c + d*x)^2 - 2*(Pi - (2*I)*(c + d*x))*Log[1
 + I*E^(-c - d*x)] + 4*Pi*Log[1 + E^(c + d*x)] + 2*Pi*Log[-Cos[(Pi + (2*I)*
(c + d*x))/4]] - 4*Pi*Log[Cosh[(c + d*x)/2]] - (4*I)*PolyLog[2, (-I)*E^(-c
- d*x)])/4 - (I/2)*(-1/2*(c + d*x)^2 + 2*(c + d*x)*Log[1 - E^(c + d*x)] + 2
*PolyLog[2, E^(c + d*x)])))/((a^2 + b^2)*d^2) + (b^4*(-2*d*e*ArcTanh[(a + b
*Cosh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] + 2*c*f*ArcTanh[(a + b*C
osh[c + d*x] + b*Sinh[c + d*x])/Sqrt[a^2 + b^2]] + f*(c + d*x)*Log[1 + (b*(
Cosh[c + d*x] + Sinh[c + d*x]))/(a - Sqrt[a^2 + b^2])] - f*(c + d*x)*Log[1
+ (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2])] + f*PolyLog[2,
 (b*(Cosh[c + d*x] + Sinh[c + d*x]))/(-a + Sqrt[a^2 + b^2])] - f*PolyLog[2,
 -((b*(Cosh[c + d*x] + Sinh[c + d*x]))/(a + Sqrt[a^2 + b^2]))]))/(4*a^2*(a^
2 + b^2)^(3/2)*d^2) + (Sech[(c + d*x)/2]*(-(d*e*Sinh[(c + d*x)/2]) + c*f*Si
nh[(c + d*x)/2] - f*(c + d*x)*Sinh[(c + d*x)/2]))/(8*a*d^2) + (Sech[c + d*x
]*(-(b*d*e) + b*c*f - b*f*(c + d*x) - a*d*e*Sinh[c + d*x] + a*c*f*Sinh[c +
d*x] - a*f*(c + d*x)*Sinh[c + d*x]))/(4*(a^2 + b^2)*d^2))
```

fricas [B] time = 0.60, size = 4086, normalized size = 8.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -(2*((2*a^5 + 3*a^3*b^2 + a*b^4)*d*f*x + (a^5 + 2*a^3*b^2 + a*b^4)*c*f)*cos
h(d*x + c)^4 + 2*((2*a^5 + 3*a^3*b^2 + a*b^4)*d*f*x + (a^5 + 2*a^3*b^2 + a*
b^4)*c*f)*sinh(d*x + c)^4 + 2*((a^4*b + a^2*b^3)*d*f*x + (a^4*b + a^2*b^3)*
d*e)*cosh(d*x + c)^3 + 2*((a^4*b + a^2*b^3)*d*f*x + (a^4*b + a^2*b^3)*d*e +
 4*((2*a^5 + 3*a^3*b^2 + a*b^4)*d*f*x + (a^5 + 2*a^3*b^2 + a*b^4)*c*f)*cosh
(d*x + c))*sinh(d*x + c)^3 + 2*(2*a^5 + 3*a^3*b^2 + a*b^4)*d*e - 2*(a^5 + 2
*a^3*b^2 + a*b^4)*c*f + 2*((a^3*b^2 + a*b^4)*d*f*x + (a^3*b^2 + a*b^4)*d*e)
*cosh(d*x + c)^2 + 2*((a^3*b^2 + a*b^4)*d*f*x + (a^3*b^2 + a*b^4)*d*e + 6*(
(2*a^5 + 3*a^3*b^2 + a*b^4)*d*f*x + (a^5 + 2*a^3*b^2 + a*b^4)*c*f)*cosh(d*x
 + c)^2 + 3*((a^4*b + a^2*b^3)*d*f*x + (a^4*b + a^2*b^3)*d*e)*cosh(d*x + c)
)*sinh(d*x + c)^2 - (b^5*f*cosh(d*x + c)^4 + 4*b^5*f*cosh(d*x + c)^3*sinh(d
*x + c) + 6*b^5*f*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*b^5*f*cosh(d*x + c)*s
inh(d*x + c)^3 + b^5*f*sinh(d*x + c)^4 - b^5*f)*sqrt((a^2 + b^2)/b^2)*dilog
((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*s
qrt((a^2 + b^2)/b^2) - b)/b + 1) + (b^5*f*cosh(d*x + c)^4 + 4*b^5*f*cosh(d*
x + c)^3*sinh(d*x + c) + 6*b^5*f*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*b^5*f*
cosh(d*x + c)*sinh(d*x + c)^3 + b^5*f*sinh(d*x + c)^4 - b^5*f)*sqrt((a^2 +
b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*s
inh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^5*d*e - b^5*c*f - (b^5
*d*e - b^5*c*f)*cosh(d*x + c)^4 - 4*(b^5*d*e - b^5*c*f)*cosh(d*x + c)^3*sin
h(d*x + c) - 6*(b^5*d*e - b^5*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*(b^5
*d*e - b^5*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 - (b^5*d*e - b^5*c*f)*sinh(d*
x + c)^4)*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) +
 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + (b^5*d*e - b^5*c*f - (b^5*d*e - b^5*c*f
)*cosh(d*x + c)^4 - 4*(b^5*d*e - b^5*c*f)*cosh(d*x + c)^3*sinh(d*x + c) - 6
*(b^5*d*e - b^5*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*(b^5*d*e - b^5*c*f
)*cosh(d*x + c)*sinh(d*x + c)^3 - (b^5*d*e - b^5*c*f)*sinh(d*x + c)^4)*sqrt
((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2
 + b^2)/b^2) + 2*a) + (b^5*d*f*x + b^5*c*f - (b^5*d*f*x + b^5*c*f)*cosh(d*x
 + c)^4 - 4*(b^5*d*f*x + b^5*c*f)*cosh(d*x + c)^3*sinh(d*x + c) - 6*(b^5*d*
f*x + b^5*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*(b^5*d*f*x + b^5*c*f)*co
sh(d*x + c)*sinh(d*x + c)^3 - (b^5*d*f*x + b^5*c*f)*sinh(d*x + c)^4)*sqrt((
a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b^5*d*f*x + b^5*c*f - (
b^5*d*f*x + b^5*c*f)*cosh(d*x + c)^4 - 4*(b^5*d*f*x + b^5*c*f)*cosh(d*x + c
)^3*sinh(d*x + c) - 6*(b^5*d*f*x + b^5*c*f)*cosh(d*x + c)^2*sinh(d*x + c)^2
```

- 4*(b^5*d*f*x + b^5*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 - (b^5*d*f*x + b^5
*c*f)*sinh(d*x + c)^4)*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh
(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/
b) - 2*((a^4*b + a^2*b^3)*f*cosh(d*x + c)^4 + 4*(a^4*b + a^2*b^3)*f*cosh(d*
x + c)^3*sinh(d*x + c) + 6*(a^4*b + a^2*b^3)*f*cosh(d*x + c)^2*sinh(d*x + c
)^2 + 4*(a^4*b + a^2*b^3)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4*b + a^2*b^
3)*f*sinh(d*x + c)^4 - (a^4*b + a^2*b^3)*f)*arctan(cosh(d*x + c) + sinh(d*x
 + c)) - 2*((a^4*b + a^2*b^3)*d*f*x + (a^4*b + a^2*b^3)*d*e)*cosh(d*x + c)
+ ((a^4*b + 2*a^2*b^3 + b^5)*f*cosh(d*x + c)^4 + 4*(a^4*b + 2*a^2*b^3 + b^5
)*f*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^4*b + 2*a^2*b^3 + b^5)*f*cosh(d*x
+ c)^2*sinh(d*x + c)^2 + 4*(a^4*b + 2*a^2*b^3 + b^5)*f*cosh(d*x + c)*sinh(d
*x + c)^3 + (a^4*b + 2*a^2*b^3 + b^5)*f*sinh(d*x + c)^4 - (a^4*b + 2*a^2*b^
3 + b^5)*f)*dilog(cosh(d*x + c) + sinh(d*x + c)) - ((a^4*b + 2*a^2*b^3 + b^
5)*f*cosh(d*x + c)^4 + 4*(a^4*b + 2*a^2*b^3 + b^5)*f*cosh(d*x + c)^3*sinh(d
x + c) + 6(a^4*b + 2*a^2*b^3 + b^5)*f*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4
*(a^4*b + 2*a^2*b^3 + b^5)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4*b + 2*a^2
*b^3 + b^5)*f*sinh(d*x + c)^4 - (a^4*b + 2*a^2*b^3 + b^5)*f)*dilog(-cosh(d*
x + c) - sinh(d*x + c)) - ((a^5 + a^3*b^2)*f*cosh(d*x + c)^4 + 4*(a^5 + a^3
*b^2)*f*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^5 + a^3*b^2)*f*cosh(d*x + c)^2
*sinh(d*x + c)^2 + 4*(a^5 + a^3*b^2)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^5
 + a^3*b^2)*f*sinh(d*x + c)^4 - (a^5 + a^3*b^2)*f)*log(2*cosh(d*x + c)/(cos
h(d*x + c) - sinh(d*x + c))) - (((a^4*b + 2*a^2*b^3 + b^5)*d*f*x + (a^4*b +
 2*a^2*b^3 + b^5)*d*e + (a^5 + 2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c)^4 + 4*((
a^4*b + 2*a^2*b^3 + b^5)*d*f*x + (a^4*b + 2*a^2*b^3 + b^5)*d*e + (a^5 + 2*a
^3*b^2 + a*b^4)*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4*b + 2*a^2*b^3 +
b^5)*d*f*x + (a^4*b + 2*a^2*b^3 + b^5)*d*e + (a^5 + 2*a^3*b^2 + a*b^4)*f)*c
osh(d*x + c)^2*sinh(d*x + c)^2 + 4*((a^4*b + 2*a^2*b^3 + b^5)*d*f*x + (a^4*
b + 2*a^2*b^3 + b^5)*d*e + (a^5 + 2*a^3*b^2 + a*b^4)*f)*cosh(d*x + c)*sinh(
d*x + c)^3 + ((a^4*b + 2*a^2*b^3 + b^5)*d*f*x + (a^4*b + 2*a^2*b^3 + b^5)*d
*e + (a^5 + 2*a^3*b^2 + a*b^4)*f)*sinh(d*x + c)^4 - (a^4*b + 2*a^2*b^3 + b^
5)*d*f*x - (a^4*b + 2*a^2*b^3 + b^5)*d*e - (a^5 + 2*a^3*b^2 + a*b^4)*f)*log
(cosh(d*x + c) + sinh(d*x + c) + 1) + (((a^4*b + 2*a^2*b^3 + b^5)*d*e - (a^
5 + 2*a^3*b^2 + a*b^4 + (a^4*b + 2*a^2*b^3 + b^5)*c)*f)*cosh(d*x + c)^4 + 4
*((a^4*b + 2*a^2*b^3 + b^5)*d*e - (a^5 + 2*a^3*b^2 + a*b^4 + (a^4*b + 2*a^2
*b^3 + b^5)*c)*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4*b + 2*a^2*b^3 + b
^5)*d*e - (a^5 + 2*a^3*b^2 + a*b^4 + (a^4*b + 2*a^2*b^3 + b^5)*c)*f)*cosh(d
*x + c)^2*sinh(d*x + c)^2 + 4*((a^4*b + 2*a^2*b^3 + b^5)*d*e - (a^5 + 2*a^3
*b^2 + a*b^4 + (a^4*b + 2*a^2*b^3 + b^5)*c)*f)*cosh(d*x + c)*sinh(d*x + c)^
3 + ((a^4*b + 2*a^2*b^3 + b^5)*d*e - (a^5 + 2*a^3*b^2 + a*b^4 + (a^4*b + 2*
a^2*b^3 + b^5)*c)*f)*sinh(d*x + c)^4 - (a^4*b + 2*a^2*b^3 + b^5)*d*e + (a^5
 + 2*a^3*b^2 + a*b^4 + (a^4*b + 2*a^2*b^3 + b^5)*c)*f)*log(cosh(d*x + c) +
sinh(d*x + c) - 1) + (((a^4*b + 2*a^2*b^3 + b^5)*d*f*x + (a^4*b + 2*a^2*b^3
 + b^5)*c*f)*cosh(d*x + c)^4 + 4*((a^4*b + 2*a^2*b^3 + b^5)*d*f*x + (a^4*b
+ 2*a^2*b^3 + b^5)*c*f)*cosh(d*x + c)^3*sinh(d*x + c) + 6*((a^4*b + 2*a^2*b
^3 + b^5)*d*f*x + (a^4*b + 2*a^2*b^3 + b^5)*c*f)*cosh(d*x + c)^2*sinh(d*x +

```
 c)^2 + 4*((a^4*b + 2*a^2*b^3 + b^5)*d*f*x + (a^4*b + 2*a^2*b^3 + b^5)*c*f)
*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4*b + 2*a^2*b^3 + b^5)*d*f*x + (a^4*b
+ 2*a^2*b^3 + b^5)*c*f)*sinh(d*x + c)^4 - (a^4*b + 2*a^2*b^3 + b^5)*d*f*x -
 (a^4*b + 2*a^2*b^3 + b^5)*c*f)*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 2
*((a^4*b + a^2*b^3)*d*f*x - 4*((2*a^5 + 3*a^3*b^2 + a*b^4)*d*f*x + (a^5 + 2
*a^3*b^2 + a*b^4)*c*f)*cosh(d*x + c)^3 + (a^4*b + a^2*b^3)*d*e - 3*((a^4*b
+ a^2*b^3)*d*f*x + (a^4*b + a^2*b^3)*d*e)*cosh(d*x + c)^2 - 2*((a^3*b^2 + a
*b^4)*d*f*x + (a^3*b^2 + a*b^4)*d*e)*cosh(d*x + c))*sinh(d*x + c))/((a^6 +
2*a^4*b^2 + a^2*b^4)*d^2*cosh(d*x + c)^4 + 4*(a^6 + 2*a^4*b^2 + a^2*b^4)*d^
2*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^6 + 2*a^4*b^2 + a^2*b^4)*d^2*cosh(d*
x + c)^2*sinh(d*x + c)^2 + 4*(a^6 + 2*a^4*b^2 + a^2*b^4)*d^2*cosh(d*x + c)*
sinh(d*x + c)^3 + (a^6 + 2*a^4*b^2 + a^2*b^4)*d^2*sinh(d*x + c)^4 - (a^6 +
2*a^4*b^2 + a^2*b^4)*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.36, size = 1771, normalized size = 3.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/(a^2+b^2)/d^2/a^2*b^3*f*dilog(exp(d*x+c)+1)+1/(a^2+b^2)/d^2/a^2*b^3*f*dil
og(exp(d*x+c))+4/(a^2+b^2)/d^2*a^3*f/(4*a^2+4*b^2)*ln(1+exp(2*d*x+2*c))+1/(
a^2+b^2)/d^2/a*b^2*f*ln(exp(d*x+c)-1)-2/(a^2+b^2)/d^2/a*b^2*f*ln(exp(d*x+c)
)+1/(a^2+b^2)/d^2/a*b^2*f*ln(exp(d*x+c)+1)+1/(a^2+b^2)/d/a^2*b^3*e*ln(exp(d
*x+c)+1)-1/(a^2+b^2)/d/a^2*b^3*e*ln(exp(d*x+c)-1)+8/(a^2+b^2)/d^2*b^3*f/(4*
a^2+4*b^2)*arctan(exp(d*x+c))+1/(a^2+b^2)^(5/2)/d^2*b^4*f*dilog((-b*exp(d*x
+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/(a^2+b^2)^(5/2)/d^2*b^4*f*di
log((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/(a^2+b^2)/d^2*b
*f*c*ln(exp(d*x+c)-1)+1/(a^2+b^2)/d^2/a^2*b^3*f*c*ln(exp(d*x+c)-1)+8/(a^2+b
^2)/d^2*a^2*b*f/(4*a^2+4*b^2)*arctan(exp(d*x+c))-1/d^2/(a^2+b^2)^(5/2)*a^2*
b^2*f*c*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d/(a^2+b^2)^(3/
2)*b^2*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/(a^2+b^2)/d*ln
(exp(d*x+c)+1)*b*f*x-4/(a^2+b^2)/d^2*a*f*ln(exp(d*x+c))-2*(f*x+e)*(a*b*exp(
```

```
3*d*x+3*c)+b^2*exp(2*d*x+2*c)-a*b*exp(d*x+c)+2*a^2+b^2)/d/(a^2+b^2)/(1+exp(
2*d*x+2*c))/a/(exp(2*d*x+2*c)-1)+1/d^2/(a^2+b^2)^(3/2)*b^2*f*c*arctanh(1/2*
(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d/(a^2+b^2)^(5/2)*a^2*b^2*e*arctanh
(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/(a^2+b^2)^(3/2)/d/a^2*b^4*e*ar
ctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/(a^2+b^2)^(5/2)/d/a^2*b^6
*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+4/(a^2+b^2)/d^2*a*b^2*
f/(4*a^2+4*b^2)*ln(1+exp(2*d*x+2*c))+1/(a^2+b^2)^(5/2)/d*b^4*f*ln((-b*exp(d
*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/(a^2+b^2)^(5/2)/d*b^4*f*
ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/(a^2+b^2)^(5/2
)/d^2*b^4*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/(a
^2+b^2)^(5/2)/d^2*b^4*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^
(1/2)))*c+1/(a^2+b^2)^(5/2)/d^2/a^2*b^6*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1
/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/(a^2+b^2)^(5/2)/d^2/a^2*b^6*f*dilog((b*exp(d
*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))+1/(a^2+b^2)/d/a^2*b^3*f*ln(ex
p(d*x+c)+1)*x+1/(a^2+b^2)^(5/2)/d^2/a^2*b^6*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(
1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/(a^2+b^2)^(5/2)/d^2/a^2*b^6*f*ln((b*exp(d
*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/(a^2+b^2)^(5/2)/d/a^2*b^6
*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/(a^2+b^2)
^(5/2)/d/a^2*b^6*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))
*x+1/(a^2+b^2)^(5/2)/d^2/a^2*b^6*f*c*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+
b^2)^(1/2))+1/(a^2+b^2)^(3/2)/d^2/a^2*b^4*f*c*arctanh(1/2*(2*b*exp(d*x+c)+2
*a)/(a^2+b^2)^(1/2))+1/(a^2+b^2)/d^2*b*f*dilog(exp(d*x+c)+1)+1/(a^2+b^2)/d^
2*b*f*dilog(exp(d*x+c))+1/(a^2+b^2)/d*b*e*ln(exp(d*x+c)+1)-1/(a^2+b^2)/d*b*
e*ln(exp(d*x+c)-1)+1/(a^2+b^2)/d^2*a*f*ln(exp(d*x+c)+1)+1/(a^2+b^2)/d^2*a*f
*ln(exp(d*x+c)-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(\frac{b^4\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\left(a^4+a^2b^2\right)\sqrt{a^2+b^2}\,d}-\frac{2\left(abe^{(-dx-c)}+b^2e^{(-2\,dx-2\,c)}-abe^{(-3\,dx-3\,c)}+2\,a^2+b^2\right)}{\left(a^3+ab^2-\left(a^3+ab^2\right)e^{(-4\,dx-4\,c)}\right)d}+\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^2d}-\frac{b\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] (b^4*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(
a^2 + b^2)))/((a^4 + a^2*b^2)*sqrt(a^2 + b^2)*d) - 2*(a*b*e^(-d*x - c) + b^
2*e^(-2*d*x - 2*c) - a*b*e^(-3*d*x - 3*c) + 2*a^2 + b^2)/((a^3 + a*b^2 - (a
^3 + a*b^2)*e^(-4*d*x - 4*c))*d) + b*log(e^(-d*x - c) + 1)/(a^2*d) - b*log(
e^(-d*x - c) - 1)/(a^2*d))*e + (16*b^4*integrate(-1/8*x*e^(d*x + c)/(a^4*b
+ a^2*b^3 - (a^4*b*e^(2*c) + a^2*b^3*e^(2*c))*e^(2*d*x) - 2*(a^5*e^c + a^3*
b^2*e^c)*e^(d*x)), x) - 16*b*d*integrate(1/16*x/(a^2*d*e^(d*x + c) + a^2*d)
```

```
, x) - 16*b*d*integrate(1/16*x/(a^2*d*e^(d*x + c) - a^2*d), x) - a*((d*x +
c)/(a^2*d^2) - log(e^(d*x + c) + 1)/(a^2*d^2)) - a*((d*x + c)/(a^2*d^2) - l
og(e^(d*x + c) - 1)/(a^2*d^2)) + 2*(a*b*x*e^(3*d*x + 3*c) + b^2*x*e^(2*d*x
+ 2*c) - a*b*x*e^(d*x + c) + (2*a^2 + b^2)*x)/(a^3*d + a*b^2*d - (a^3*d*e^(
4*c) + a*b^2*d*e^(4*c))*e^(4*d*x)) - 2*a*x/((a^2 + b^2)*d) + 2*b*arctan(e^(
d*x + c))/((a^2 + b^2)*d^2) + a*log(e^(2*d*x + 2*c) + 1)/((a^2 + b^2)*d^2))
*f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{{\mathrm{cosh}\left(c+d\,x\right)}^2\,{\mathrm{sinh}\left(c+d\,x\right)}^2\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)^2*sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)/(cosh(c + d*x)^2*sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)**2*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.471 $\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=144

$$\frac{b^2\operatorname{sech}(c+dx)(a\sinh(c+dx)+b)}{a^2d\left(a^2+b^2\right)}-\frac{2b^4\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^2d\left(a^2+b^2\right)^{3/2}}-\frac{b\operatorname{sech}(c+dx)}{a^2d}+\frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d}-\frac{\tanh}{}$$

```
[Out] b*arctanh(cosh(d*x+c))/a^2/d-2*b^4*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b
^2)^(1/2))/a^2/(a^2+b^2)^(3/2)/d-coth(d*x+c)/a/d-b*sech(d*x+c)/a^2/d+b^2*se
ch(d*x+c)*(b+a*sinh(d*x+c))/a^2/(a^2+b^2)/d-tanh(d*x+c)/a/d
```

Rubi [A] time = 0.31, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.379, Rules used = {2898, 2622, 321, 207, 2620, 14, 2696, 12, 2660, 618, 204}

$$-\frac{2b^4\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^2d\left(a^2+b^2\right)^{3/2}}+\frac{b^2\operatorname{sech}(c+dx)(a\sinh(c+dx)+b)}{a^2d\left(a^2+b^2\right)}-\frac{b\operatorname{sech}(c+dx)}{a^2d}+\frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d}-\frac{\tan}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Csch[c + d*x]^2*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*ArcTanh[Cosh[c + d*x]])/(a^2*d) - (2*b^4*ArcTanh[(b - a*Tanh[(c + d*x)/2
])/Sqrt[a^2 + b^2]])/(a^2*(a^2 + b^2)^(3/2)*d) - Coth[c + d*x]/(a*d) - (b*S
ech[c + d*x])/(a^2*d) + (b^2*Sech[c + d*x]*(b + a*Sinh[c + d*x]))/(a^2*(a^2
 + b^2)*d) - Tanh[c + d*x]/(a*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2696

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_), x_Symbol] :> Simp[((g*Cos[e + f*x])^(p + 1)*(a + b*Sin[e + f*x])
^(m + 1)*(b - a*Sin[e + f*x]))/(f*g*(a^2 - b^2)*(p + 1)), x] + Dist[1/(g^2*
(a^2 - b^2)*(p + 1)), Int[(g*Cos[e + f*x])^(p + 2)*(a + b*Sin[e + f*x])^m*(
a^2*(p + 2) - b^2*(m + p + 2) + a*b*(m + p + 3)*Sin[e + f*x]), x], x] /; Fr
eeQ[{a, b, e, f, g, m}, x] && NeQ[a^2 - b^2, 0] && LtQ[p, -1] && IntegersQ[
2*m, 2*p]
```

Rule 2898

```
Int[((cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*sin[(e_.) + (f_.)*(x_)]^(n_))/((a
_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Symbol] :> Int[ExpandTrig[(g*cos[e +
 f*x])^p, sin[e + f*x]^n/(a + b*sin[e + f*x]), x], x] /; FreeQ[{a, b, e, f,
 g, p}, x] && NeQ[a^2 - b^2, 0] && IntegerQ[n] && (LtQ[n, 0] || IGtQ[p + 1/
2, 0])
```

Rubi steps

$$\int \frac{\text{csch}^2(c+dx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = -\int \left(\frac{b\text{csch}(c+dx)\text{sech}^2(c+dx)}{a^2} - \frac{\text{csch}^2(c+dx)\text{sech}^2(c+dx)}{a} - \frac{b^2\text{se}}{a^2(a+}\right.$$

$$= \frac{\int \text{csch}^2(c+dx)\text{sech}^2(c+dx)\,dx}{a} - \frac{b\int \text{csch}(c+dx)\text{sech}^2(c+dx)\,dx}{a^2} + \frac{b^2}{}$$

$$= \frac{b^2\text{sech}(c+dx)(b+a\sinh(c+dx))}{a^2\left(a^2+b^2\right)d} + \frac{b^2\int \frac{b^2}{a+b\sinh(c+dx)}\,dx}{a^2\left(a^2+b^2\right)} + \frac{i\,\text{Subst}\left(\int \frac{1+}{x}\right.}{}$$

$$= -\frac{b\text{sech}(c+dx)}{a^2d} + \frac{b^2\text{sech}(c+dx)(b+a\sinh(c+dx))}{a^2\left(a^2+b^2\right)d} + \frac{b^4\int \frac{1}{a+b\sinh(c+dx)}}{a^2\left(a^2+b^2\right)}$$

$$= \frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{\coth(c+dx)}{ad} - \frac{b\text{sech}(c+dx)}{a^2d} + \frac{b^2\text{sech}(c+dx)}{a^2\left(a\right.}$$

$$= \frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{\coth(c+dx)}{ad} - \frac{b\text{sech}(c+dx)}{a^2d} + \frac{b^2\text{sech}(c+dx)}{a^2\left(a\right.}$$

$$= \frac{b\tanh^{-1}(\cosh(c+dx))}{a^2d} - \frac{2b^4\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^2\left(a^2+b^2\right)^{3/2}d} - \frac{\coth(c+dx)}{ad} - $$

Mathematica [A] time = 2.57, size = 135, normalized size = 0.94

$$-\frac{\frac{2\text{sech}(c+dx)(a\sinh(c+dx)+b)}{a^2+b^2} + \frac{4b^4\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{a^2\left(-a^2-b^2\right)^{3/2}} + \frac{2b\log\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)}{a^2} + \frac{\tanh\left(\frac{1}{2}(c+dx)\right)}{a} + \frac{\coth\left(\frac{1}{2}(c+dx)\right)}{a}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Csch[c + d*x]^2*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*((4*b^4*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/(a^2*(-a^2
 - b^2)^(3/2)) + Coth[(c + d*x)/2]/a + (2*b*Log[Tanh[(c + d*x)/2]])/a^2 + (
2*Sech[c + d*x]*(b + a*Sinh[c + d*x]))/(a^2 + b^2) + Tanh[(c + d*x)/2]/a)/d
```

fricas [B] time = 0.61, size = 1040, normalized size = 7.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="frica
s")
```

```
[Out] -(4*a^5 + 6*a^3*b^2 + 2*a*b^4 + 2*(a^4*b + a^2*b^3)*cosh(d*x + c)^3 + 2*(a^
4*b + a^2*b^3)*sinh(d*x + c)^3 + 2*(a^3*b^2 + a*b^4)*cosh(d*x + c)^2 + 2*(a
^3*b^2 + a*b^4 + 3*(a^4*b + a^2*b^3)*cosh(d*x + c))*sinh(d*x + c)^2 - (b^4*
cosh(d*x + c)^4 + 4*b^4*cosh(d*x + c)^3*sinh(d*x + c) + 6*b^4*cosh(d*x + c)
^2*sinh(d*x + c)^2 + 4*b^4*cosh(d*x + c)*sinh(d*x + c)^3 + b^4*sinh(d*x + c
)^4 - b^4)*sqrt(a^2 + b^2)*log((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x + c)^2 +
 2*a*b*cosh(d*x + c) + 2*a^2 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x +
 c) - 2*sqrt(a^2 + b^2)*(b*cosh(d*x + c) + b*sinh(d*x + c) + a))/(b*cosh(d*
x + c)^2 + b*sinh(d*x + c)^2 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c) + a)*
sinh(d*x + c) - b)) - 2*(a^4*b + a^2*b^3)*cosh(d*x + c) + (a^4*b + 2*a^2*b^
3 + b^5 - (a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)^4 - 4*(a^4*b + 2*a^2*b^3
+ b^5)*cosh(d*x + c)^3*sinh(d*x + c) - 6*(a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x
 + c)^2*sinh(d*x + c)^2 - 4*(a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)*sinh(d*
x + c)^3 - (a^4*b + 2*a^2*b^3 + b^5)*sinh(d*x + c)^4)*log(cosh(d*x + c) + s
inh(d*x + c) + 1) - (a^4*b + 2*a^2*b^3 + b^5 - (a^4*b + 2*a^2*b^3 + b^5)*co
sh(d*x + c)^4 - 4*(a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)^3*sinh(d*x + c) -
 6*(a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)^2*sinh(d*x + c)^2 - 4*(a^4*b + 2
*a^2*b^3 + b^5)*cosh(d*x + c)*sinh(d*x + c)^3 - (a^4*b + 2*a^2*b^3 + b^5)*s
inh(d*x + c)^4)*log(cosh(d*x + c) + sinh(d*x + c) - 1) - 2*(a^4*b + a^2*b^3
 - 3*(a^4*b + a^2*b^3)*cosh(d*x + c)^2 - 2*(a^3*b^2 + a*b^4)*cosh(d*x + c))
*sinh(d*x + c))/((a^6 + 2*a^4*b^2 + a^2*b^4)*d*cosh(d*x + c)^4 + 4*(a^6 + 2
*a^4*b^2 + a^2*b^4)*d*cosh(d*x + c)^3*sinh(d*x + c) + 6*(a^6 + 2*a^4*b^2 +
a^2*b^4)*d*cosh(d*x + c)^2*sinh(d*x + c)^2 + 4*(a^6 + 2*a^4*b^2 + a^2*b^4)*
d*cosh(d*x + c)*sinh(d*x + c)^3 + (a^6 + 2*a^4*b^2 + a^2*b^4)*d*sinh(d*x +
c)^4 - (a^6 + 2*a^4*b^2 + a^2*b^4)*d)
```

giac [A] time = 0.18, size = 185, normalized size = 1.28

$$\frac{\frac{b^4 \log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\,\sqrt{a^2+b^2}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\,\sqrt{a^2+b^2}\right|}\right)}{\left(a^4+a^2b^2\right)\sqrt{a^2+b^2}} + \frac{b\log\left(e^{(dx+c)}+1\right)}{a^2} - \frac{b\log\left(\left|e^{(dx+c)}-1\right|\right)}{a^2} - \frac{2\left(abe^{(3\,dx+3\,c)}+b^2e^{(2\,dx+2\,c)}-abe^{(dx+c)}+2\,a^2+b^2\right)}{\left(a^3+ab^2\right)\left(e^{(4\,dx+4\,c)}-1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac"
)
```

```
[Out] (b^4*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d*x + c)
 + 2*a + 2*sqrt(a^2 + b^2)))/((a^4 + a^2*b^2)*sqrt(a^2 + b^2)) + b*log(e^(d
*x + c) + 1)/a^2 - b*log(abs(e^(d*x + c) - 1))/a^2 - 2*(a*b*e^(3*d*x + 3*c)
```

```
 + b^2*e^(2*d*x + 2*c) - a*b*e^(d*x + c) + 2*a^2 + b^2)/((a^3 + a*b^2)*(e^(
4*d*x + 4*c) - 1)))/d
```

maple [A] time = 0.00, size = 174, normalized size = 1.21

$$-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da}+\frac{2b^4\operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{d\,a^2\left(a^2+b^2\right)^{\frac{3}{2}}}-\frac{1}{2da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{b\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,a^2}-\frac{2a\tanh\left(\frac{dx}{2}\right.}{d\left(a^2+b^2\right)\left(\tanh^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/2/d/a*tanh(1/2*d*x+1/2*c)+2/d/a^2*b^4/(a^2+b^2)^(3/2)*arctanh(1/2*(2*a*t
anh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))-1/2/d/a/tanh(1/2*d*x+1/2*c)-1/d/a^
2*b*ln(tanh(1/2*d*x+1/2*c))-2/d/(a^2+b^2)/(tanh(1/2*d*x+1/2*c)^2+1)*a*tanh(
1/2*d*x+1/2*c)-2/d/(a^2+b^2)/(tanh(1/2*d*x+1/2*c)^2+1)*b
```

maxima [A] time = 0.41, size = 208, normalized size = 1.44

$$\frac{b^4\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\left(a^4+a^2b^2\right)\sqrt{a^2+b^2}\,d}-\frac{2\left(abe^{(-dx-c)}+b^2e^{(-2\,dx-2\,c)}-abe^{(-3\,dx-3\,c)}+2\,a^2+b^2\right)}{\left(a^3+ab^2-\left(a^3+ab^2\right)e^{(-4\,dx-4\,c)}\right)d}+\frac{b\log\left(e^{(-dx-c)}+1\right)}{a^2d}-\frac{b\log\left(e^{\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxim
a")
```

```
[Out] b^4*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a
^2 + b^2)))/((a^4 + a^2*b^2)*sqrt(a^2 + b^2)*d) - 2*(a*b*e^(-d*x - c) + b^2
*e^(-2*d*x - 2*c) - a*b*e^(-3*d*x - 3*c) + 2*a^2 + b^2)/((a^3 + a*b^2 - (a^
3 + a*b^2)*e^(-4*d*x - 4*c))*d) + b*log(e^(-d*x - c) + 1)/(a^2*d) - b*log(e
^(-d*x - c) - 1)/(a^2*d)
```

mupad [B] time = 5.23, size = 768, normalized size = 5.33

$$\frac{b^4\,\ln\left(\frac{64\,b^8\,\sqrt{{\left(a^2+b^2\right)}^3}-96\,a\,b^{10}-384\,a^3\,b^8-512\,a^5\,b^6-288\,a^7\,b^4-64\,a^9\,b^2+288\,a^2\,b^9\,\mathrm{e}^{c+d\,x}+960\,a^4\,b^7\,\mathrm{e}^{c+d\,x}+1152\,a^6\,b^5\,\mathrm{e}^{c+d\,x}+608\,a^8\,b^3\,\mathrm{e}^{c+d\,x}+12\cdots}{a^3\,{\left({\left(a^2+b^2\right)}^3\right)}^{3/2}\,\left(a^2+b^2\right)}\right.}{d\,a^8+3\,d\,a^6\,b^2+3\,d\,a^4\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^2*sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] (b^4*log((64*b^8*((a^2 + b^2)^3)^(1/2) - 96*a*b^10 - 384*a^3*b^8 - 512*a^5*
b^6 - 288*a^7*b^4 - 64*a^9*b^2 + 288*a^2*b^9*exp(c + d*x) + 960*a^4*b^7*exp
(c + d*x) + 1152*a^6*b^5*exp(c + d*x) + 608*a^8*b^3*exp(c + d*x) + 128*a^10
*b*exp(c + d*x) - 64*a*b^7*exp(c + d*x)*((a^2 + b^2)^3)^(1/2) + 32*a^3*b^5*
exp(c + d*x)*((a^2 + b^2)^3)^(1/2))/(a^3*((a^2 + b^2)^3)^(3/2)*(a^2 + b^2))
 - (32*b*(2*a^2*b - 4*a^3*exp(c + d*x) + 2*b^3 - 5*a*b^2*exp(c + d*x)))/(a^
3*(a^2 + b^2)^2))*((a^2 + b^2)^3)^(1/2))/(a^8*d + a^2*b^6*d + 3*a^4*b^4*d +
 3*a^6*b^2*d) - ((2*b^4*exp(3*c + 3*d*x))/(d*(b^5 + a^2*b^3)) - (2*b^4*exp(
c + d*x))/(d*(b^5 + a^2*b^3)) + (2*b^3*(2*a^2 + b^2))/(a*d*(b^5 + a^2*b^3))
 + (2*b^5*exp(2*c + 2*d*x))/(a*d*(b^5 + a^2*b^3)))/(exp(4*c + 4*d*x) - 1) -
 (b^4*log((96*a*b^10 + 64*b^8*((a^2 + b^2)^3)^(1/2) + 384*a^3*b^8 + 512*a^5
*b^6 + 288*a^7*b^4 + 64*a^9*b^2 - 288*a^2*b^9*exp(c + d*x) - 960*a^4*b^7*ex
p(c + d*x) - 1152*a^6*b^5*exp(c + d*x) - 608*a^8*b^3*exp(c + d*x) - 128*a^1
0*b*exp(c + d*x) - 64*a*b^7*exp(c + d*x)*((a^2 + b^2)^3)^(1/2) + 32*a^3*b^5
*exp(c + d*x)*((a^2 + b^2)^3)^(1/2))/(a^3*((a^2 + b^2)^3)^(3/2)*(a^2 + b^2)
) - (32*b*(2*a^2*b - 4*a^3*exp(c + d*x) + 2*b^3 - 5*a*b^2*exp(c + d*x)))/(a
^3*(a^2 + b^2)^2))*((a^2 + b^2)^3)^(1/2))/(a^8*d + a^2*b^6*d + 3*a^4*b^4*d
+ 3*a^6*b^2*d) - (b*log(exp(c + d*x) - 1))/(a^2*d) + (b*log(exp(c + d*x) +
1))/(a^2*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.472 $\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=39

$$\operatorname{Int}\left(\frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^2*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Csch[c + d*x]^2*Sech[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Csch[c + d*x]^2*Sech[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x
])), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 153.97, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Csch[c + d*x]^2*Sech[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]
)),x]
```

```
[Out] Integrate[(Csch[c + d*x]^2*Sech[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]
)), x]
```

fricas [A] time = 1.64, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(dx+c)^2\operatorname{sech}(dx+c)^2}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] integral(csch(d*x + c)^2*sech(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(
d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [A] time = 2.20, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(dx+c\right)^{2} \operatorname{sech}\left(dx+c\right)^{2}}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^2*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$16\,b^{4} \int -\frac{e^{(dx+c)}}{8\left(a^{4}be+a^{2}b^{3}e+\left(a^{4}bf+a^{2}b^{3}f\right)x-\left(a^{4}bee^{(2c)}+a^{2}b^{3}ee^{(2c)}+\left(a^{4}bfe^{(2c)}+a^{2}b^{3}fe^{(2c)}\right)x\right)e^{(2dx)}-2\left(a^{5}ee\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] 16*b^4*integrate(-1/8*e^(d*x + c)/(a^4*b*e + a^2*b^3*e + (a^4*b*f + a^2*b^3
*f)*x - (a^4*b*e*e^(2*c) + a^2*b^3*e*e^(2*c) + (a^4*b*f*e^(2*c) + a^2*b^3*f
*e^(2*c))*x)*e^(2*d*x) - 2*(a^5*e*e^c + a^3*b^2*e*e^c + (a^5*f*e^c + a^3*b^
2*f*e^c)*x)*e^(d*x)), x) + 2*(a*b*e^(3*d*x + 3*c) + b^2*e^(2*d*x + 2*c) - a
*b*e^(d*x + c) + 2*a^2 + b^2)/(a^3*d*e + a*b^2*d*e + (a^3*d*f + a*b^2*d*f)*
x - (a^3*d*e*e^(4*c) + a*b^2*d*e*e^(4*c) + (a^3*d*f*e^(4*c) + a*b^2*d*f*e^(
```

```
4*c))*x)*e^(4*d*x)) - 16*integrate(-1/16*(b*d*f*x + b*d*e + a*f)/(a^2*d*f^2
*x^2 + 2*a^2*d*e*f*x + a^2*d*e^2 - (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f*x*e^c +
 a^2*d*e^2*e^c)*e^(d*x)), x) - 16*integrate(1/16*(b*d*f*x + b*d*e - a*f)/(a
^2*d*f^2*x^2 + 2*a^2*d*e*f*x + a^2*d*e^2 + (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f
*x*e^c + a^2*d*e^2*e^c)*e^(d*x)), x) - 16*integrate(1/8*(b*f*e^(d*x + c) -
a*f)/(a^2*d*e^2 + b^2*d*e^2 + (a^2*d*f^2 + b^2*d*f^2)*x^2 + 2*(a^2*d*e*f +
b^2*d*e*f)*x + (a^2*d*e^2*e^(2*c) + b^2*d*e^2*e^(2*c) + (a^2*d*f^2*e^(2*c)
+ b^2*d*f^2*e^(2*c))*x^2 + 2*(a^2*d*e*f*e^(2*c) + b^2*d*e*f*e^(2*c))*x)*e^(
2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+dx)^2 \sinh(c+dx)^2 \left(e+fx\right) (a+b\sinh(c+dx))} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^2*sinh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)^2*sinh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2*sech(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.473 $\int \frac{(e+fx)\text{csch}^2(c+dx)\text{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=978

$$\frac{(e+fx)\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^5}{a^2\left(a^2+b^2\right)^2 d}+\frac{(e+fx)\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^5}{a^2\left(a^2+b^2\right)^2 d}-\frac{(e+fx)\log\left(1+e^{2(c+dx)}\right)b^5}{a^2\left(a^2+b^2\right)^2 d}+\frac{f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b}{a^2\left(a^2+b^2\right)^2 d^2}$$

```
[Out] 3/2*I*f*polylog(2,-I*exp(d*x+c))/a/d^2-1/2*b^5*f*polylog(2,-exp(2*d*x+2*c))
/a^2/(a^2+b^2)^2/d^2+1/2*b^2*f*sech(d*x+c)/a/(a^2+b^2)/d^2+1/2*b^3*(f*x+e)*
sech(d*x+c)^2/a^2/(a^2+b^2)/d-1/2*b^3*f*tanh(d*x+c)/a^2/(a^2+b^2)/d^2+2*b^4
*(f*x+e)*arctan(exp(d*x+c))/a/(a^2+b^2)^2/d+2*b*f*x*arctanh(exp(2*d*x+2*c))
/a^2/d+b^2*(f*x+e)*arctan(exp(d*x+c))/a/(a^2+b^2)/d+I*b^4*f*polylog(2,I*exp
(d*x+c))/a/(a^2+b^2)^2/d^2+1/2*b^2*(f*x+e)*sech(d*x+c)*tanh(d*x+c)/a/(a^2+b
^2)/d-I*b^4*f*polylog(2,-I*exp(d*x+c))/a/(a^2+b^2)^2/d^2-1/2*I*b^2*f*polylo
g(2,-I*exp(d*x+c))/a/(a^2+b^2)/d^2-1/2*b*f*x/a^2/d+1/2*(f*x+e)*csch(d*x+c)*
sech(d*x+c)^2/a/d+1/2*b*f*tanh(d*x+c)/a^2/d^2+1/2*b*(f*x+e)*tanh(d*x+c)^2/a
^2/d-3/2*I*f*polylog(2,I*exp(d*x+c))/a/d^2-3*f*x*arctan(exp(d*x+c))/a/d+3/2
*f*x*arctan(sinh(d*x+c))/a/d+1/2*b*f*polylog(2,-exp(2*d*x+2*c))/a^2/d^2-1/2
*b*f*polylog(2,exp(2*d*x+2*c))/a^2/d^2+1/2*I*b^2*f*polylog(2,I*exp(d*x+c))/
a/(a^2+b^2)/d^2-3/2*(f*x+e)*arctan(sinh(d*x+c))/a/d-f*arctanh(cosh(d*x+c))/
a/d^2-3/2*(f*x+e)*csch(d*x+c)/a/d-1/2*f*sech(d*x+c)/a/d^2+b^5*(f*x+e)*ln(1+
b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^2/d+b*f*x*ln(tanh(d*x+c))/a
^2/d+b^5*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^2/d^2
+b^5*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^2/d^2-b^5
*(f*x+e)*ln(1+exp(2*d*x+2*c))/a^2/(a^2+b^2)^2/d+b^5*(f*x+e)*ln(1+b*exp(d*x+
c)/(a-(a^2+b^2)^(1/2)))/a^2/(a^2+b^2)^2/d-b*(f*x+e)*ln(tanh(d*x+c))/a^2/d
```

Rubi [A] time = 1.41, antiderivative size = 978, normalized size of antiderivative = 1.00, number of steps used = 57, number of rules used = 27, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.794, Rules used = {5589, 2621, 288, 321, 207, 5462, 5203, 12, 4180, 2279, 2391, 3770, 2622, 2620, 14, 2548, 4182, 3473, 8, 5573, 5561, 2190, 6742, 3718, 4185, 5451, 3767}

$$\frac{(e+fx)\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^5}{a^2\left(a^2+b^2\right)^2 d}+\frac{(e+fx)\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^5}{a^2\left(a^2+b^2\right)^2 d}-\frac{(e+fx)\log\left(1+e^{2(c+dx)}\right)b^5}{a^2\left(a^2+b^2\right)^2 d}+\frac{f\text{PolyLog}\left(2,-\frac{b}{a-}\right)}{a^2\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]^2*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(b*f*x)/(2*a^2*d) - (3*f*x*ArcTan[E^(c + d*x)])/(a*d) + (2*b^4*(e + f*x)*A
rcTan[E^(c + d*x)])/(a*(a^2 + b^2)^2*d) + (b^2*(e + f*x)*ArcTan[E^(c + d*x)
```

```
])/(a*(a^2 + b^2)*d) + (3*f*x*ArcTan[Sinh[c + d*x]])/(2*a*d) - (3*(e + f*x)
*ArcTan[Sinh[c + d*x]])/(2*a*d) + (2*b*f*x*ArcTanh[E^(2*c + 2*d*x)])/(a^2*d
) - (f*ArcTanh[Cosh[c + d*x]])/(a*d^2) - (3*(e + f*x)*Csch[c + d*x])/(2*a*d
) + (b^5*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^2*(a^
2 + b^2)^2*d) + (b^5*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]
)])/(a^2*(a^2 + b^2)^2*d) - (b^5*(e + f*x)*Log[1 + E^(2*(c + d*x))])/(a^2*(
a^2 + b^2)^2*d) + (b*f*x*Log[Tanh[c + d*x]])/(a^2*d) - (b*(e + f*x)*Log[Tan
h[c + d*x]])/(a^2*d) + (((3*I)/2)*f*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^2) -
 (I*b^4*f*PolyLog[2, (-I)*E^(c + d*x)])/(a*(a^2 + b^2)^2*d^2) - ((I/2)*b^2*
f*PolyLog[2, (-I)*E^(c + d*x)])/(a*(a^2 + b^2)*d^2) - (((3*I)/2)*f*PolyLog[
2, I*E^(c + d*x)])/(a*d^2) + (I*b^4*f*PolyLog[2, I*E^(c + d*x)])/(a*(a^2 +
b^2)^2*d^2) + ((I/2)*b^2*f*PolyLog[2, I*E^(c + d*x)])/(a*(a^2 + b^2)*d^2) +
 (b^5*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^2*(a^2 + b
^2)^2*d^2) + (b^5*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(
a^2*(a^2 + b^2)^2*d^2) - (b^5*f*PolyLog[2, -E^(2*(c + d*x))])/(2*a^2*(a^2 +
 b^2)^2*d^2) + (b*f*PolyLog[2, -E^(2*c + 2*d*x)])/(2*a^2*d^2) - (b*f*PolyLo
g[2, E^(2*c + 2*d*x)])/(2*a^2*d^2) - (f*Sech[c + d*x])/(2*a*d^2) + (b^2*f*S
ech[c + d*x])/(2*a*(a^2 + b^2)*d^2) + (b^3*(e + f*x)*Sech[c + d*x]^2)/(2*a^
2*(a^2 + b^2)*d) + ((e + f*x)*Csch[c + d*x]*Sech[c + d*x]^2)/(2*a*d) + (b*f
*Tanh[c + d*x])/(2*a^2*d^2) - (b^3*f*Tanh[c + d*x])/(2*a^2*(a^2 + b^2)*d^2)
 + (b^2*(e + f*x)*Sech[c + d*x]*Tanh[c + d*x])/(2*a*(a^2 + b^2)*d) + (b*(e
+ f*x)*Tanh[c + d*x]^2)/(2*a^2*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2548

```
Int[Log[u_], x_Symbol] :> Simp[x*Log[u], x] - Int[SimplifyIntegrand[(x*D[u,
 x])/u, x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
```

```
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5203

```
Int[ArcTan[u_], x_Symbol] :> Simp[x*ArcTan[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/(1 + u^2), x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
```

```
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\operatorname{csch}^2(c+dx)\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\operatorname{csch}^2(c+dx)\operatorname{sech}^3(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\operatorname{csch}(c+dx)\operatorname{sech}^3(c+}{a+b\sinh(c+dx)}}{a}$$

$$= -\frac{3(e+fx)\tan^{-1}(\sinh(c+dx))}{2ad} - \frac{3(e+fx)\operatorname{csch}(c+dx)}{2ad} + \frac{(e+fx)}{}$$

$$= -\frac{3(e+fx)\tan^{-1}(\sinh(c+dx))}{2ad} - \frac{3(e+fx)\operatorname{csch}(c+dx)}{2ad} - \frac{b(e+fx}{}$$

$$= \frac{3fx\tan^{-1}(\sinh(c+dx))}{2ad} - \frac{3(e+fx)\tan^{-1}(\sinh(c+dx))}{2ad} - \frac{3f\tanh}{}$$

$$= -\frac{b^5(e+fx)^2}{2a^2\left(a^2+b^2\right)^2 f} + \frac{3fx\tan^{-1}(\sinh(c+dx))}{2ad} - \frac{3(e+fx)\tan^{-1}(\sinh}{2ad}$$

$$= -\frac{bfx}{2a^2d} - \frac{b^5(e+fx)^2}{2a^2\left(a^2+b^2\right)^2 f} - \frac{3fx\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{3fx\tan^{-1}(\sinh(c+}{2ad}$$

$$= -\frac{bfx}{2a^2d} - \frac{3fx\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^4(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)^2 d} + \frac{b^2(e+fx}{a\left(a^2\right.}$$

$$= -\frac{bfx}{2a^2d} - \frac{3fx\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^4(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)^2 d} + \frac{b^2(e+fx}{a\left(a^2\right.}$$

$$= -\frac{bfx}{2a^2d} - \frac{3fx\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^4(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)^2 d} + \frac{b^2(e+fx}{a\left(a^2\right.}$$

$$= -\frac{bfx}{2a^2d} - \frac{3fx\tan^{-1}\left(e^{c+dx}\right)}{ad} + \frac{2b^4(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a\left(a^2+b^2\right)^2 d} + \frac{b^2(e+fx}{a\left(a^2\right.}$$

Mathematica [A] time = 10.92, size = 1337, normalized size = 1.37

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]^2*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] 8*(((-(d*e*Cosh[(c + d*x)/2]) + c*f*Cosh[(c + d*x)/2] - f*(c + d*x)*Cosh[(c
 + d*x)/2])*Csch[(c + d*x)/2]*Csch[c + d*x]*(a + b*Sinh[c + d*x]))/(16*a*d^
2*(b + a*Csch[c + d*x])) - (b*e*Csch[c + d*x]*Log[Sinh[c + d*x]]*(a + b*Sin
h[c + d*x]))/(8*a^2*d*(b + a*Csch[c + d*x])) + (b*c*f*Csch[c + d*x]*Log[Sin
h[c + d*x]]*(a + b*Sinh[c + d*x]))/(8*a^2*d^2*(b + a*Csch[c + d*x])) + (f*C
sch[c + d*x]*Log[Tanh[(c + d*x)/2]]*(a + b*Sinh[c + d*x]))/(8*a*d^2*(b + a*
Csch[c + d*x])) + ((I/8)*b*f*Csch[c + d*x]*(I*(c + d*x)*Log[1 - E^(-2*(c +
d*x))] - (I/2)*(-(c + d*x)^2 + PolyLog[2, E^(-2*(c + d*x))]))*(a + b*Sinh[c
 + d*x]))/(a^2*d^2*(b + a*Csch[c + d*x])) + (b^5*Csch[c + d*x]*(-1/2*(f*(c
+ d*x)^2) + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*
(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d*e*Log[a + b*Si
nh[c + d*x]] - c*f*Log[a + b*Sinh[c + d*x]] + f*PolyLog[2, (b*E^(c + d*x))/
(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2]))])*(a + b*Sinh[c + d*x]))/(8*a^2*(a^2 + b^2)^2*d^2*(b + a*Csch[c + d*x]
)) + (Csch[c + d*x]*(-2*a^2*b*d*e*(c + d*x) - 4*b^3*d*e*(c + d*x) + 2*a^2*b
*c*f*(c + d*x) + 4*b^3*c*f*(c + d*x) - a^2*b*f*(c + d*x)^2 - 2*b^3*f*(c + d
*x)^2 - 6*a^3*d*e*ArcTan[E^(c + d*x)] - 10*a*b^2*d*e*ArcTan[E^(c + d*x)] +
6*a^3*c*f*ArcTan[E^(c + d*x)] + 10*a*b^2*c*f*ArcTan[E^(c + d*x)] - (3*I)*a^
3*f*(c + d*x)*Log[1 - I*E^(c + d*x)] - (5*I)*a*b^2*f*(c + d*x)*Log[1 - I*E^
(c + d*x)] + (3*I)*a^3*f*(c + d*x)*Log[1 + I*E^(c + d*x)] + (5*I)*a*b^2*f*(
c + d*x)*Log[1 + I*E^(c + d*x)] + 2*a^2*b*d*e*Log[1 + E^(2*(c + d*x))] + 4*
b^3*d*e*Log[1 + E^(2*(c + d*x))] - 2*a^2*b*c*f*Log[1 + E^(2*(c + d*x))] - 4
*b^3*c*f*Log[1 + E^(2*(c + d*x))] + 2*a^2*b*f*(c + d*x)*Log[1 + E^(2*(c + d
*x))] + 4*b^3*f*(c + d*x)*Log[1 + E^(2*(c + d*x))] + I*a*(3*a^2 + 5*b^2)*f*
PolyLog[2, (-I)*E^(c + d*x)] - I*a*(3*a^2 + 5*b^2)*f*PolyLog[2, I*E^(c + d*
x)] + a^2*b*f*PolyLog[2, -E^(2*(c + d*x))] + 2*b^3*f*PolyLog[2, -E^(2*(c +
d*x))])*(a + b*Sinh[c + d*x]))/(16*(a^2 + b^2)^2*d^2*(b + a*Csch[c + d*x]))
 + (Csch[c + d*x]*Sech[(c + d*x)/2]*(d*e*Sinh[(c + d*x)/2] - c*f*Sinh[(c +
d*x)/2] + f*(c + d*x)*Sinh[(c + d*x)/2])*(a + b*Sinh[c + d*x]))/(16*a*d^2*(
b + a*Csch[c + d*x])) + (Csch[c + d*x]*Sech[c + d*x]*(a + b*Sinh[c + d*x])*
(-(a*f) + b*f*Sinh[c + d*x]))/(16*(a^2 + b^2)*d^2*(b + a*Csch[c + d*x])) +
(Csch[c + d*x]*Sech[c + d*x]^2*(a + b*Sinh[c + d*x])*(-(b*d*e) + b*c*f - b*
f*(c + d*x) - a*d*e*Sinh[c + d*x] + a*c*f*Sinh[c + d*x] - a*f*(c + d*x)*Sin
h[c + d*x]))/(16*(a^2 + b^2)*d^2*(b + a*Csch[c + d*x])))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

[Out] Timed out

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

[Out] Timed out

maple [B] time = 0.41, size = 3280, normalized size = 3.35

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/d/a^2/(a^2+b^2)^2*b^5*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+1/d^2/a^2/(
a^2+b^2)^2*b^5*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2
)))+1/d^2/a^2/(a^2+b^2)^2*b^5*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(
a^2+b^2)^(1/2)))-12/d*a^3/(a^2+b^2)*e/(4*a^2+4*b^2)*arctan(exp(d*x+c))-1/(a
^2+b^2)^(5/2)/d^2*f*b*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a^3
-2/(a^2+b^2)^(5/2)/d^2*f*b^3*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/
2))*a-1/(a^2+b^2)/d^2/a^2*b^3*f*dilog(exp(d*x+c)+1)+1/(a^2+b^2)/d^2/a^2*b^3
*f*dilog(exp(d*x+c))+1/(a^2+b^2)/d^2/a*b^2*f*ln(exp(d*x+c)-1)-1/(a^2+b^2)/d
^2/a*b^2*f*ln(exp(d*x+c)+1)-1/(a^2+b^2)/d/a^2*b^3*e*ln(exp(d*x+c)+1)-1/(a^2
+b^2)/d/a^2*b^3*e*ln(exp(d*x+c)-1)+1/(a^2+b^2)/d^2*b*f*c*ln(exp(d*x+c)-1)+6
*I/d^2*a^3/(a^2+b^2)*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*c-6*I/d^2*a^3/(a^2+
b^2)*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*c+20/d^2*a/(a^2+b^2)*b^2*f*c/(4*a^2
+4*b^2)*arctan(exp(d*x+c))+7/2/d^2*a/(a^2+b^2)^(5/2)*b^3*f*c*arctanh(1/2*(2
*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+4/d*a^2/(a^2+b^2)*f/(4*a^2+4*b^2)*ln(1+
I*exp(d*x+c))*b*x+4/d*a^2/(a^2+b^2)*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*b*x-
4/d^2*a^2/(a^2+b^2)*f*c/(4*a^2+4*b^2)*b*ln(1+exp(2*d*x+2*c))+4/d^2*a^2/(a^2
+b^2)*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*b*c+4/d^2*a^2/(a^2+b^2)*f/(4*a^2+4
*b^2)*ln(1-I*exp(d*x+c))*b*c-10*I/d^2*a/(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*dilog
(1-I*exp(d*x+c))+10*I/d^2*a/(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*dilog(1+I*exp(d*x
+c))+6*I/d*a^3/(a^2+b^2)*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*x-6*I/d*a^3/(a^
2+b^2)*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*x+1/d^2/(a^2+b^2)^(3/2)*f*b^3/a*a
rctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+3/2*b/d*e/(a^2+b^2)^(3/2)*
arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a+2/d^2/(a^2+b^2)^(5/2)*b
^5*f*c/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+3/2/d^2/(a^2+b^2
)^(5/2)*a^3*f*b*c*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d^2/(
```

```
a^2+b^2)^(3/2)*b^3*f*c/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+
1/(a^2+b^2)/d^2/a^2*b^3*f*c*ln(exp(d*x+c)-1)-8/d^2/(a^2+b^2)*b^3*f*c/(4*a^2
+4*b^2)*ln(1+exp(2*d*x+2*c))+1/d/a^2/(a^2+b^2)^2*b^5*f*ln((-b*exp(d*x+c)+(a
^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d/a^2/(a^2+b^2)^2*b^5*f*ln((b*ex
p(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+4/d*a^2/(a^2+b^2)*e/(4*a
^2+4*b^2)*b*ln(1+exp(2*d*x+2*c))+8/d/(a^2+b^2)*b^3*f/(4*a^2+4*b^2)*ln(1-I*e
xp(d*x+c))*x+8/d/(a^2+b^2)*b^3*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*x+8/d^2/(
a^2+b^2)*b^3*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*c+8/d^2/(a^2+b^2)*b^3*f/(4*
a^2+4*b^2)*ln(1+I*exp(d*x+c))*c-1/(a^2+b^2)/d*ln(exp(d*x+c)+1)*b*f*x+8/d/(a
^2+b^2)*b^3*e/(4*a^2+4*b^2)*ln(1+exp(2*d*x+2*c))+8/d^2/(a^2+b^2)*b^3*f/(4*a
^2+4*b^2)*dilog(1+I*exp(d*x+c))+8/d^2/(a^2+b^2)*b^3*f/(4*a^2+4*b^2)*dilog(1
-I*exp(d*x+c))+10*I/d^2*a/(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*
c-10*I/d^2*a/(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*c+10*I/d*a/(a
^2+b^2)*b^2*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*x-10*I/d*a/(a^2+b^2)*b^2*f/(
4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*x-3/2*b/d^2*f*c/(a^2+b^2)^(3/2)*arctanh(1/2
*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))*a+1/d^2/(a^2+b^2)^(3/2)*a*f*b*arctan
h(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d^2/(a^2+b^2)^(5/2)*f*b^5/a*a
rctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-3/2/d/(a^2+b^2)^(5/2)*a^3*
b*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-2/d/(a^2+b^2)^(5/2)*b
^5*e/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+2/d/(a^2+b^2)^(3/2
)*b^3*e/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+4/d^2*a^2/(a^2+
b^2)*f/(4*a^2+4*b^2)*dilog(1+I*exp(d*x+c))*b+4/d^2*a^2/(a^2+b^2)*f/(4*a^2+4
*b^2)*dilog(1-I*exp(d*x+c))*b+12/d^2*a^3/(a^2+b^2)*f*c/(4*a^2+4*b^2)*arctan
(exp(d*x+c))+1/d^2/a^2/(a^2+b^2)^2*b^5*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-
a)/(-a+(a^2+b^2)^(1/2)))*c+1/d^2/a^2/(a^2+b^2)^2*b^5*f*ln((b*exp(d*x+c)+(a^
2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d^2/a^2/(a^2+b^2)^2*b^5*f*c*ln(b*e
xp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-7/2/d*a/(a^2+b^2)^(5/2)*b^3*e*arctanh(1/2*(
2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-20/d*a/(a^2+b^2)*b^2*e/(4*a^2+4*b^2)*a
rctan(exp(d*x+c))+6*I/d^2*a^3/(a^2+b^2)*f/(4*a^2+4*b^2)*dilog(1+I*exp(d*x+c
))-6*I/d^2*a^3/(a^2+b^2)*f/(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))-(3*a^2*d*f*x
*exp(5*d*x+5*c)+2*b^2*d*f*x*exp(5*d*x+5*c)+3*a^2*d*e*exp(5*d*x+5*c)+2*a*b*d
*f*x*exp(4*d*x+4*c)+2*b^2*d*e*exp(5*d*x+5*c)+2*a^2*d*f*x*exp(3*d*x+3*c)+a^2
*f*exp(5*d*x+5*c)+2*a*b*d*e*exp(4*d*x+4*c)+4*b^2*d*f*x*exp(3*d*x+3*c)+2*a^2
*d*e*exp(3*d*x+3*c)-2*a*b*d*f*x*exp(2*d*x+2*c)+a*b*f*exp(4*d*x+4*c)+4*b^2*d
*e*exp(3*d*x+3*c)+3*a^2*d*f*x*exp(d*x+c)-2*a*b*d*e*exp(2*d*x+2*c)+2*b^2*d*f
*x*exp(d*x+c)+3*a^2*d*e*exp(d*x+c)+2*b^2*d*e*exp(d*x+c)-a^2*f*exp(d*x+c)-a*
b*f)/d^2/a/(exp(2*d*x+2*c)-1)/(a^2+b^2)/(1+exp(2*d*x+2*c))^2-1/(a^2+b^2)/d/
a^2*b^3*f*ln(exp(d*x+c)+1)*x-1/(a^2+b^2)/d^2*b*f*dilog(exp(d*x+c)+1)+1/(a^2
+b^2)/d^2*b*f*dilog(exp(d*x+c))-1/(a^2+b^2)/d*b*e*ln(exp(d*x+c)+1)-1/(a^2+b
^2)/d*b*e*ln(exp(d*x+c)-1)-1/(a^2+b^2)/d^2*a*f*ln(exp(d*x+c)+1)+1/(a^2+b^2)
/d^2*a*f*ln(exp(d*x+c)-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] (b^5*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^6 + 2*a^4*b^2 + a^
2*b^4)*d) + (3*a^3 + 5*a*b^2)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)
*d) + (a^2*b + 2*b^3)*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d)
 - (2*a*b*e^(-2*d*x - 2*c) - 2*a*b*e^(-4*d*x - 4*c) + (3*a^2 + 2*b^2)*e^(-d
*x - c) + 2*(a^2 + 2*b^2)*e^(-3*d*x - 3*c) + (3*a^2 + 2*b^2)*e^(-5*d*x - 5*
c))/((a^3 + a*b^2 + (a^3 + a*b^2)*e^(-2*d*x - 2*c) - (a^3 + a*b^2)*e^(-4*d*
x - 4*c) - (a^3 + a*b^2)*e^(-6*d*x - 6*c))*d) - b*log(e^(-d*x - c) + 1)/(a^
2*d) - b*log(e^(-d*x - c) - 1)/(a^2*d))*e + (32*b*d*integrate(1/32*x/(a^2*d
*e^(d*x + c) + a^2*d), x) - 32*b*d*integrate(1/32*x/(a^2*d*e^(d*x + c) - a^
2*d), x) + a*((d*x + c)/(a^2*d^2) - log(e^(d*x + c) + 1)/(a^2*d^2)) - a*((d
*x + c)/(a^2*d^2) - log(e^(d*x + c) - 1)/(a^2*d^2)) - (2*a*b*d*x*e^(2*d*x +
 2*c) - 2*(a^2*d*e^(3*c) + 2*b^2*d*e^(3*c))*x*e^(3*d*x) + a*b - (a^2*e^(5*c
) + (3*a^2*d*e^(5*c) + 2*b^2*d*e^(5*c))*x)*e^(5*d*x) - (2*a*b*d*x*e^(4*c) +
 a*b*e^(4*c))*e^(4*d*x) + (a^2*e^c - (3*a^2*d*e^c + 2*b^2*d*e^c)*x)*e^(d*x)
)/(a^3*d^2 + a*b^2*d^2 - (a^3*d^2*e^(6*c) + a*b^2*d^2*e^(6*c))*e^(6*d*x) -
(a^3*d^2*e^(4*c) + a*b^2*d^2*e^(4*c))*e^(4*d*x) + (a^3*d^2*e^(2*c) + a*b^2*
d^2*e^(2*c))*e^(2*d*x)) - 32*integrate(-1/16*(a*b^5*x*e^(d*x + c) - b^6*x)/
(a^6*b + 2*a^4*b^3 + a^2*b^5 - (a^6*b*e^(2*c) + 2*a^4*b^3*e^(2*c) + a^2*b^5
*e^(2*c))*e^(2*d*x) - 2*(a^7*e^c + 2*a^5*b^2*e^c + a^3*b^4*e^c)*e^(d*x)), x
) - 32*integrate(1/32*((3*a^3*e^c + 5*a*b^2*e^c)*x*e^(d*x) + 2*(a^2*b + 2*b
^3)*x)/(a^4 + 2*a^2*b^2 + b^4 + (a^4*e^(2*c) + 2*a^2*b^2*e^(2*c) + b^4*e^(2
*c))*e^(2*d*x)), x))*f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{\cosh\left(c+d\,x\right)^3\,\sinh\left(c+d\,x\right)^2\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)^3*sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)^3*sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)**2*sech(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.474 $\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=180

$$-\frac{a\left(a^2+2b^2\right)\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{a\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)}+\frac{b\left(a^2+2b^2\right)\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{\operatorname{sech}^2(c+dx)(a\sin}{2d\left(a^2+\right.}$$

```
[Out] -1/2*a*arctan(sinh(d*x+c))/(a^2+b^2)/d-a*(a^2+2*b^2)*arctan(sinh(d*x+c))/(a
^2+b^2)^2/d-csch(d*x+c)/a/d+b*(a^2+2*b^2)*ln(cosh(d*x+c))/(a^2+b^2)^2/d-b*l
n(sinh(d*x+c))/a^2/d+b^5*ln(a+b*sinh(d*x+c))/a^2/(a^2+b^2)^2/d-1/2*sech(d*x
+c)^2*(b+a*sinh(d*x+c))/(a^2+b^2)/d
```

Rubi [A] time = 0.26, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {2837, 12, 894, 639, 203, 635, 260}

$$\frac{b^5\log(a+b\sinh(c+dx))}{a^2d\left(a^2+b^2\right)^2}-\frac{a\left(a^2+2b^2\right)\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{a\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)}+\frac{b\left(a^2+2b^2\right)\log(\cosh(c+}{d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Csch[c + d*x]^2*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(a*ArcTan[Sinh[c + d*x]])/(2*(a^2 + b^2)*d) - (a*(a^2 + 2*b^2)*ArcTan[Sinh
[c + d*x]])/((a^2 + b^2)^2*d) - Csch[c + d*x]/(a*d) + (b*(a^2 + 2*b^2)*Log[
Cosh[c + d*x]])/((a^2 + b^2)^2*d) - (b*Log[Sinh[c + d*x]])/(a^2*d) + (b^5*L
og[a + b*Sinh[c + d*x]])/(a^2*(a^2 + b^2)^2*d) - (Sech[c + d*x]^2*(b + a*Si
nh[c + d*x]))/(2*(a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{b^3\operatorname{Subst}\left(\int \frac{b^2}{x^2(a+x)\left(-b^2-x^2\right)^2}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= \frac{b^5\operatorname{Subst}\left(\int \frac{1}{x^2(a+x)\left(-b^2-x^2\right)^2}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= \frac{b^5\operatorname{Subst}\left(\int \left(\frac{1}{ab^4x^2} - \frac{1}{a^2b^4x} + \frac{1}{a^2\left(a^2+b^2\right)^2(a+x)} + \frac{-a+x}{b^2\left(a^2+b^2\right)\left(b^2+x^2\right)^2} - \frac{\left(a^2+2b^2\right)(a-x}{b^4\left(a^2+b^2\right)^2\left(b^2+\right.}\right.\right.}{d}$$

$$= -\frac{\operatorname{csch}(c+dx)}{ad} - \frac{b\log(\sinh(c+dx))}{a^2d} + \frac{b^5\log(a+b\sinh(c+dx))}{a^2\left(a^2+b^2\right)^2d} + \frac{b^3\operatorname{Su}}{}$$

$$= -\frac{\operatorname{csch}(c+dx)}{ad} - \frac{b\log(\sinh(c+dx))}{a^2d} + \frac{b^5\log(a+b\sinh(c+dx))}{a^2\left(a^2+b^2\right)^2d} - \frac{\operatorname{sech}^2}{}$$

$$= -\frac{a\tan^{-1}(\sinh(c+dx))}{2\left(a^2+b^2\right)d} - \frac{a\left(a^2+2b^2\right)\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)^2d} - \frac{\operatorname{csch}(c+dx)}{ad}$$

Mathematica [C] time = 0.94, size = 227, normalized size = 1.26

$$-\frac{\operatorname{csch}(c+dx)(a+b\sinh(c+dx))\left(\frac{b\operatorname{sech}^2(c+dx)}{a^2+b^2} - \frac{(b+ia)\left(a^2+2b^2\right)\log(-\sinh(c+dx)+i)}{\left(a^2+b^2\right)^2} + \frac{(-b+ia)\left(a^2+2b^2\right)\log(\sinh(c+dx)+i)}{\left(a^2+b^2\right)^2} + \frac{a}{}\right.}{2d(a\operatorname{csch}(c+dx)+b)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Csch[c + d*x]^2*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -1/2*(Csch[c + d*x]*(a + b*Sinh[c + d*x])*((a*ArcTan[Sinh[c + d*x]])/(a^2 +
 b^2) + (2*Csch[c + d*x])/a - ((I*a + b)*(a^2 + 2*b^2)*Log[I - Sinh[c + d*x
]])/(a^2 + b^2)^2 + (2*b*Log[Sinh[c + d*x]])/a^2 + ((I*a - b)*(a^2 + 2*b^2)
*Log[I + Sinh[c + d*x]])/(a^2 + b^2)^2 - (2*b^5*Log[a + b*Sinh[c + d*x]])/(
a^2*(a^2 + b^2)^2) + (b*Sech[c + d*x]^2)/(a^2 + b^2) + (a*Sech[c + d*x]*Tan
h[c + d*x])/(a^2 + b^2)))/(d*(b + a*Csch[c + d*x]))
```

fricas [B] time = 2.05, size = 2568, normalized size = 14.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="frica
s")
```

```
[Out] -((3*a^5 + 5*a^3*b^2 + 2*a*b^4)*cosh(d*x + c)^5 + (3*a^5 + 5*a^3*b^2 + 2*a*
b^4)*sinh(d*x + c)^5 + 2*(a^4*b + a^2*b^3)*cosh(d*x + c)^4 + (2*a^4*b + 2*a
^2*b^3 + 5*(3*a^5 + 5*a^3*b^2 + 2*a*b^4)*cosh(d*x + c))*sinh(d*x + c)^4 + 2
*(a^5 + 3*a^3*b^2 + 2*a*b^4)*cosh(d*x + c)^3 + 2*(a^5 + 3*a^3*b^2 + 2*a*b^4
 + 5*(3*a^5 + 5*a^3*b^2 + 2*a*b^4)*cosh(d*x + c)^2 + 4*(a^4*b + a^2*b^3)*co
sh(d*x + c))*sinh(d*x + c)^3 - 2*(a^4*b + a^2*b^3)*cosh(d*x + c)^2 - 2*(a^4
*b + a^2*b^3 - 5*(3*a^5 + 5*a^3*b^2 + 2*a*b^4)*cosh(d*x + c)^3 - 6*(a^4*b +
 a^2*b^3)*cosh(d*x + c)^2 - 3*(a^5 + 3*a^3*b^2 + 2*a*b^4)*cosh(d*x + c))*si
nh(d*x + c)^2 + ((3*a^5 + 5*a^3*b^2)*cosh(d*x + c)^6 + 6*(3*a^5 + 5*a^3*b^2
)*cosh(d*x + c)*sinh(d*x + c)^5 + (3*a^5 + 5*a^3*b^2)*sinh(d*x + c)^6 - 3*a
^5 - 5*a^3*b^2 + (3*a^5 + 5*a^3*b^2)*cosh(d*x + c)^4 + (3*a^5 + 5*a^3*b^2 +
 15*(3*a^5 + 5*a^3*b^2)*cosh(d*x + c)^2)*sinh(d*x + c)^4 + 4*(5*(3*a^5 + 5*
a^3*b^2)*cosh(d*x + c)^3 + (3*a^5 + 5*a^3*b^2)*cosh(d*x + c))*sinh(d*x + c)
^3 - (3*a^5 + 5*a^3*b^2)*cosh(d*x + c)^2 - (3*a^5 + 5*a^3*b^2 - 15*(3*a^5 +
 5*a^3*b^2)*cosh(d*x + c)^4 - 6*(3*a^5 + 5*a^3*b^2)*cosh(d*x + c)^2)*sinh(d
*x + c)^2 + 2*(3*(3*a^5 + 5*a^3*b^2)*cosh(d*x + c)^5 + 2*(3*a^5 + 5*a^3*b^2
)*cosh(d*x + c)^3 - (3*a^5 + 5*a^3*b^2)*cosh(d*x + c))*sinh(d*x + c))*arcta
n(cosh(d*x + c) + sinh(d*x + c)) + (3*a^5 + 5*a^3*b^2 + 2*a*b^4)*cosh(d*x +
 c) - (b^5*cosh(d*x + c)^6 + 6*b^5*cosh(d*x + c)*sinh(d*x + c)^5 + b^5*sinh
(d*x + c)^6 + b^5*cosh(d*x + c)^4 - b^5*cosh(d*x + c)^2 - b^5 + (15*b^5*cos
h(d*x + c)^2 + b^5)*sinh(d*x + c)^4 + 4*(5*b^5*cosh(d*x + c)^3 + b^5*cosh(d
*x + c))*sinh(d*x + c)^3 + (15*b^5*cosh(d*x + c)^4 + 6*b^5*cosh(d*x + c)^2
- b^5)*sinh(d*x + c)^2 + 2*(3*b^5*cosh(d*x + c)^5 + 2*b^5*cosh(d*x + c)^3 -
 b^5*cosh(d*x + c))*sinh(d*x + c))*log(2*(b*sinh(d*x + c) + a)/(cosh(d*x +
c) - sinh(d*x + c))) - ((a^4*b + 2*a^2*b^3)*cosh(d*x + c)^6 + 6*(a^4*b + 2*
a^2*b^3)*cosh(d*x + c)*sinh(d*x + c)^5 + (a^4*b + 2*a^2*b^3)*sinh(d*x + c)^
6 - a^4*b - 2*a^2*b^3 + (a^4*b + 2*a^2*b^3)*cosh(d*x + c)^4 + (a^4*b + 2*a^
2*b^3 + 15*(a^4*b + 2*a^2*b^3)*cosh(d*x + c)^2)*sinh(d*x + c)^4 + 4*(5*(a^4
*b + 2*a^2*b^3)*cosh(d*x + c)^3 + (a^4*b + 2*a^2*b^3)*cosh(d*x + c))*sinh(d
*x + c)^3 - (a^4*b + 2*a^2*b^3)*cosh(d*x + c)^2 - (a^4*b + 2*a^2*b^3 - 15*(
a^4*b + 2*a^2*b^3)*cosh(d*x + c)^4 - 6*(a^4*b + 2*a^2*b^3)*cosh(d*x + c)^2)
*sinh(d*x + c)^2 + 2*(3*(a^4*b + 2*a^2*b^3)*cosh(d*x + c)^5 + 2*(a^4*b + 2*
a^2*b^3)*cosh(d*x + c)^3 - (a^4*b + 2*a^2*b^3)*cosh(d*x + c))*sinh(d*x + c)
)*log(2*cosh(d*x + c)/(cosh(d*x + c) - sinh(d*x + c))) + ((a^4*b + 2*a^2*b^
3 + b^5)*cosh(d*x + c)^6 + 6*(a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)*sinh(d
*x + c)^5 + (a^4*b + 2*a^2*b^3 + b^5)*sinh(d*x + c)^6 - a^4*b - 2*a^2*b^3 -
 b^5 + (a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)^4 + (a^4*b + 2*a^2*b^3 + b^5
 + 15*(a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)^2)*sinh(d*x + c)^4 + 4*(5*(a^
4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)^3 + (a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x
 + c))*sinh(d*x + c)^3 - (a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)^2 - (a^4*b
```

```
 + 2*a^2*b^3 + b^5 - 15*(a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)^4 - 6*(a^4*
b + 2*a^2*b^3 + b^5)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 2*(3*(a^4*b + 2*a^2
*b^3 + b^5)*cosh(d*x + c)^5 + 2*(a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c)^3 -
 (a^4*b + 2*a^2*b^3 + b^5)*cosh(d*x + c))*sinh(d*x + c))*log(2*sinh(d*x + c
)/(cosh(d*x + c) - sinh(d*x + c))) + (3*a^5 + 5*a^3*b^2 + 2*a*b^4 + 5*(3*a^
5 + 5*a^3*b^2 + 2*a*b^4)*cosh(d*x + c)^4 + 8*(a^4*b + a^2*b^3)*cosh(d*x + c
)^3 + 6*(a^5 + 3*a^3*b^2 + 2*a*b^4)*cosh(d*x + c)^2 - 4*(a^4*b + a^2*b^3)*c
osh(d*x + c))*sinh(d*x + c))/((a^6 + 2*a^4*b^2 + a^2*b^4)*d*cosh(d*x + c)^6
 + 6*(a^6 + 2*a^4*b^2 + a^2*b^4)*d*cosh(d*x + c)*sinh(d*x + c)^5 + (a^6 + 2
*a^4*b^2 + a^2*b^4)*d*sinh(d*x + c)^6 + (a^6 + 2*a^4*b^2 + a^2*b^4)*d*cosh(
d*x + c)^4 + (15*(a^6 + 2*a^4*b^2 + a^2*b^4)*d*cosh(d*x + c)^2 + (a^6 + 2*a
^4*b^2 + a^2*b^4)*d)*sinh(d*x + c)^4 - (a^6 + 2*a^4*b^2 + a^2*b^4)*d*cosh(d
*x + c)^2 + 4*(5*(a^6 + 2*a^4*b^2 + a^2*b^4)*d*cosh(d*x + c)^3 + (a^6 + 2*a
^4*b^2 + a^2*b^4)*d*cosh(d*x + c))*sinh(d*x + c)^3 + (15*(a^6 + 2*a^4*b^2 +
 a^2*b^4)*d*cosh(d*x + c)^4 + 6*(a^6 + 2*a^4*b^2 + a^2*b^4)*d*cosh(d*x + c)
^2 - (a^6 + 2*a^4*b^2 + a^2*b^4)*d)*sinh(d*x + c)^2 - (a^6 + 2*a^4*b^2 + a^
2*b^4)*d + 2*(3*(a^6 + 2*a^4*b^2 + a^2*b^4)*d*cosh(d*x + c)^5 + 2*(a^6 + 2*
a^4*b^2 + a^2*b^4)*d*cosh(d*x + c)^3 - (a^6 + 2*a^4*b^2 + a^2*b^4)*d*cosh(d
*x + c))*sinh(d*x + c))
```

giac [B] time = 0.70, size = 458, normalized size = 2.54

$$\frac{\frac{12\,b^6 \log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{a^6 b+2\,a^4 b^3+a^2 b^5} - \frac{3\left(\pi+2\,\arctan\left(\frac{1}{2}\left(e^{(2\,dx+2\,c)}-1\right)e^{(-dx-c)}\right)\right)\left(3\,a^3+5\,ab^2\right)}{a^4+2\,a^2 b^2+b^4} + \frac{6\left(a^2 b+2\,b^3\right)\log\left(\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+4\right)}{a^4+2\,a^2 b^2+b^4} - 12\,b\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac"
)
```

```
[Out] 1/12*(12*b^6*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/(a^6*b + 2*a^4*
b^3 + a^2*b^5) - 3*(pi + 2*arctan(1/2*(e^(2*d*x + 2*c) - 1)*e^(-d*x - c)))*
(3*a^3 + 5*a*b^2)/(a^4 + 2*a^2*b^2 + b^4) + 6*(a^2*b + 2*b^3)*log((e^(d*x +
 c) - e^(-d*x - c))^2 + 4)/(a^4 + 2*a^2*b^2 + b^4) - 12*b*log(abs(e^(d*x +
c) - e^(-d*x - c)))/a^2 + 4*(b^5*(e^(d*x + c) - e^(-d*x - c))^3 - 9*a^5*(e^
(d*x + c) - e^(-d*x - c))^2 - 15*a^3*b^2*(e^(d*x + c) - e^(-d*x - c))^2 - 6
*a*b^4*(e^(d*x + c) - e^(-d*x - c))^2 - 6*a^4*b*(e^(d*x + c) - e^(-d*x - c)
) - 6*a^2*b^3*(e^(d*x + c) - e^(-d*x - c)) + 4*b^5*(e^(d*x + c) - e^(-d*x -
 c)) - 24*a^5 - 48*a^3*b^2 - 24*a*b^4)/((a^6 + 2*a^4*b^2 + a^2*b^4)*((e^(d*
x + c) - e^(-d*x - c))^3 + 4*e^(d*x + c) - 4*e^(-d*x - c))))/d
```

maple [B] time = 0.00, size = 478, normalized size = 2.66

$$\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}{2da}+\frac{b^5\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\left(a^2+b^2\right)^2a^2}-\frac{1}{2da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{b\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,a^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/2/d/a*tanh(1/2*d*x+1/2*c)+1/d*b^5/(a^2+b^2)^2/a^2*ln(tanh(1/2*d*x+1/2*c)^
2*a-2*tanh(1/2*d*x+1/2*c)*b-a)-1/2/d/a/tanh(1/2*d*x+1/2*c)-1/d/a^2*b*ln(tan
h(1/2*d*x+1/2*c))+1/d/(a^2+b^2)^2/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+
1/2*c)^3*a^3+1/d/(a^2+b^2)^2/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c
)^3*a*b^2+2/d/(a^2+b^2)^2/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)^2
*a^2*b+2/d/(a^2+b^2)^2/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)^2*b^
3-1/d/(a^2+b^2)^2/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)*a^3-1/d/(
a^2+b^2)^2/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)*a*b^2+1/d/(a^2+b
^2)^2*ln(tanh(1/2*d*x+1/2*c)^2+1)*a^2*b+2/d/(a^2+b^2)^2*ln(tanh(1/2*d*x+1/2
*c)^2+1)*b^3-3/d/(a^2+b^2)^2*arctan(tanh(1/2*d*x+1/2*c))*a^3-5/d/(a^2+b^2)^
2*arctan(tanh(1/2*d*x+1/2*c))*a*b^2
```

maxima [A] time = 0.42, size = 350, normalized size = 1.94

$$\frac{b^5\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^6+2\,a^4b^2+a^2b^4\right)d}+\frac{\left(3\,a^3+5\,ab^2\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{\left(a^2b+2\,b^3\right)\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\frac{2\,abe^{(-2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxim
a")
```

```
[Out] b^5*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^6 + 2*a^4*b^2 + a^2
*b^4)*d) + (3*a^3 + 5*a*b^2)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)*
d) + (a^2*b + 2*b^3)*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*d)
- (2*a*b*e^(-2*d*x - 2*c) - 2*a*b*e^(-4*d*x - 4*c) + (3*a^2 + 2*b^2)*e^(-d*
x - c) + 2*(a^2 + 2*b^2)*e^(-3*d*x - 3*c) + (3*a^2 + 2*b^2)*e^(-5*d*x - 5*c
))/((a^3 + a*b^2 + (a^3 + a*b^2)*e^(-2*d*x - 2*c) - (a^3 + a*b^2)*e^(-4*d*x
 - 4*c) - (a^3 + a*b^2)*e^(-6*d*x - 6*c))*d) - b*log(e^(-d*x - c) + 1)/(a^2
*d) - b*log(e^(-d*x - c) - 1)/(a^2*d)
```

mupad [B] time = 7.50, size = 398, normalized size = 2.21

$$\frac{2\,b}{d\left(e^{2\,c+2\,d\,x}+1\right)^2\left(a^2+b^2\right)}-\frac{b\,\ln\left(e^{2\,c}\,e^{2\,d\,x}-1\right)}{a^2\,d}+\frac{2\,b\,\ln\left(1+e^{d\,x}\,e^{c}\,1i\right)}{d\,(-b+a\,1i)^2}-\frac{2\,b^3}{d\,\left(e^{2\,c+2\,d\,x}+1\right)\left(a^2+b^2\right)^2}-\frac{2\,e^{c+d\,x}}{a\,d\,\left(e^{2\,c+2\,d\,x}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] (2*b)/(d*(exp(2*c + 2*d*x) + 1)^2*(a^2 + b^2)) - (b*log(exp(2*c)*exp(2*d*x)
 - 1))/(a^2*d) - (a*log(exp(d*x)*exp(c)*1i + 1)*3i)/(2*d*(a*1i - b)^2) + (2
*b*log(exp(d*x)*exp(c)*1i + 1))/(d*(a*1i - b)^2) - (2*b^3)/(d*(exp(2*c + 2*
d*x) + 1)*(a^2 + b^2)^2) - (2*exp(c + d*x))/(a*d*(exp(2*c + 2*d*x) - 1)) +
(a*log(exp(d*x)*exp(c) + 1i)*3i)/(2*d*(a*1i + b)^2) + (2*b*log(exp(d*x)*exp
(c) + 1i))/(d*(a*1i + b)^2) - (2*a^2*b)/(d*(exp(2*c + 2*d*x) + 1)*(a^2 + b^
2)^2) - (a^3*exp(c + d*x))/(d*(exp(2*c + 2*d*x) + 1)*(a^2 + b^2)^2) + (b^5*
log(2*a*exp(d*x)*exp(c) - b + b*exp(2*c)*exp(2*d*x)))/(a^2*d*(a^2 + b^2)^2)
 + (2*a*exp(c + d*x))/(d*(exp(2*c + 2*d*x) + 1)^2*(a^2 + b^2)) - (a*b^2*exp
(c + d*x))/(d*(exp(2*c + 2*d*x) + 1)*(a^2 + b^2)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2*sech(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.475 $\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=39

$$\operatorname{Int}\left(\frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^2*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Csch[c + d*x]^2*Sech[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Csch[c + d*x]^2*Sech[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x
])), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Csch[c + d*x]^2*Sech[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x]
)),x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [A] time = 4.65, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx+c)^2 \operatorname{sech}(dx+c)^3}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^2*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^2*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^2*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] (a*b*f + (2*b^2*d*e*e^(5*c) + (3*d*e - f)*a^2*e^(5*c) + (3*a^2*d*f*e^(5*c)
+ 2*b^2*d*f*e^(5*c))*x)*e^(5*d*x) + (2*a*b*d*f*x*e^(4*c) + (2*d*e - f)*a*b*
e^(4*c))*e^(4*d*x) + 2*(a^2*d*e*e^(3*c) + 2*b^2*d*e*e^(3*c) + (a^2*d*f*e^(3
*c) + 2*b^2*d*f*e^(3*c))*x)*e^(3*d*x) - 2*(a*b*d*f*x*e^(2*c) + a*b*d*e*e^(2
*c))*e^(2*d*x) + (2*b^2*d*e*e^c + (3*d*e + f)*a^2*e^c + (3*a^2*d*f*e^c + 2*
b^2*d*f*e^c)*x)*e^(d*x))/(a^3*d^2*e^2 + a*b^2*d^2*e^2 + (a^3*d^2*f^2 + a*b^
2*d^2*f^2)*x^2 + 2*(a^3*d^2*e*f + a*b^2*d^2*e*f)*x - (a^3*d^2*e^2*e^(6*c) +
 a*b^2*d^2*e^2*e^(6*c) + (a^3*d^2*f^2*e^(6*c) + a*b^2*d^2*f^2*e^(6*c))*x^2
+ 2*(a^3*d^2*e*f*e^(6*c) + a*b^2*d^2*e*f*e^(6*c))*x)*e^(6*d*x) - (a^3*d^2*e
^2*e^(4*c) + a*b^2*d^2*e^2*e^(4*c) + (a^3*d^2*f^2*e^(4*c) + a*b^2*d^2*f^2*e
^(4*c))*x^2 + 2*(a^3*d^2*e*f*e^(4*c) + a*b^2*d^2*e*f*e^(4*c))*x)*e^(4*d*x)
```

```
+ (a^3*d^2*e^2*e^(2*c) + a*b^2*d^2*e^2*e^(2*c) + (a^3*d^2*f^2*e^(2*c) + a*b
^2*d^2*f^2*e^(2*c))*x^2 + 2*(a^3*d^2*e*f*e^(2*c) + a*b^2*d^2*e*f*e^(2*c))*x
)*e^(2*d*x)) - 32*integrate(-1/16*(a*b^5*e^(d*x + c) - b^6)/(a^6*b*e + 2*a^
4*b^3*e + a^2*b^5*e + (a^6*b*f + 2*a^4*b^3*f + a^2*b^5*f)*x - (a^6*b*e*e^(2
*c) + 2*a^4*b^3*e*e^(2*c) + a^2*b^5*e*e^(2*c) + (a^6*b*f*e^(2*c) + 2*a^4*b^
3*f*e^(2*c) + a^2*b^5*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^7*e*e^c + 2*a^5*b^2*e*
e^c + a^3*b^4*e*e^c + (a^7*f*e^c + 2*a^5*b^2*f*e^c + a^3*b^4*f*e^c)*x)*e^(d
*x)), x) - 32*integrate(1/32*(2*(d^2*e^2 - f^2)*a^2*b + 2*(2*d^2*e^2 - f^2)
*b^3 + 2*(a^2*b*d^2*f^2 + 2*b^3*d^2*f^2)*x^2 + 4*(a^2*b*d^2*e*f + 2*b^3*d^2
*e*f)*x + ((3*d^2*e^2 - 2*f^2)*a^3*e^c + (5*d^2*e^2 - 2*f^2)*a*b^2*e^c + (3
*a^3*d^2*f^2*e^c + 5*a*b^2*d^2*f^2*e^c)*x^2 + 2*(3*a^3*d^2*e*f*e^c + 5*a*b^
2*d^2*e*f*e^c)*x)*e^(d*x))/(a^4*d^2*e^3 + 2*a^2*b^2*d^2*e^3 + b^4*d^2*e^3 +
 (a^4*d^2*f^3 + 2*a^2*b^2*d^2*f^3 + b^4*d^2*f^3)*x^3 + 3*(a^4*d^2*e*f^2 + 2
*a^2*b^2*d^2*e*f^2 + b^4*d^2*e*f^2)*x^2 + 3*(a^4*d^2*e^2*f + 2*a^2*b^2*d^2*
e^2*f + b^4*d^2*e^2*f)*x + (a^4*d^2*e^3*e^(2*c) + 2*a^2*b^2*d^2*e^3*e^(2*c)
 + b^4*d^2*e^3*e^(2*c) + (a^4*d^2*f^3*e^(2*c) + 2*a^2*b^2*d^2*f^3*e^(2*c) +
 b^4*d^2*f^3*e^(2*c))*x^3 + 3*(a^4*d^2*e*f^2*e^(2*c) + 2*a^2*b^2*d^2*e*f^2*
e^(2*c) + b^4*d^2*e*f^2*e^(2*c))*x^2 + 3*(a^4*d^2*e^2*f*e^(2*c) + 2*a^2*b^2
*d^2*e^2*f*e^(2*c) + b^4*d^2*e^2*f*e^(2*c))*x)*e^(2*d*x)), x) - 32*integrat
e(-1/32*(b*d*f*x + b*d*e + a*f)/(a^2*d*f^2*x^2 + 2*a^2*d*e*f*x + a^2*d*e^2
- (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f*x*e^c + a^2*d*e^2*e^c)*e^(d*x)), x) + 32
*integrate(1/32*(b*d*f*x + b*d*e - a*f)/(a^2*d*f^2*x^2 + 2*a^2*d*e*f*x + a^
2*d*e^2 + (a^2*d*f^2*x^2*e^c + 2*a^2*d*e*f*x*e^c + a^2*d*e^2*e^c)*e^(d*x)),
 x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+dx)^3 \sinh(c+dx)^2 \left(e+fx\right) (a+b\sinh(c+dx))}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*sinh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)^3*sinh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**2*sech(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.476 $\int \frac{(e+fx)^3 \coth(c+dx)\mathbf{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=752

$$\frac{3b^2f^3\text{Li}_4\left(e^{2(c+dx)}\right)}{4a^3d^4}-\frac{3b^2f^2(e+fx)\text{Li}_3\left(e^{2(c+dx)}\right)}{2a^3d^3}+\frac{3b^2f(e+fx)^2\text{Li}_2\left(e^{2(c+dx)}\right)}{2a^3d^2}+\frac{b^2(e+fx)^3\log\left(1-e^{2(c+dx)}\right)}{a^3d}-6b$$

```
[Out] -3/2*f*(f*x+e)^2/a/d^2+6*b*f*(f*x+e)^2*arctanh(exp(d*x+c))/a^2/d^2-3/2*f*(f
*x+e)^2*coth(d*x+c)/a/d^2+b*(f*x+e)^3*csch(d*x+c)/a^2/d-1/2*(f*x+e)^3*csch(
d*x+c)^2/a/d+3*f^2*(f*x+e)*ln(1-exp(2*d*x+2*c))/a/d^3+b^2*(f*x+e)^3*ln(1-ex
p(2*d*x+2*c))/a^3/d-b^2*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^
3/d-b^2*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/d+6*b*f^2*(f*x
+e)*polylog(2,-exp(d*x+c))/a^2/d^3-6*b*f^2*(f*x+e)*polylog(2,exp(d*x+c))/a^
2/d^3+3/2*f^3*polylog(2,exp(2*d*x+2*c))/a/d^4+3/2*b^2*f*(f*x+e)^2*polylog(2
,exp(2*d*x+2*c))/a^3/d^2-3*b^2*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+
b^2)^(1/2)))/a^3/d^2-3*b^2*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)
^(1/2)))/a^3/d^2-6*b*f^3*polylog(3,-exp(d*x+c))/a^2/d^4+6*b*f^3*polylog(3,e
xp(d*x+c))/a^2/d^4-3/2*b^2*f^2*(f*x+e)*polylog(3,exp(2*d*x+2*c))/a^3/d^3+6*
b^2*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d^3+6*b^2*
f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/d^3+3/4*b^2*f^
3*polylog(4,exp(2*d*x+2*c))/a^3/d^4-6*b^2*f^3*polylog(4,-b*exp(d*x+c)/(a-(a
^2+b^2)^(1/2)))/a^3/d^4-6*b^2*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2
)))/a^3/d^4
```

Rubi [A] time = 1.35, antiderivative size = 752, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 14, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.412, Rules used = {5587, 5452, 4184, 3716, 2190, 2279, 2391, 4182, 2531, 2282, 6589, 5569, 6609, 5561}

$$\frac{6b^2f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^3d^3}+\frac{6b^2f^2(e+fx)\text{PolyLog}\left(3,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^3d^3}-\frac{3b^2f^2(e+fx)\text{PolyLog}\left(3,e^{2(c-}\right.}{2a^3d^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Coth[c + d*x]*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-3*f*(e + f*x)^2)/(2*a*d^2) + (6*b*f*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a^
2*d^2) - (3*f*(e + f*x)^2*Coth[c + d*x])/(2*a*d^2) + (b*(e + f*x)^3*Csch[c
+ d*x])/(a^2*d) - ((e + f*x)^3*Csch[c + d*x]^2)/(2*a*d) - (b^2*(e + f*x)^3*
Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*d) - (b^2*(e + f*x)^3*
Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^3*d) + (3*f^2*(e + f*x)*
Log[1 - E^(2*(c + d*x))])/(a*d^3) + (b^2*(e + f*x)^3*Log[1 - E^(2*(c + d*x)
)])/(a^3*d) + (6*b*f^2*(e + f*x)*PolyLog[2, -E^(c + d*x)])/(a^2*d^3) - (6*b
```

```
*f^2*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a^2*d^3) - (3*b^2*f*(e + f*x)^2*Po
lyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^2) - (3*b^2*f*(e
 + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^2) +
 (3*f^3*PolyLog[2, E^(2*(c + d*x))])/(2*a*d^4) + (3*b^2*f*(e + f*x)^2*PolyL
og[2, E^(2*(c + d*x))])/(2*a^3*d^2) - (6*b*f^3*PolyLog[3, -E^(c + d*x)])/(a
^2*d^4) + (6*b*f^3*PolyLog[3, E^(c + d*x)])/(a^2*d^4) + (6*b^2*f^2*(e + f*x
)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^3) + (6*b^2*
f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^
3) - (3*b^2*f^2*(e + f*x)*PolyLog[3, E^(2*(c + d*x))])/(2*a^3*d^3) - (6*b^2
*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^4) - (6*b
^2*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^4) + (3
*b^2*f^3*PolyLog[4, E^(2*(c + d*x))])/(4*a^3*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
```

```
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5587

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*Csch[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Csch[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Csch[c + d*x]^(p - 1)*Coth[c + d*x]^n)/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\coth(c+dx)\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\coth(c+dx)\text{csch}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\coth(c+dx)\text{csch}}{a+b\sinh(c+dx)}}{a}$$

$$= -\frac{(e+fx)^3\text{csch}^2(c+dx)}{2ad} - \frac{b\int (e+fx)^3\coth(c+dx)\text{csch}(c+dx)}{a^2}$$

$$= -\frac{3f(e+fx)^2\coth(c+dx)}{2ad^2} + \frac{b(e+fx)^3\text{csch}(c+dx)}{a^2d} - \frac{(e+fx)^3\text{c}}{2}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{6bf(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{3f(e+fx)^2\coth(c}{2ad^2}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{6bf(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{3f(e+fx)^2\coth(c}{2ad^2}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{6bf(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{3f(e+fx)^2\coth(c}{2ad^2}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{6bf(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{3f(e+fx)^2\coth(c}{2ad^2}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{6bf(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{3f(e+fx)^2\coth(c}{2ad^2}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{6bf(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{3f(e+fx)^2\coth(c}{2ad^2}$$

Mathematica [B] time = 69.32, size = 3043, normalized size = 4.05

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Coth[c + d*x]*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (b*(e + f*x)^3*Csch[c])/(a^2*d) - ((e + f*x)^3*Csch[(c + d*x)/2]^2)/(8*a*d)
 - (8*b^2*d^4*e^3*E^(2*c)*x + 24*a^2*d^2*e*E^(2*c)*f^2*x + 12*b^2*d^4*e^2*E
^(2*c)*f*x^2 + 12*a^2*d^2*E^(2*c)*f^3*x^2 + 8*b^2*d^4*e*E^(2*c)*f^2*x^3 + 2
*b^2*d^4*E^(2*c)*f^3*x^4 + 24*a*b*d^2*e^2*f*ArcTanh[E^(c + d*x)] - 24*a*b*d
^2*e^2*E^(2*c)*f*ArcTanh[E^(c + d*x)] - 24*a*b*d^2*e*f^2*x*Log[1 - E^(c + d
```

*x)] + 24*a*b*d^2*e*E^(2*c)*f^2*x*Log[1 - E^(c + d*x)] - 12*a*b*d^2*f^3*x^2
*Log[1 - E^(c + d*x)] + 12*a*b*d^2*E^(2*c)*f^3*x^2*Log[1 - E^(c + d*x)] + 2
4*a*b*d^2*e*f^2*x*Log[1 + E^(c + d*x)] - 24*a*b*d^2*e*E^(2*c)*f^2*x*Log[1 +
 E^(c + d*x)] + 12*a*b*d^2*f^3*x^2*Log[1 + E^(c + d*x)] - 12*a*b*d^2*E^(2*c
)*f^3*x^2*Log[1 + E^(c + d*x)] + 4*b^2*d^3*e^3*Log[1 - E^(2*(c + d*x))] - 4
*b^2*d^3*e^3*E^(2*c)*Log[1 - E^(2*(c + d*x))] + 12*a^2*d*e*f^2*Log[1 - E^(2
*(c + d*x))] - 12*a^2*d*e*E^(2*c)*f^2*Log[1 - E^(2*(c + d*x))] + 12*b^2*d^3
*e^2*f*x*Log[1 - E^(2*(c + d*x))] - 12*b^2*d^3*e^2*E^(2*c)*f*x*Log[1 - E^(2
*(c + d*x))] + 12*a^2*d*f^3*x*Log[1 - E^(2*(c + d*x))] - 12*a^2*d*E^(2*c)*f
^3*x*Log[1 - E^(2*(c + d*x))] + 12*b^2*d^3*e*f^2*x^2*Log[1 - E^(2*(c + d*x)
)] - 12*b^2*d^3*e*E^(2*c)*f^2*x^2*Log[1 - E^(2*(c + d*x))] + 4*b^2*d^3*f^3*
x^3*Log[1 - E^(2*(c + d*x))] - 4*b^2*d^3*E^(2*c)*f^3*x^3*Log[1 - E^(2*(c +
d*x))] - 24*a*b*d*(-1 + E^(2*c))*f^2*(e + f*x)*PolyLog[2, -E^(c + d*x)] + 2
4*a*b*d*(-1 + E^(2*c))*f^2*(e + f*x)*PolyLog[2, E^(c + d*x)] + 6*b^2*d^2*e^
2*f*PolyLog[2, E^(2*(c + d*x))] - 6*b^2*d^2*e^2*E^(2*c)*f*PolyLog[2, E^(2*(
c + d*x))] + 6*a^2*f^3*PolyLog[2, E^(2*(c + d*x))] - 6*a^2*E^(2*c)*f^3*Poly
Log[2, E^(2*(c + d*x))] + 12*b^2*d^2*e*f^2*x*PolyLog[2, E^(2*(c + d*x))] -
12*b^2*d^2*e*E^(2*c)*f^2*x*PolyLog[2, E^(2*(c + d*x))] + 6*b^2*d^2*f^3*x^2*
PolyLog[2, E^(2*(c + d*x))] - 6*b^2*d^2*E^(2*c)*f^3*x^2*PolyLog[2, E^(2*(c
+ d*x))] - 24*a*b*f^3*PolyLog[3, -E^(c + d*x)] + 24*a*b*E^(2*c)*f^3*PolyLog
[3, -E^(c + d*x)] + 24*a*b*f^3*PolyLog[3, E^(c + d*x)] - 24*a*b*E^(2*c)*f^3
*PolyLog[3, E^(c + d*x)] - 6*b^2*d*e*f^2*PolyLog[3, E^(2*(c + d*x))] + 6*b^
2*d*e*E^(2*c)*f^2*PolyLog[3, E^(2*(c + d*x))] - 6*b^2*d*f^3*x*PolyLog[3, E^
(2*(c + d*x))] + 6*b^2*d*E^(2*c)*f^3*x*PolyLog[3, E^(2*(c + d*x))] + 3*b^2*
f^3*PolyLog[4, E^(2*(c + d*x))] - 3*b^2*E^(2*c)*f^3*PolyLog[4, E^(2*(c + d*
x))])/(4*a^3*d^4*(-1 + E^(2*c))) + (b^2*(4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*
x^2 + 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*f^3*x^4 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3
*E^(2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d
) + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[
a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (2*e^3*Log[b - 2*a*E^(c + d*x) - b*E^
(2*(c + d*x))])/d - (2*e^3*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c +
d*x)))])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)
*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt
[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c
- Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c +
 d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2
*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log
[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x
*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2
*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])]
)/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2
*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a
^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqr
t[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/
(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*P

```
olyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 -
(6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqr
t[(a^2 + b^2)*E^(2*c)]))])/d^2 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(
a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -(
(b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*Po
lyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (
12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E
^(2*c)]))])/d^3 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a
^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x
))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E
^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*
x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3
 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)
]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a
^2 + b^2)*E^(2*c)]))])/d^4 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c
+ Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*
c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4))/(2*a^3*(-1 + E^(2*c)
)) + ((e + f*x)^3*Sech[(c + d*x)/2]^2)/(8*a*d) + ((e + f*x)^2*(3*a*f - 2*b*
d*(e + f*x))*Csch[c/2]*Csch[(c + d*x)/2]*Sinh[(d*x)/2])/(4*a^2*d^2) - ((e +
 f*x)^2*(3*a*f + 2*b*d*(e + f*x))*Sech[c/2]*Sech[(c + d*x)/2]*Sinh[(d*x)/2]
)/(4*a^2*d^2)
```

<u>fricas</u> [C] time = 1.19, size = 11595, normalized size = 15.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] (3*a^2*d^2*e^2*f - 6*a^2*c*d*e*f^2 + 3*a^2*c^2*f^3 - 3*(a^2*d^2*f^3*x^2 + 2
*a^2*d^2*e*f^2*x + 2*a^2*c*d*e*f^2 - a^2*c^2*f^3)*cosh(d*x + c)^4 - 3*(a^2*
d^2*f^3*x^2 + 2*a^2*d^2*e*f^2*x + 2*a^2*c*d*e*f^2 - a^2*c^2*f^3)*sinh(d*x +
 c)^4 + 2*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + a*b*
d^3*e^3)*cosh(d*x + c)^3 + 2*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b
*d^3*e^2*f*x + a*b*d^3*e^3 - 6*(a^2*d^2*f^3*x^2 + 2*a^2*d^2*e*f^2*x + 2*a^2
*c*d*e*f^2 - a^2*c^2*f^3)*cosh(d*x + c))*sinh(d*x + c)^3 - (2*a^2*d^3*f^3*x
^3 + 2*a^2*d^3*e^3 + 3*a^2*d^2*e^2*f - 12*a^2*c*d*e*f^2 + 6*a^2*c^2*f^3 + 3
*(2*a^2*d^3*e*f^2 - a^2*d^2*f^3)*x^2 + 6*(a^2*d^3*e^2*f - a^2*d^2*e*f^2)*x)
*cosh(d*x + c)^2 - (2*a^2*d^3*f^3*x^3 + 2*a^2*d^3*e^3 + 3*a^2*d^2*e^2*f - 1
2*a^2*c*d*e*f^2 + 6*a^2*c^2*f^3 + 3*(2*a^2*d^3*e*f^2 - a^2*d^2*f^3)*x^2 + 1
8*(a^2*d^2*f^3*x^2 + 2*a^2*d^2*e*f^2*x + 2*a^2*c*d*e*f^2 - a^2*c^2*f^3)*cos
h(d*x + c)^2 + 6*(a^2*d^3*e^2*f - a^2*d^2*e*f^2)*x - 6*(a*b*d^3*f^3*x^3 + 3
*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + a*b*d^3*e^3)*cosh(d*x + c))*sinh(d
*x + c)^2 - 2*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x +
```

a*b*d^3*e^3)*cosh(d*x + c) - 3*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d
^2*e^2*f + (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x +
 c)^4 + 4*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x +
c)*sinh(d*x + c)^3 + (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*
sinh(d*x + c)^4 - 2*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*c
osh(d*x + c)^2 - 2*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f - 3
*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^2)*sin
h(d*x + c)^2 + 4*((b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cos
h(d*x + c)^3 - (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d
*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(
d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 3*(b^2*d^2*
f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f + (b^2*d^2*f^3*x^2 + 2*b^2*d^2*
e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^4 + 4*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e
*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^2*f^3*x^2 +
2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*sinh(d*x + c)^4 - 2*(b^2*d^2*f^3*x^2 + 2
*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^3*x^2 + 2*
b^2*d^2*e*f^2*x + b^2*d^2*e^2*f - 3*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x +
b^2*d^2*e^2*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^2*f^3*x^2 + 2*b
^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^3 - (b^2*d^2*f^3*x^2 + 2*b^2*
d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*
x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 +
b^2)/b^2) - b)/b + 1) + 3*(b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*f^2
 + a^2*f^3 + (b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*f^2 + a^2*f^3 + 2*
(b^2*d^2*e*f^2 - a*b*d*f^3)*x)*cosh(d*x + c)^4 + 4*(b^2*d^2*f^3*x^2 + b^2*d
^2*e^2*f - 2*a*b*d*e*f^2 + a^2*f^3 + 2*(b^2*d^2*e*f^2 - a*b*d*f^3)*x)*cosh(
d*x + c)*sinh(d*x + c)^3 + (b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*f^2
 + a^2*f^3 + 2*(b^2*d^2*e*f^2 - a*b*d*f^3)*x)*sinh(d*x + c)^4 - 2*(b^2*d^2*
f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*f^2 + a^2*f^3 + 2*(b^2*d^2*e*f^2 - a*b*
d*f^3)*x)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*
f^2 + a^2*f^3 - 3*(b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*f^2 + a^2*f^
3 + 2*(b^2*d^2*e*f^2 - a*b*d*f^3)*x)*cosh(d*x + c)^2 + 2*(b^2*d^2*e*f^2 - a
*b*d*f^3)*x)*sinh(d*x + c)^2 + 2*(b^2*d^2*e*f^2 - a*b*d*f^3)*x + 4*((b^2*d^
2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*f^2 + a^2*f^3 + 2*(b^2*d^2*e*f^2 - a*
b*d*f^3)*x)*cosh(d*x + c)^3 - (b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f - 2*a*b*d*e*
f^2 + a^2*f^3 + 2*(b^2*d^2*e*f^2 - a*b*d*f^3)*x)*cosh(d*x + c))*sinh(d*x +
c))*dilog(cosh(d*x + c) + sinh(d*x + c)) + 3*(b^2*d^2*f^3*x^2 + b^2*d^2*e^2
*f + 2*a*b*d*e*f^2 + a^2*f^3 + (b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f + 2*a*b*d*e
*f^2 + a^2*f^3 + 2*(b^2*d^2*e*f^2 + a*b*d*f^3)*x)*cosh(d*x + c)^4 + 4*(b^2*
d^2*f^3*x^2 + b^2*d^2*e^2*f + 2*a*b*d*e*f^2 + a^2*f^3 + 2*(b^2*d^2*e*f^2 +
a*b*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^2*f^3*x^2 + b^2*d^2*e^
2*f + 2*a*b*d*e*f^2 + a^2*f^3 + 2*(b^2*d^2*e*f^2 + a*b*d*f^3)*x)*sinh(d*x +
 c)^4 - 2*(b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f + 2*a*b*d*e*f^2 + a^2*f^3 + 2*(b
^2*d^2*e*f^2 + a*b*d*f^3)*x)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^3*x^2 + b^2*d^2
*e^2*f + 2*a*b*d*e*f^2 + a^2*f^3 - 3*(b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f + 2*a
*b*d*e*f^2 + a^2*f^3 + 2*(b^2*d^2*e*f^2 + a*b*d*f^3)*x)*cosh(d*x + c)^2 + 2

```
*(b^2*d^2*e*f^2 + a*b*d*f^3)*x)*sinh(d*x + c)^2 + 2*(b^2*d^2*e*f^2 + a*b*d*
f^3)*x + 4*((b^2*d^2*f^3*x^2 + b^2*d^2*e^2*f + 2*a*b*d*e*f^2 + a^2*f^3 + 2*
(b^2*d^2*e*f^2 + a*b*d*f^3)*x)*cosh(d*x + c)^3 - (b^2*d^2*f^3*x^2 + b^2*d^2
*e^2*f + 2*a*b*d*e*f^2 + a^2*f^3 + 2*(b^2*d^2*e*f^2 + a*b*d*f^3)*x)*cosh(d*
x + c))*sinh(d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) - (b^2*d^3*e^3
 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3 + (b^2*d^3*e^3 - 3*b
^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^4 + 4*(b^2*
d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c
)*sinh(d*x + c)^3 + (b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 -
b^2*c^3*f^3)*sinh(d*x + c)^4 - 2*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c
^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^
2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3 - 3*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f
+ 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b
^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x
+ c)^3 - (b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3
)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) +
 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^
2*c^2*d*e*f^2 - b^2*c^3*f^3 + (b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*
d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^4 + 4*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f
 + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^
3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*sinh(d*x + c)^
4 - 2*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*c
osh(d*x + c)^2 - 2*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b
^2*c^3*f^3 - 3*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c
^3*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^3*e^3 - 3*b^2*c*d^2*e^
2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^3 - (b^2*d^3*e^3 - 3*b
^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c))*sinh(d*x +
 c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2)
+ 2*a) - (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2
*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3 + (b^2*d^3*f^3*x^3 + 3*b^2*d
^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 +
b^2*c^3*f^3)*cosh(d*x + c)^4 + 4*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3
*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cos
h(d*x + c)*sinh(d*x + c)^3 + (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2
*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*sinh(d*
x + c)^4 - 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3
*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^
2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f
 - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3 - 3*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x
^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^
3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2
*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*
f^3)*cosh(d*x + c)^3 - (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e
^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)
)*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c)
```

+ b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3 + (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^4 + 4*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*sinh(d*x + c)^4 - 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3 - 3*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^3 - (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*a^2*d*e*f^2 + (b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*a^2*d*e*f^2 + 3*(b^2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x + c)^4 + 4*(b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*a^2*d*e*f^2 + 3*(b^2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*a^2*d*e*f^2 + 3*(b^2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*sinh(d*x + c)^4 + 3*(b^2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 - 2*(b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*a^2*d*e*f^2 + 3*(b^2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x + c)^2 - 2*(b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*a^2*d*e*f^2 + 3*(b^2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 - 3*(b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*a^2*d*e*f^2 + 3*(b^2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x + c)^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*sinh(d*x + c)^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x + 4*((b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*a^2*d*e*f^2 + 3*(b^2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x + c)^3 - (b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*a^2*d*e*f^2 + 3*(b^2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) + (b^2*d^3*e^3 - 3*(b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c + a^2)*d*e*f^2 + (b^2*d^3*e^3 - 3*(b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c + a^2)*d*e*f^2 - (b^2*c^3 + 3*a*b*c^2 + 3*a^2*c)*f^3)*cosh(d*x + c)^4 + 4*(b^2*d^3*e^3 - 3*(b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c + a^2)*d*e*f^2 - (b^2*c^3 + 3*a*b*c^2 + 3*a^2*c)*f^3)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^3*

```
e^3 - 3*(b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c + a^2)*d*e*f^2 - (b^
2*c^3 + 3*a*b*c^2 + 3*a^2*c)*f^3)*sinh(d*x + c)^4 - (b^2*c^3 + 3*a*b*c^2 +
3*a^2*c)*f^3 - 2*(b^2*d^3*e^3 - 3*(b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*
a*b*c + a^2)*d*e*f^2 - (b^2*c^3 + 3*a*b*c^2 + 3*a^2*c)*f^3)*cosh(d*x + c)^2
 - 2*(b^2*d^3*e^3 - 3*(b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c + a^2)
*d*e*f^2 - (b^2*c^3 + 3*a*b*c^2 + 3*a^2*c)*f^3 - 3*(b^2*d^3*e^3 - 3*(b^2*c
+ a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c + a^2)*d*e*f^2 - (b^2*c^3 + 3*a*b*c
^2 + 3*a^2*c)*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^3*e^3 - 3*(
b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c + a^2)*d*e*f^2 - (b^2*c^3 + 3
*a*b*c^2 + 3*a^2*c)*f^3)*cosh(d*x + c)^3 - (b^2*d^3*e^3 - 3*(b^2*c + a*b)*d
^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c + a^2)*d*e*f^2 - (b^2*c^3 + 3*a*b*c^2 + 3*a
^2*c)*f^3)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c)
- 1) + (b^2*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2
 + (b^2*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 + (
b^2*c^3 + 3*a*b*c^2 + 3*a^2*c)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 +
3*(b^2*d^3*e^2*f - 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x + c)^4 + 4*(b^2
*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 + (b^2*c^3
 + 3*a*b*c^2 + 3*a^2*c)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(b^2*
d^3*e^2*f - 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c)^3 +
 (b^2*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 + (b^
2*c^3 + 3*a*b*c^2 + 3*a^2*c)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*
(b^2*d^3*e^2*f - 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*sinh(d*x + c)^4 + (b^2*c^3
 + 3*a*b*c^2 + 3*a^2*c)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 - 2*(b^2*
d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 + (b^2*c^3
+ 3*a*b*c^2 + 3*a^2*c)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(b^2*d
^3*e^2*f - 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x + c)^2 - 2*(b^2*d^3*f^3
*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 + (b^2*c^3 + 3*a*b
*c^2 + 3*a^2*c)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 - 3*(b^2*d^3*f^3*
x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 + (b^2*c^3 + 3*a*b*
c^2 + 3*a^2*c)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f
 - 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x + c)^2 + 3*(b^2*d^3*e^2*f - 2*a
*b*d^2*e*f^2 + a^2*d*f^3)*x)*sinh(d*x + c)^2 + 3*(b^2*d^3*e^2*f - 2*a*b*d^2
*e*f^2 + a^2*d*f^3)*x + 4*((b^2*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^
2 + 2*a*b*c)*d*e*f^2 + (b^2*c^3 + 3*a*b*c^2 + 3*a^2*c)*f^3 + 3*(b^2*d^3*e*f
^2 - a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f - 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*
cosh(d*x + c)^3 - (b^2*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b
*c)*d*e*f^2 + (b^2*c^3 + 3*a*b*c^2 + 3*a^2*c)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*
d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f - 2*a*b*d^2*e*f^2 + a^2*d*f^3)*x)*cosh(d*x
+ c))*sinh(d*x + c))*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 6*(b^2*f^3*c
osh(d*x + c)^4 + 4*b^2*f^3*cosh(d*x + c)*sinh(d*x + c)^3 + b^2*f^3*sinh(d*x
 + c)^4 - 2*b^2*f^3*cosh(d*x + c)^2 + b^2*f^3 + 2*(3*b^2*f^3*cosh(d*x + c)^
2 - b^2*f^3)*sinh(d*x + c)^2 + 4*(b^2*f^3*cosh(d*x + c)^3 - b^2*f^3*cosh(d*
x + c))*sinh(d*x + c))*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*c
osh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*(b^2*f^3*cosh
(d*x + c)^4 + 4*b^2*f^3*cosh(d*x + c)*sinh(d*x + c)^3 + b^2*f^3*sinh(d*x +
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c)^4 - 2*b^2*f^3*cosh(d*x + c)^2 + b^2*f^3 + 2*(3*b^2*f^3*cosh(d*x + c)^2 -
 b^2*f^3)*sinh(d*x + c)^2 + 4*(b^2*f^3*cosh(d*x + c)^3 - b^2*f^3*cosh(d*x +
 c))*sinh(d*x + c))*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh
(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 6*(b^2*f^3*cosh(d*
x + c)^4 + 4*b^2*f^3*cosh(d*x + c)*sinh(d*x + c)^3 + b^2*f^3*sinh(d*x + c)^
4 - 2*b^2*f^3*cosh(d*x + c)^2 + b^2*f^3 + 2*(3*b^2*f^3*cosh(d*x + c)^2 - b^
2*f^3)*sinh(d*x + c)^2 + 4*(b^2*f^3*cosh(d*x + c)^3 - b^2*f^3*cosh(d*x + c)
)*sinh(d*x + c))*polylog(4, cosh(d*x + c) + sinh(d*x + c)) + 6*(b^2*f^3*cos
h(d*x + c)^4 + 4*b^2*f^3*cosh(d*x + c)*sinh(d*x + c)^3 + b^2*f^3*sinh(d*x +
 c)^4 - 2*b^2*f^3*cosh(d*x + c)^2 + b^2*f^3 + 2*(3*b^2*f^3*cosh(d*x + c)^2
- b^2*f^3)*sinh(d*x + c)^2 + 4*(b^2*f^3*cosh(d*x + c)^3 - b^2*f^3*cosh(d*x
+ c))*sinh(d*x + c))*polylog(4, -cosh(d*x + c) - sinh(d*x + c)) + 6*(b^2*d*
f^3*x + b^2*d*e*f^2 + (b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^4 + 4*(b^2*
d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*f^3*x + b^2*d
*e*f^2)*sinh(d*x + c)^4 - 2*(b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^2 - 2
*(b^2*d*f^3*x + b^2*d*e*f^2 - 3*(b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^2
)*sinh(d*x + c)^2 + 4*((b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^3 - (b^2*d
*f^3*x + b^2*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x
+ c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^
2)/b^2))/b) + 6*(b^2*d*f^3*x + b^2*d*e*f^2 + (b^2*d*f^3*x + b^2*d*e*f^2)*co
sh(d*x + c)^4 + 4*(b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)^3
 + (b^2*d*f^3*x + b^2*d*e*f^2)*sinh(d*x + c)^4 - 2*(b^2*d*f^3*x + b^2*d*e*f
^2)*cosh(d*x + c)^2 - 2*(b^2*d*f^3*x + b^2*d*e*f^2 - 3*(b^2*d*f^3*x + b^2*d
*e*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*f^3*x + b^2*d*e*f^2)*c
osh(d*x + c)^3 - (b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c))*
polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d
*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 6*(b^2*d*f^3*x + b^2*d*e*f^2 - a*b*f^3
 + (b^2*d*f^3*x + b^2*d*e*f^2 - a*b*f^3)*cosh(d*x + c)^4 + 4*(b^2*d*f^3*x +
 b^2*d*e*f^2 - a*b*f^3)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*f^3*x + b^2*
d*e*f^2 - a*b*f^3)*sinh(d*x + c)^4 - 2*(b^2*d*f^3*x + b^2*d*e*f^2 - a*b*f^3
)*cosh(d*x + c)^2 - 2*(b^2*d*f^3*x + b^2*d*e*f^2 - a*b*f^3 - 3*(b^2*d*f^3*x
 + b^2*d*e*f^2 - a*b*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*f^3*
x + b^2*d*e*f^2 - a*b*f^3)*cosh(d*x + c)^3 - (b^2*d*f^3*x + b^2*d*e*f^2 - a
*b*f^3)*cosh(d*x + c))*sinh(d*x + c))*polylog(3, cosh(d*x + c) + sinh(d*x +
 c)) - 6*(b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f^3 + (b^2*d*f^3*x + b^2*d*e*f^2
+ a*b*f^3)*cosh(d*x + c)^4 + 4*(b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f^3)*cosh(d
*x + c)*sinh(d*x + c)^3 + (b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f^3)*sinh(d*x +
c)^4 - 2*(b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f^3)*cosh(d*x + c)^2 - 2*(b^2*d*f
^3*x + b^2*d*e*f^2 + a*b*f^3 - 3*(b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f^3)*cosh
(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f^3)*cos
h(d*x + c)^3 - (b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f^3)*cosh(d*x + c))*sinh(d*
x + c))*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) - 2*(a*b*d^3*f^3*x^3 + 3
*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + a*b*d^3*e^3 + 6*(a^2*d^2*f^3*x^2 +
 2*a^2*d^2*e*f^2*x + 2*a^2*c*d*e*f^2 - a^2*c^2*f^3)*cosh(d*x + c)^3 - 3*(a*
b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + a*b*d^3*e^3)*cosh
```

```
(d*x + c)^2 + (2*a^2*d^3*f^3*x^3 + 2*a^2*d^3*e^3 + 3*a^2*d^2*e^2*f - 12*a^2
*c*d*e*f^2 + 6*a^2*c^2*f^3 + 3*(2*a^2*d^3*e*f^2 - a^2*d^2*f^3)*x^2 + 6*(a^2
*d^3*e^2*f - a^2*d^2*e*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/(a^3*d^4*cosh(
d*x + c)^4 + 4*a^3*d^4*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*d^4*sinh(d*x + c
)^4 - 2*a^3*d^4*cosh(d*x + c)^2 + a^3*d^4 + 2*(3*a^3*d^4*cosh(d*x + c)^2 -
a^3*d^4)*sinh(d*x + c)^2 + 4*(a^3*d^4*cosh(d*x + c)^3 - a^3*d^4*cosh(d*x +
c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.17, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \coth \left(dx+c\right) \operatorname{csch} \left(dx+c\right)^{2}}{a+b\sinh \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -e^3*(2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((2*a^2*
e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) + b^2*log(-2*a*e^(-d*x -
c) + b*e^(-2*d*x - 2*c) - b)/(a^3*d) - b^2*log(e^(-d*x - c) + 1)/(a^3*d) -
b^2*log(e^(-d*x - c) - 1)/(a^3*d)) + (3*a*f^3*x^2 + 6*a*e*f^2*x + 3*a*e^2*f
 + 2*(b*d*f^3*x^3*e^(3*c) + 3*b*d*e*f^2*x^2*e^(3*c) + 3*b*d*e^2*f*x*e^(3*c)
)*e^(3*d*x) - (2*a*d*f^3*x^3*e^(2*c) + 3*a*e^2*f*e^(2*c) + 3*(2*d*e*f^2 + f
^3)*a*x^2*e^(2*c) + 6*(d*e^2*f + e*f^2)*a*x*e^(2*c))*e^(2*d*x) - 2*(b*d*f^3
*x^3*e^c + 3*b*d*e*f^2*x^2*e^c + 3*b*d*e^2*f*x*e^c)*e^(d*x))/(a^2*d^2*e^(4*
```

```
d*x + 4*c) - 2*a^2*d^2*e^(2*d*x + 2*c) + a^2*d^2) + (d^3*x^3*log(e^(d*x + c
) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x + c)) + 6
*polylog(4, -e^(d*x + c)))*b^2*f^3/(a^3*d^4) + (d^3*x^3*log(-e^(d*x + c) +
1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*polyl
og(4, e^(d*x + c)))*b^2*f^3/(a^3*d^4) - 3*(b*d*e^2*f + a*e*f^2)*x/(a^2*d^2)
 + 3*(b*d*e^2*f - a*e*f^2)*x/(a^2*d^2) + 3*(b*d*e^2*f + a*e*f^2)*log(e^(d*x
 + c) + 1)/(a^2*d^3) - 3*(b*d*e^2*f - a*e*f^2)*log(e^(d*x + c) - 1)/(a^2*d^
3) + 3*(b^2*d*e*f^2 + a*b*f^3)*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(
-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))/(a^3*d^4) + 3*(b^2*d*e*f^2 - a*
b*f^3)*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylo
g(3, e^(d*x + c)))/(a^3*d^4) + 3*(b^2*d^2*e^2*f + 2*a*b*d*e*f^2 + a^2*f^3)*
(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^3*d^4) + 3*(b^2*d^2*e^2
*f - 2*a*b*d*e*f^2 + a^2*f^3)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c
)))/(a^3*d^4) - 1/4*(b^2*d^4*f^3*x^4 + 4*(b^2*d*e*f^2 + a*b*f^3)*d^3*x^3 +
6*(b^2*d^2*e^2*f + 2*a*b*d*e*f^2 + a^2*f^3)*d^2*x^2)/(a^3*d^4) - 1/4*(b^2*d
^4*f^3*x^4 + 4*(b^2*d*e*f^2 - a*b*f^3)*d^3*x^3 + 6*(b^2*d^2*e^2*f - 2*a*b*d
*e*f^2 + a^2*f^3)*d^2*x^2)/(a^3*d^4) + integrate(-2*(b^3*f^3*x^3 + 3*b^3*e*
f^2*x^2 + 3*b^3*e^2*f*x - (a*b^2*f^3*x^3*e^c + 3*a*b^2*e*f^2*x^2*e^c + 3*a*
b^2*e^2*f*x*e^c)*e^(d*x))/(a^3*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x + c) - a^3*
b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth(c+dx)\,(e+fx)^3}{\sinh(c+dx)^2\,(a+b\sinh(c+dx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)*(e + f*x)^3)/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((coth(c + d*x)*(e + f*x)^3)/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*coth(d*x+c)*csch(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.477 $\int \frac{(e+fx)^2 \coth(c+dx)\mathbf{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=502

$$-\frac{b^2f^2\text{Li}_3\left(e^{2(c+dx)}\right)}{2a^3d^3}+\frac{b^2f(e+fx)\text{Li}_2\left(e^{2(c+dx)}\right)}{a^3d^2}+\frac{b^2(e+fx)^2\log\left(1-e^{2(c+dx)}\right)}{a^3d}+\frac{2bf^2\text{Li}_2\left(-e^{c+dx}\right)}{a^2d^3}-\frac{2bf^2\text{Li}_2\left(e^{c+dx}\right.}{a^2d^3}$$

```
[Out] 4*b*f*(f*x+e)*arctanh(exp(d*x+c))/a^2/d^2-f*(f*x+e)*coth(d*x+c)/a/d^2+b*(f*
x+e)^2*csch(d*x+c)/a^2/d-1/2*(f*x+e)^2*csch(d*x+c)^2/a/d+b^2*(f*x+e)^2*ln(1
-exp(2*d*x+2*c))/a^3/d+f^2*ln(sinh(d*x+c))/a/d^3-b^2*(f*x+e)^2*ln(1+b*exp(d
*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d-b^2*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^
2)^(1/2)))/a^3/d+2*b*f^2*polylog(2,-exp(d*x+c))/a^2/d^3-2*b*f^2*polylog(2,e
xp(d*x+c))/a^2/d^3+b^2*f*(f*x+e)*polylog(2,exp(2*d*x+2*c))/a^3/d^2-2*b^2*f*
(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d^2-2*b^2*f*(f*x+e
)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/d^2-1/2*b^2*f^2*polylog(
3,exp(2*d*x+2*c))/a^3/d^3+2*b^2*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1
/2)))/a^3/d^3+2*b^2*f^2*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/d^
3
```

Rubi [A] time = 1.00, antiderivative size = 502, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 14, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.412, Rules used = {5587, 5452, 4184, 3475, 4182, 2279, 2391, 5569, 3716, 2190, 2531, 2282, 6589, 5561}

$$-\frac{2b^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^3d^2}-\frac{2b^2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^3d^2}+\frac{b^2f(e+fx)\text{PolyLog}\left(2,e^{2(c+dx)}\right.}{a^3d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Coth[c + d*x]*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (4*b*f*(e + f*x)*ArcTanh[E^(c + d*x)])/(a^2*d^2) - (f*(e + f*x)*Coth[c + d*
x])/(a*d^2) + (b*(e + f*x)^2*Csch[c + d*x])/(a^2*d) - ((e + f*x)^2*Csch[c +
 d*x]^2)/(2*a*d) - (b^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2])])/(a^3*d) - (b^2*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 +
 b^2])])/(a^3*d) + (b^2*(e + f*x)^2*Log[1 - E^(2*(c + d*x))])/(a^3*d) + (f^
2*Log[Sinh[c + d*x]])/(a*d^3) + (2*b*f^2*PolyLog[2, -E^(c + d*x)])/(a^2*d^3
) - (2*b*f^2*PolyLog[2, E^(c + d*x)])/(a^2*d^3) - (2*b^2*f*(e + f*x)*PolyLo
g[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^2) - (2*b^2*f*(e + f
*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^2) + (b^2*
f*(e + f*x)*PolyLog[2, E^(2*(c + d*x))])/(a^3*d^2) + (2*b^2*f^2*PolyLog[3,
-((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^3) + (2*b^2*f^2*PolyLog[3
```

```
, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^3) - (b^2*f^2*PolyLog[3
, E^(2*(c + d*x))])/(2*a^3*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5587

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*Csch[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Csch[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Csch[c + d*x]^(p - 1)*Coth[c + d*x]^n)/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\coth(c+dx)\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\coth(c+dx)\text{csch}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\coth(c+dx)\text{csch}(c}{a+b\sinh(c+dx)}}{a}$$

$$= -\frac{(e+fx)^2\text{csch}^2(c+dx)}{2ad} - \frac{b\int (e+fx)^2\coth(c+dx)\text{csch}(c+dx)\,d}{a^2}$$

$$= -\frac{f(e+fx)\coth(c+dx)}{ad^2} + \frac{b(e+fx)^2\text{csch}(c+dx)}{a^2d} - \frac{(e+fx)^2\text{csch}}{2ad}$$

$$= \frac{4bf(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{f(e+fx)\coth(c+dx)}{ad^2} + \frac{b(e+fx)^2\text{c}}{a^2}$$

$$= \frac{4bf(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{f(e+fx)\coth(c+dx)}{ad^2} + \frac{b(e+fx)^2\text{c}}{a^2}$$

$$= \frac{4bf(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{f(e+fx)\coth(c+dx)}{ad^2} + \frac{b(e+fx)^2\text{c}}{a^2}$$

$$= \frac{4bf(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{f(e+fx)\coth(c+dx)}{ad^2} + \frac{b(e+fx)^2\text{c}}{a^2}$$

$$= \frac{4bf(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^2d^2} - \frac{f(e+fx)\coth(c+dx)}{ad^2} + \frac{b(e+fx)^2\text{c}}{a^2}$$

Mathematica [B] time = 28.09, size = 1550, normalized size = 3.09

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Coth[c + d*x]*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (b*(e + f*x)^2*Csch[c])/(a^2*d) + ((-e^2 - 2*e*f*x - f^2*x^2)*Csch[c/2 + (d
*x)/2]^2)/(8*a*d) - (12*d*E^(2*c)*(b^2*d^2*e^2 + a^2*f^2)*x - 12*d*(-1 + E^
(2*c))*(b^2*d^2*e^2 + a^2*f^2)*x + 12*b^2*d^3*e*f*x^2 + 4*b^2*d^3*f^2*x^3 -
 24*a*b*d*e*(-1 + E^(2*c))*f*ArcTanh[E^(c + d*x)] + 6*b^2*d^2*e^2*(-1 + E^(
2*c))*(2*d*x - Log[1 - E^(2*(c + d*x))]) + 6*a^2*(-1 + E^(2*c))*f^2*(2*d*x
- Log[1 - E^(2*(c + d*x))]) + 12*a*b*(-1 + E^(2*c))*f^2*(d*x*(Log[1 - E^(c
+ d*x)] - Log[1 + E^(c + d*x)]) - PolyLog[2, -E^(c + d*x)] + PolyLog[2, E^(
c + d*x)]) + 6*b^2*d*e*(-1 + E^(2*c))*f*(2*d*x*(d*x - Log[1 - E^(2*(c + d*x
))]) - PolyLog[2, E^(2*(c + d*x))]) + b^2*(-1 + E^(2*c))*f^2*(2*d^2*x^2*(2*
d*x - 3*Log[1 - E^(2*(c + d*x))]) - 6*d*x*PolyLog[2, E^(2*(c + d*x))] + 3*P
olyLog[3, E^(2*(c + d*x))]))/(6*a^3*d^3*(-1 + E^(2*c))) + (b^2*(6*d^3*e^2*E
^(2*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*d^2*e^2*Log[b
- 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^(2*c)*Log[b - 2*a*E^(c
 + d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c
 - Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*
x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c
+ d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1
+ (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2*e*f*x*Log[
1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c
)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^
2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] -
3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E
^(2*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(
a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyL
og[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*Pol
yLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*
c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))]
 - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])
)] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)
*E^(2*c)]))]))/(3*a^3*d^3*(-1 + E^(2*c))) + ((e^2 + 2*e*f*x + f^2*x^2)*Sech
[c/2 + (d*x)/2]^2)/(8*a*d) + (Sech[c/2]*Sech[c/2 + (d*x)/2]*(-(b*d*e^2*Sinh
[(d*x)/2]) - a*e*f*Sinh[(d*x)/2] - 2*b*d*e*f*x*Sinh[(d*x)/2] - a*f^2*x*Sinh
[(d*x)/2] - b*d*f^2*x^2*Sinh[(d*x)/2]))/(2*a^2*d^2) + (Csch[c/2]*Csch[c/2 +
 (d*x)/2]*(-(b*d*e^2*Sinh[(d*x)/2]) + a*e*f*Sinh[(d*x)/2] - 2*b*d*e*f*x*Sin
h[(d*x)/2] + a*f^2*x*Sinh[(d*x)/2] - b*d*f^2*x^2*Sinh[(d*x)/2]))/(2*a^2*d^2
)
```

fricas [C] time = 1.03, size = 6479, normalized size = 12.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] (2*a^2*d*e*f - 2*a^2*c*f^2 - 2*(a^2*d*f^2*x + a^2*c*f^2)*cosh(d*x + c)^4 -
2*(a^2*d*f^2*x + a^2*c*f^2)*sinh(d*x + c)^4 + 2*(a*b*d^2*f^2*x^2 + 2*a*b*d^
2*e*f*x + a*b*d^2*e^2)*cosh(d*x + c)^3 + 2*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f
*x + a*b*d^2*e^2 - 4*(a^2*d*f^2*x + a^2*c*f^2)*cosh(d*x + c))*sinh(d*x + c)
^3 - 2*(a^2*d^2*f^2*x^2 + a^2*d^2*e^2 + a^2*d*e*f - 2*a^2*c*f^2 + (2*a^2*d^
2*e*f - a^2*d*f^2)*x)*cosh(d*x + c)^2 - 2*(a^2*d^2*f^2*x^2 + a^2*d^2*e^2 +
a^2*d*e*f - 2*a^2*c*f^2 + 6*(a^2*d*f^2*x + a^2*c*f^2)*cosh(d*x + c)^2 + (2*
a^2*d^2*e*f - a^2*d*f^2)*x - 3*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + a*b*d^2
*e^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 2*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x
 + a*b*d^2*e^2)*cosh(d*x + c) - 2*(b^2*d*f^2*x + b^2*d*e*f + (b^2*d*f^2*x +
 b^2*d*e*f)*cosh(d*x + c)^4 + 4*(b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c)*sin
h(d*x + c)^3 + (b^2*d*f^2*x + b^2*d*e*f)*sinh(d*x + c)^4 - 2*(b^2*d*f^2*x +
 b^2*d*e*f)*cosh(d*x + c)^2 - 2*(b^2*d*f^2*x + b^2*d*e*f - 3*(b^2*d*f^2*x +
 b^2*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*f^2*x + b^2*d*e*f)
*cosh(d*x + c)^3 - (b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*
dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x +
c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(b^2*d*f^2*x + b^2*d*e*f + (b^2*d
*f^2*x + b^2*d*e*f)*cosh(d*x + c)^4 + 4*(b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x
+ c)*sinh(d*x + c)^3 + (b^2*d*f^2*x + b^2*d*e*f)*sinh(d*x + c)^4 - 2*(b^2*d
*f^2*x + b^2*d*e*f)*cosh(d*x + c)^2 - 2*(b^2*d*f^2*x + b^2*d*e*f - 3*(b^2*d
*f^2*x + b^2*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*f^2*x + b^
2*d*e*f)*cosh(d*x + c)^3 - (b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c))*sinh(d*
x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sin
h(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(b^2*d*f^2*x + b^2*d*e*f
+ (b^2*d*f^2*x + b^2*d*e*f - a*b*f^2)*cosh(d*x + c)^4 + 4*(b^2*d*f^2*x + b^
2*d*e*f - a*b*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*f^2*x + b^2*d*e*f
 - a*b*f^2)*sinh(d*x + c)^4 - a*b*f^2 - 2*(b^2*d*f^2*x + b^2*d*e*f - a*b*f^
2)*cosh(d*x + c)^2 - 2*(b^2*d*f^2*x + b^2*d*e*f - a*b*f^2 - 3*(b^2*d*f^2*x
+ b^2*d*e*f - a*b*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*f^2*x +
 b^2*d*e*f - a*b*f^2)*cosh(d*x + c)^3 - (b^2*d*f^2*x + b^2*d*e*f - a*b*f^2)
*cosh(d*x + c))*sinh(d*x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) + 2*(b^
2*d*f^2*x + b^2*d*e*f + (b^2*d*f^2*x + b^2*d*e*f + a*b*f^2)*cosh(d*x + c)^4
 + 4*(b^2*d*f^2*x + b^2*d*e*f + a*b*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b
^2*d*f^2*x + b^2*d*e*f + a*b*f^2)*sinh(d*x + c)^4 + a*b*f^2 - 2*(b^2*d*f^2*
x + b^2*d*e*f + a*b*f^2)*cosh(d*x + c)^2 - 2*(b^2*d*f^2*x + b^2*d*e*f + a*b
*f^2 - 3*(b^2*d*f^2*x + b^2*d*e*f + a*b*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)
^2 + 4*((b^2*d*f^2*x + b^2*d*e*f + a*b*f^2)*cosh(d*x + c)^3 - (b^2*d*f^2*x
+ b^2*d*e*f + a*b*f^2)*cosh(d*x + c))*sinh(d*x + c))*dilog(-cosh(d*x + c) -
 sinh(d*x + c)) - (b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2 + (b^2*d^2*e^2
 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c)^4 + 4*(b^2*d^2*e^2 - 2*b^2*c*
```

d*e*f + b^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^2*e^2 - 2*b^2*c
*d*e*f + b^2*c^2*f^2)*sinh(d*x + c)^4 - 2*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^
2*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2 -
 3*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x +
c)^2 + 4*((b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c)^3 - (b^
2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(
2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) -
(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2 + (b^2*d^2*e^2 - 2*b^2*c*d*e*f +
 b^2*c^2*f^2)*cosh(d*x + c)^4 + 4*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^
2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f
^2)*sinh(d*x + c)^4 - 2*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*
x + c)^2 - 2*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2 - 3*(b^2*d^2*e^2 -
2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^2
*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c)^3 - (b^2*d^2*e^2 - 2*b^2*
c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c)
+ 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b^2*d^2*f^2*x^2 +
 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2 + (b^2*d^2*f^2*x^2 + 2*b^2*d
^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)^4 + 4*(b^2*d^2*f^2*x^
2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x +
 c)^3 + (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*s
inh(d*x + c)^4 - 2*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2
*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*
d*e*f - b^2*c^2*f^2 - 3*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f
- b^2*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^2*f^2*x^2 + 2*b
^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)^3 - (b^2*d^2*f^2*
x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c))*sinh(d*
x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f
*x + 2*b^2*c*d*e*f - b^2*c^2*f^2 + (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b
^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)^4 + 4*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*
e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d
^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*sinh(d*x + c)^4
 - 2*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh
(d*x + c)^2 - 2*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^
2*f^2 - 3*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)
*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x +
 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)^3 - (b^2*d^2*f^2*x^2 + 2*b^2*d^
2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(-(
a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqr
t((a^2 + b^2)/b^2) - b)/b) + (b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b*d*e*f +
 (b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*(b^2*d^2*e*f +
a*b*d*f^2)*x)*cosh(d*x + c)^4 + 4*(b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b*d*
e*f + a^2*f^2 + 2*(b^2*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c)^
3 + (b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*(b^2*d^2*e*f
 + a*b*d*f^2)*x)*sinh(d*x + c)^4 + a^2*f^2 - 2*(b^2*d^2*f^2*x^2 + b^2*d^2*e

```
^2 + 2*a*b*d*e*f + a^2*f^2 + 2*(b^2*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c)^2
 - 2*(b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 - 3*(b^2*d^2*f^
2*x^2 + b^2*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*(b^2*d^2*e*f + a*b*d*f^2)*x
)*cosh(d*x + c)^2 + 2*(b^2*d^2*e*f + a*b*d*f^2)*x)*sinh(d*x + c)^2 + 2*(b^2
*d^2*e*f + a*b*d*f^2)*x + 4*((b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b*d*e*f +
 a^2*f^2 + 2*(b^2*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c)^3 - (b^2*d^2*f^2*x^
2 + b^2*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*(b^2*d^2*e*f + a*b*d*f^2)*x)*co
sh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) + (b^2*d
^2*e^2 + (b^2*d^2*e^2 - 2*(b^2*c + a*b)*d*e*f + (b^2*c^2 + 2*a*b*c + a^2)*f
^2)*cosh(d*x + c)^4 + 4*(b^2*d^2*e^2 - 2*(b^2*c + a*b)*d*e*f + (b^2*c^2 + 2
*a*b*c + a^2)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^2*e^2 - 2*(b^2*c
+ a*b)*d*e*f + (b^2*c^2 + 2*a*b*c + a^2)*f^2)*sinh(d*x + c)^4 - 2*(b^2*c +
a*b)*d*e*f + (b^2*c^2 + 2*a*b*c + a^2)*f^2 - 2*(b^2*d^2*e^2 - 2*(b^2*c + a*
b)*d*e*f + (b^2*c^2 + 2*a*b*c + a^2)*f^2)*cosh(d*x + c)^2 - 2*(b^2*d^2*e^2
- 2*(b^2*c + a*b)*d*e*f + (b^2*c^2 + 2*a*b*c + a^2)*f^2 - 3*(b^2*d^2*e^2 -
2*(b^2*c + a*b)*d*e*f + (b^2*c^2 + 2*a*b*c + a^2)*f^2)*cosh(d*x + c)^2)*sin
h(d*x + c)^2 + 4*((b^2*d^2*e^2 - 2*(b^2*c + a*b)*d*e*f + (b^2*c^2 + 2*a*b*c
 + a^2)*f^2)*cosh(d*x + c)^3 - (b^2*d^2*e^2 - 2*(b^2*c + a*b)*d*e*f + (b^2*
c^2 + 2*a*b*c + a^2)*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) +
 sinh(d*x + c) - 1) + (b^2*d^2*f^2*x^2 + 2*b^2*c*d*e*f + (b^2*d^2*f^2*x^2 +
 2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c)*f^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x)*c
osh(d*x + c)^4 + 4*(b^2*d^2*f^2*x^2 + 2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c)*f
^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^
2*f^2*x^2 + 2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c)*f^2 + 2*(b^2*d^2*e*f - a*b*
d*f^2)*x)*sinh(d*x + c)^4 - (b^2*c^2 + 2*a*b*c)*f^2 - 2*(b^2*d^2*f^2*x^2 +
2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c)*f^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x)*co
sh(d*x + c)^2 - 2*(b^2*d^2*f^2*x^2 + 2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c)*f^
2 - 3*(b^2*d^2*f^2*x^2 + 2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c)*f^2 + 2*(b^2*d
^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c)^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x)*sin
h(d*x + c)^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x + 4*((b^2*d^2*f^2*x^2 + 2*b^2*
c*d*e*f - (b^2*c^2 + 2*a*b*c)*f^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x
 + c)^3 - (b^2*d^2*f^2*x^2 + 2*b^2*c*d*e*f - (b^2*c^2 + 2*a*b*c)*f^2 + 2*(b
^2*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))*log(-cosh(d*x + c)
 - sinh(d*x + c) + 1) + 2*(b^2*f^2*cosh(d*x + c)^4 + 4*b^2*f^2*cosh(d*x + c
)*sinh(d*x + c)^3 + b^2*f^2*sinh(d*x + c)^4 - 2*b^2*f^2*cosh(d*x + c)^2 + b
^2*f^2 + 2*(3*b^2*f^2*cosh(d*x + c)^2 - b^2*f^2)*sinh(d*x + c)^2 + 4*(b^2*f
^2*cosh(d*x + c)^3 - b^2*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*co
sh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2))/b) + 2*(b^2*f^2*cosh(d*x + c)^4 + 4*b^2*f^2*cosh(d*x + c)*s
inh(d*x + c)^3 + b^2*f^2*sinh(d*x + c)^4 - 2*b^2*f^2*cosh(d*x + c)^2 + b^2*
f^2 + 2*(3*b^2*f^2*cosh(d*x + c)^2 - b^2*f^2)*sinh(d*x + c)^2 + 4*(b^2*f^2*
cosh(d*x + c)^3 - b^2*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(
d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2))/b) - 2*(b^2*f^2*cosh(d*x + c)^4 + 4*b^2*f^2*cosh(d*x + c)*sinh
(d*x + c)^3 + b^2*f^2*sinh(d*x + c)^4 - 2*b^2*f^2*cosh(d*x + c)^2 + b^2*f^2
```

```
 + 2*(3*b^2*f^2*cosh(d*x + c)^2 - b^2*f^2)*sinh(d*x + c)^2 + 4*(b^2*f^2*cos
h(d*x + c)^3 - b^2*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, cosh(d*x +
c) + sinh(d*x + c)) - 2*(b^2*f^2*cosh(d*x + c)^4 + 4*b^2*f^2*cosh(d*x + c)*
sinh(d*x + c)^3 + b^2*f^2*sinh(d*x + c)^4 - 2*b^2*f^2*cosh(d*x + c)^2 + b^2
*f^2 + 2*(3*b^2*f^2*cosh(d*x + c)^2 - b^2*f^2)*sinh(d*x + c)^2 + 4*(b^2*f^2
*cosh(d*x + c)^3 - b^2*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, -cosh(d
*x + c) - sinh(d*x + c)) - 2*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + a*b*d^2*e
^2 + 4*(a^2*d*f^2*x + a^2*c*f^2)*cosh(d*x + c)^3 - 3*(a*b*d^2*f^2*x^2 + 2*a
*b*d^2*e*f*x + a*b*d^2*e^2)*cosh(d*x + c)^2 + 2*(a^2*d^2*f^2*x^2 + a^2*d^2*
e^2 + a^2*d*e*f - 2*a^2*c*f^2 + (2*a^2*d^2*e*f - a^2*d*f^2)*x)*cosh(d*x + c
))*sinh(d*x + c))/(a^3*d^3*cosh(d*x + c)^4 + 4*a^3*d^3*cosh(d*x + c)*sinh(d
*x + c)^3 + a^3*d^3*sinh(d*x + c)^4 - 2*a^3*d^3*cosh(d*x + c)^2 + a^3*d^3 +
 2*(3*a^3*d^3*cosh(d*x + c)^2 - a^3*d^3)*sinh(d*x + c)^2 + 4*(a^3*d^3*cosh(
d*x + c)^3 - a^3*d^3*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.25, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \coth \left(dx+c\right) \operatorname{csch}\left(dx+c\right)^{2}}{a+b \sinh \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-e^{2}\left(\frac{2\left(be^{(-dx-c)}-ae^{(-2\,dx-2\,c)}-be^{(-3\,dx-3\,c)}\right)}{\left(2\,a^{2}e^{(-2\,dx-2\,c)}-a^{2}e^{(-4\,dx-4\,c)}-a^{2}\right)d}+\frac{b^{2}\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{a^{3}d}-\frac{b^{2}\log\left(e^{(-dx-c)}+1\right)}{a^{3}d}-\frac{b^{2}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -e^2*(2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((2*a^2*
e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) + b^2*log(-2*a*e^(-d*x -
c) + b*e^(-2*d*x - 2*c) - b)/(a^3*d) - b^2*log(e^(-d*x - c) + 1)/(a^3*d) -
b^2*log(e^(-d*x - c) - 1)/(a^3*d)) + 2*(a*f^2*x + a*e*f + (b*d*f^2*x^2*e^(3
*c) + 2*b*d*e*f*x*e^(3*c))*e^(3*d*x) - (a*d*f^2*x^2*e^(2*c) + a*e*f*e^(2*c)
 + (2*d*e*f + f^2)*a*x*e^(2*c))*e^(2*d*x) - (b*d*f^2*x^2*e^c + 2*b*d*e*f*x*
e^c)*e^(d*x))/(a^2*d^2*e^(4*d*x + 4*c) - 2*a^2*d^2*e^(2*d*x + 2*c) + a^2*d^
2) + (d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(
3, -e^(d*x + c)))*b^2*f^2/(a^3*d^3) + (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*
x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*b^2*f^2/(a^3*d^3) - (2*b*
d*e*f + a*f^2)*x/(a^2*d^2) + (2*b*d*e*f - a*f^2)*x/(a^2*d^2) + (2*b*d*e*f +
 a*f^2)*log(e^(d*x + c) + 1)/(a^2*d^3) - (2*b*d*e*f - a*f^2)*log(e^(d*x + c
) - 1)/(a^2*d^3) + 2*(b^2*d*e*f + a*b*f^2)*(d*x*log(e^(d*x + c) + 1) + dilo
g(-e^(d*x + c)))/(a^3*d^3) + 2*(b^2*d*e*f - a*b*f^2)*(d*x*log(-e^(d*x + c)
+ 1) + dilog(e^(d*x + c)))/(a^3*d^3) - 1/3*(b^2*d^3*f^2*x^3 + 3*(b^2*d*e*f
+ a*b*f^2)*d^2*x^2)/(a^3*d^3) - 1/3*(b^2*d^3*f^2*x^3 + 3*(b^2*d*e*f - a*b*f
^2)*d^2*x^2)/(a^3*d^3) + integrate(-2*(b^3*f^2*x^2 + 2*b^3*e*f*x - (a*b^2*f
^2*x^2*e^c + 2*a*b^2*e*f*x*e^c)*e^(d*x))/(a^3*b*e^(2*d*x + 2*c) + 2*a^4*e^(
d*x + c) - a^3*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{{\mathrm{sinh}\left(c+d\,x\right)}^2\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)*(e + f*x)^2)/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
[Out] int((coth(c + d*x)*(e + f*x)^2)/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*coth(d*x+c)*csch(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.478 $\int \frac{(e+fx)\coth(c+dx)\textbf{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=298

$$\frac{b^2 f\text{Li}_2\left(e^{2(c+dx)}\right)}{2a^3d^2}+\frac{b^2(e+fx)\log\left(1-e^{2(c+dx)}\right)}{a^3d}+\frac{bf\tanh^{-1}(\cosh(c+dx))}{a^2d^2}+\frac{b(e+fx)\text{csch}(c+dx)}{a^2d}-\frac{b^2 f\text{Li}_2\left(-\frac{b}{a-}\right.}{a^3d^2}$$

```
[Out] b*f*arctanh(cosh(d*x+c))/a^2/d^2-1/2*f*coth(d*x+c)/a/d^2+b*(f*x+e)*csch(d*x
+c)/a^2/d-1/2*(f*x+e)*csch(d*x+c)^2/a/d+b^2*(f*x+e)*ln(1-exp(2*d*x+2*c))/a^
3/d-b^2*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d-b^2*(f*x+e)*ln
(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/d+1/2*b^2*f*polylog(2,exp(2*d*x+2*
c))/a^3/d^2-b^2*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d^2-b^2*
f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/d^2
```

Rubi [A] time = 0.57, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {5587, 5452, 3767, 8, 3770, 5569, 3716, 2190, 2279, 2391, 5561}

$$-\frac{b^2 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^3d^2}-\frac{b^2 f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^3d^2}+\frac{b^2 f\text{PolyLog}\left(2,e^{2(c+dx)}\right)}{2a^3d^2}-\frac{b^2(e+fx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right.}{a^3d}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Coth[c + d*x]*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*f*ArcTanh[Cosh[c + d*x]])/(a^2*d^2) - (f*Coth[c + d*x])/(2*a*d^2) + (b*(
e + f*x)*Csch[c + d*x])/(a^2*d) - ((e + f*x)*Csch[c + d*x]^2)/(2*a*d) - (b^
2*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*d) - (b^2*
(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^3*d) + (b^2*(e
 + f*x)*Log[1 - E^(2*(c + d*x))])/(a^3*d) - (b^2*f*PolyLog[2, -((b*E^(c + d
*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^2) - (b^2*f*PolyLog[2, -((b*E^(c + d*x
))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^2) + (b^2*f*PolyLog[2, E^(2*(c + d*x))])
/(2*a^3*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
```

```
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5587

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*Csch[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Csch[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Csch[c + d*x]^(p - 1)*Coth[c + d*x]^n)/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\coth(c+dx)\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\coth(c+dx)\text{csch}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\coth(c+dx)\text{csch}(c+dx}{a+b\sinh(c+dx)}}{a}$$

$$= -\frac{(e+fx)\text{csch}^2(c+dx)}{2ad} - \frac{b\int (e+fx)\coth(c+dx)\text{csch}(c+dx)\,dx}{a^2} +$$

$$= \frac{b(e+fx)\text{csch}(c+dx)}{a^2d} - \frac{(e+fx)\text{csch}^2(c+dx)}{2ad} + \frac{b^2\int (e+fx)\coth(}{a^3}$$

$$= \frac{bf\tanh^{-1}(\cosh(c+dx))}{a^2d^2} - \frac{f\coth(c+dx)}{2ad^2} + \frac{b(e+fx)\text{csch}(c+dx)}{a^2d}$$

$$= \frac{bf\tanh^{-1}(\cosh(c+dx))}{a^2d^2} - \frac{f\coth(c+dx)}{2ad^2} + \frac{b(e+fx)\text{csch}(c+dx)}{a^2d}$$

$$= \frac{bf\tanh^{-1}(\cosh(c+dx))}{a^2d^2} - \frac{f\coth(c+dx)}{2ad^2} + \frac{b(e+fx)\text{csch}(c+dx)}{a^2d}$$

$$= \frac{bf\tanh^{-1}(\cosh(c+dx))}{a^2d^2} - \frac{f\coth(c+dx)}{2ad^2} + \frac{b(e+fx)\text{csch}(c+dx)}{a^2d}$$

Mathematica [A] time = 7.04, size = 376, normalized size = 1.26

$$\frac{-8b^2\left(f\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right) + f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right) + f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right) + f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right) + de\,\text{lo}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Coth[c + d*x]*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] (2*a*(-(a*f) + 2*b*d*(e + f*x))*Coth[(c + d*x)/2] - a^2*d*(e + f*x)*Csch[(c
 + d*x)/2]^2 + 8*b^2*d*e*Log[Sinh[c + d*x]] - 8*b^2*c*f*Log[Sinh[c + d*x]]
- 8*a*b*f*Log[Tanh[(c + d*x)/2]] + 4*b^2*f*((c + d*x)*(c + d*x + 2*Log[1 -
E^(-2*(c + d*x))]) - PolyLog[2, E^(-2*(c + d*x))]) - 8*b^2*(-1/2*(f*(c + d*
x)^2) + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c +
 d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d*e*Log[a + b*Sinh[c
 + d*x]] - c*f*Log[a + b*Sinh[c + d*x]] + f*PolyLog[2, (b*E^(c + d*x))/(-a
+ Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
]) + a^2*d*(e + f*x)*Sech[(c + d*x)/2]^2 - 2*a*(a*f + 2*b*d*(e + f*x))*Tanh
[(c + d*x)/2])/(8*a^3*d^2)
```

fricas [B] time = 0.74, size = 2899, normalized size = 9.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] (2*(a*b*d*f*x + a*b*d*e)*cosh(d*x + c)^3 + 2*(a*b*d*f*x + a*b*d*e)*sinh(d*x
 + c)^3 + a^2*f - (2*a^2*d*f*x + 2*a^2*d*e + a^2*f)*cosh(d*x + c)^2 - (2*a^
2*d*f*x + 2*a^2*d*e + a^2*f - 6*(a*b*d*f*x + a*b*d*e)*cosh(d*x + c))*sinh(d
*x + c)^2 - 2*(a*b*d*f*x + a*b*d*e)*cosh(d*x + c) - (b^2*f*cosh(d*x + c)^4
+ 4*b^2*f*cosh(d*x + c)*sinh(d*x + c)^3 + b^2*f*sinh(d*x + c)^4 - 2*b^2*f*c
osh(d*x + c)^2 + b^2*f + 2*(3*b^2*f*cosh(d*x + c)^2 - b^2*f)*sinh(d*x + c)^
2 + 4*(b^2*f*cosh(d*x + c)^3 - b^2*f*cosh(d*x + c))*sinh(d*x + c))*dilog((a
*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt
((a^2 + b^2)/b^2) - b)/b + 1) - (b^2*f*cosh(d*x + c)^4 + 4*b^2*f*cosh(d*x +
 c)*sinh(d*x + c)^3 + b^2*f*sinh(d*x + c)^4 - 2*b^2*f*cosh(d*x + c)^2 + b^2
*f + 2*(3*b^2*f*cosh(d*x + c)^2 - b^2*f)*sinh(d*x + c)^2 + 4*(b^2*f*cosh(d*
x + c)^3 - b^2*f*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*s
inh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) -
b)/b + 1) + (b^2*f*cosh(d*x + c)^4 + 4*b^2*f*cosh(d*x + c)*sinh(d*x + c)^3
+ b^2*f*sinh(d*x + c)^4 - 2*b^2*f*cosh(d*x + c)^2 + b^2*f + 2*(3*b^2*f*cosh
(d*x + c)^2 - b^2*f)*sinh(d*x + c)^2 + 4*(b^2*f*cosh(d*x + c)^3 - b^2*f*cos
h(d*x + c))*sinh(d*x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) + (b^2*f*co
sh(d*x + c)^4 + 4*b^2*f*cosh(d*x + c)*sinh(d*x + c)^3 + b^2*f*sinh(d*x + c)
^4 - 2*b^2*f*cosh(d*x + c)^2 + b^2*f + 2*(3*b^2*f*cosh(d*x + c)^2 - b^2*f)*
sinh(d*x + c)^2 + 4*(b^2*f*cosh(d*x + c)^3 - b^2*f*cosh(d*x + c))*sinh(d*x
+ c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) - ((b^2*d*e - b^2*c*f)*cosh(d*x
 + c)^4 + 4*(b^2*d*e - b^2*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*e -
b^2*c*f)*sinh(d*x + c)^4 + b^2*d*e - b^2*c*f - 2*(b^2*d*e - b^2*c*f)*cosh(d
*x + c)^2 - 2*(b^2*d*e - b^2*c*f - 3*(b^2*d*e - b^2*c*f)*cosh(d*x + c)^2)*s
inh(d*x + c)^2 + 4*((b^2*d*e - b^2*c*f)*cosh(d*x + c)^3 - (b^2*d*e - b^2*c*
f)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c)
+ 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - ((b^2*d*e - b^2*c*f)*cosh(d*x + c)^4 +
 4*(b^2*d*e - b^2*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*e - b^2*c*f)*
sinh(d*x + c)^4 + b^2*d*e - b^2*c*f - 2*(b^2*d*e - b^2*c*f)*cosh(d*x + c)^2
 - 2*(b^2*d*e - b^2*c*f - 3*(b^2*d*e - b^2*c*f)*cosh(d*x + c)^2)*sinh(d*x +
 c)^2 + 4*((b^2*d*e - b^2*c*f)*cosh(d*x + c)^3 - (b^2*d*e - b^2*c*f)*cosh(d
*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqr
t((a^2 + b^2)/b^2) + 2*a) - (b^2*d*f*x + (b^2*d*f*x + b^2*c*f)*cosh(d*x + c
)^4 + 4*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*f*x +
b^2*c*f)*sinh(d*x + c)^4 + b^2*c*f - 2*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^
2 - 2*(b^2*d*f*x + b^2*c*f - 3*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^2)*sinh(
```

```
d*x + c)^2 + 4*((b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^3 - (b^2*d*f*x + b^2*c*
f)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) +
(b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (b^2*d*
f*x + (b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^4 + 4*(b^2*d*f*x + b^2*c*f)*cosh(
d*x + c)*sinh(d*x + c)^3 + (b^2*d*f*x + b^2*c*f)*sinh(d*x + c)^4 + b^2*c*f
- 2*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^2 - 2*(b^2*d*f*x + b^2*c*f - 3*(b^2
*d*f*x + b^2*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*f*x + b^2*c*
f)*cosh(d*x + c)^3 - (b^2*d*f*x + b^2*c*f)*cosh(d*x + c))*sinh(d*x + c))*lo
g(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))
*sqrt((a^2 + b^2)/b^2) - b)/b) + (b^2*d*f*x + (b^2*d*f*x + b^2*d*e + a*b*f)
*cosh(d*x + c)^4 + 4*(b^2*d*f*x + b^2*d*e + a*b*f)*cosh(d*x + c)*sinh(d*x +
 c)^3 + (b^2*d*f*x + b^2*d*e + a*b*f)*sinh(d*x + c)^4 + b^2*d*e + a*b*f - 2
*(b^2*d*f*x + b^2*d*e + a*b*f)*cosh(d*x + c)^2 - 2*(b^2*d*f*x + b^2*d*e + a
*b*f - 3*(b^2*d*f*x + b^2*d*e + a*b*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4
*((b^2*d*f*x + b^2*d*e + a*b*f)*cosh(d*x + c)^3 - (b^2*d*f*x + b^2*d*e + a*
b*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) +
 ((b^2*d*e - (b^2*c + a*b)*f)*cosh(d*x + c)^4 + 4*(b^2*d*e - (b^2*c + a*b)*
f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*e - (b^2*c + a*b)*f)*sinh(d*x + c
)^4 + b^2*d*e - 2*(b^2*d*e - (b^2*c + a*b)*f)*cosh(d*x + c)^2 - 2*(b^2*d*e
- 3*(b^2*d*e - (b^2*c + a*b)*f)*cosh(d*x + c)^2 - (b^2*c + a*b)*f)*sinh(d*x
 + c)^2 - (b^2*c + a*b)*f + 4*((b^2*d*e - (b^2*c + a*b)*f)*cosh(d*x + c)^3
- (b^2*d*e - (b^2*c + a*b)*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x +
c) + sinh(d*x + c) - 1) + (b^2*d*f*x + (b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^
4 + 4*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*f*x + b^
2*c*f)*sinh(d*x + c)^4 + b^2*c*f - 2*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^2
- 2*(b^2*d*f*x + b^2*c*f - 3*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^2)*sinh(d*
x + c)^2 + 4*((b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^3 - (b^2*d*f*x + b^2*c*f)
*cosh(d*x + c))*sinh(d*x + c))*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 2*
(a*b*d*f*x + a*b*d*e - 3*(a*b*d*f*x + a*b*d*e)*cosh(d*x + c)^2 + (2*a^2*d*f
*x + 2*a^2*d*e + a^2*f)*cosh(d*x + c))*sinh(d*x + c))/(a^3*d^2*cosh(d*x + c
)^4 + 4*a^3*d^2*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*d^2*sinh(d*x + c)^4 - 2
*a^3*d^2*cosh(d*x + c)^2 + a^3*d^2 + 2*(3*a^3*d^2*cosh(d*x + c)^2 - a^3*d^2
)*sinh(d*x + c)^2 + 4*(a^3*d^2*cosh(d*x + c)^3 - a^3*d^2*cosh(d*x + c))*sin
h(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"giac")

[Out] Timed out
```

maple [B] time = 0.25, size = 649, normalized size = 2.18

$$-\frac{-2bdfx\,e^{3dx+3c}+2adfx\,e^{2dx+2c}-2bde\,e^{3dx+3c}+2ade\,e^{2dx+2c}+2bdfx\,e^{dx+c}+af\,e^{2dx+2c}+2bde\,e^{dx+c}-af}{d^2a^2\left(e^{2dx+2c}-1\right)^2}+\frac{b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -(-2*b*d*f*x*exp(3*d*x+3*c)+2*a*d*f*x*exp(2*d*x+2*c)-2*b*d*e*exp(3*d*x+3*c)
+2*a*d*e*exp(2*d*x+2*c)+2*b*d*f*x*exp(d*x+c)+a*f*exp(2*d*x+2*c)+2*b*d*e*exp
(d*x+c)-a*f)/d^2/a^2/(exp(2*d*x+2*c)-1)^2+1/d^2/a^3*b^2*f*dilog(exp(d*x+c)+
1)-1/d^2/a^3*b^2*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1
/2)))-1/d^2/a^3*b^2*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(
1/2)))-1/d^2/a^3*b^2*f*dilog(exp(d*x+c))+1/d^2/a^2*b*f*ln(exp(d*x+c)+1)-1/d
^2/a^2*b*f*ln(exp(d*x+c)-1)-1/d^2/a^3*b^2*f*c*ln(exp(d*x+c)-1)-1/d/a^3*b^2*
f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2/a^3*b^2*
f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/d/a^3*b^2*f*
ln(exp(d*x+c)+1)*x-1/d/a^3*b^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(
a^2+b^2)^(1/2)))*x-1/d^2/a^3*b^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a
+(a^2+b^2)^(1/2)))*c+1/d^2/a^3*b^2*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b
)+1/d/a^3*b^2*e*ln(exp(d*x+c)+1)-1/d/a^3*b^2*e*ln(b*exp(2*d*x+2*c)+2*a*exp(
d*x+c)-b)+1/d/a^3*b^2*e*ln(exp(d*x+c)-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(4\,b^2d\int\frac{x}{4\left(a^3de^{(dx+c)}+a^3d\right)}\,dx-4\,b^2d\int\frac{x}{4\left(a^3de^{(dx+c)}-a^3d\right)}\,dx+ab\left(\frac{dx+c}{a^3d^2}-\frac{\log\left(e^{(dx+c)}+1\right)}{a^3d^2}\right)-ab\left(\frac{dx+}{a^3d^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -(4*b^2*d*integrate(1/4*x/(a^3*d*e^(d*x + c) + a^3*d), x) - 4*b^2*d*integra
te(1/4*x/(a^3*d*e^(d*x + c) - a^3*d), x) + a*b*((d*x + c)/(a^3*d^2) - log(e
^(d*x + c) + 1)/(a^3*d^2)) - a*b*((d*x + c)/(a^3*d^2) - log(e^(d*x + c) - 1
)/(a^3*d^2)) - (2*b*d*x*e^(3*d*x + 3*c) - 2*b*d*x*e^(d*x + c) - (2*a*d*x*e^
(2*c) + a*e^(2*c))*e^(2*d*x) + a)/(a^2*d^2*e^(4*d*x + 4*c) - 2*a^2*d^2*e^(2
*d*x + 2*c) + a^2*d^2) - 4*integrate(1/2*(a*b^2*x*e^(d*x + c) - b^3*x)/(a^3
*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x + c) - a^3*b), x))*f - e*(2*(b*e^(-d*x -
c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((2*a^2*e^(-2*d*x - 2*c) - a^
2*e^(-4*d*x - 4*c) - a^2)*d) + b^2*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*
```

```
c) - b)/(a^3*d) - b^2*log(e^(-d*x - c) + 1)/(a^3*d) - b^2*log(e^(-d*x - c)
- 1)/(a^3*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth(c+d\,x)\,\left(e+f\,x\right)}{\sinh(c+d\,x)^2\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)*(e + f*x))/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((coth(c + d*x)*(e + f*x))/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\coth(c+dx)\operatorname{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)*csch(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*coth(c + d*x)*csch(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.479 $\int \frac{\coth(c+dx)\mathbf{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=72

$$\frac{b^2\log(\sinh(c+dx))}{a^3d}-\frac{b^2\log(a+b\sinh(c+dx))}{a^3d}+\frac{b\text{csch}(c+dx)}{a^2d}-\frac{\text{csch}^2(c+dx)}{2ad}$$

```
[Out] b*csch(d*x+c)/a^2/d-1/2*csch(d*x+c)^2/a/d+b^2*ln(sinh(d*x+c))/a^3/d-b^2*ln(
a+b*sinh(d*x+c))/a^3/d
```

Rubi **[A]** time = 0.11, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2833, 12, 44}

$$\frac{b^2\log(\sinh(c+dx))}{a^3d}-\frac{b^2\log(a+b\sinh(c+dx))}{a^3d}+\frac{b\text{csch}(c+dx)}{a^2d}-\frac{\text{csch}^2(c+dx)}{2ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Coth[c + d*x]*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*Csch[c + d*x])/(a^2*d) - Csch[c + d*x]^2/(2*a*d) + (b^2*Log[Sinh[c + d*x
]])/(a^3*d) - (b^2*Log[a + b*Sinh[c + d*x]])/(a^3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2833

```
Int[cos[(e_.) + (f_.)*(x_)]*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((
c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b*f), Sub
st[Int[(a + x)^m*(c + (d*x)/b)^n, x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b
, c, d, e, f, m, n}, x]
```

Rubi steps

$$\int \frac{\coth(c+dx)\text{csch}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{b^3}{x^3(a+x)}\,dx, x, b\sinh(c+dx)\right)}{bd}$$
$$= \frac{b^2\,\text{Subst}\left(\int \frac{1}{x^3(a+x)}\,dx, x, b\sinh(c+dx)\right)}{d}$$
$$= \frac{b^2\,\text{Subst}\left(\int \left(\frac{1}{ax^3} - \frac{1}{a^2x^2} + \frac{1}{a^3x} - \frac{1}{a^3(a+x)}\right)dx, x, b\sinh(c+dx)\right)}{d}$$
$$= \frac{b\text{csch}(c+dx)}{a^2d} - \frac{\text{csch}^2(c+dx)}{2ad} + \frac{b^2\log(\sinh(c+dx))}{a^3d} - \frac{b^2\log(a+b\sinh(c$$

Mathematica [A] time = 0.10, size = 60, normalized size = 0.83

$$\frac{-a^2\text{csch}^2(c+dx) + 2b^2(\log(\sinh(c+dx)) - \log(a+b\sinh(c+dx))) + 2ab\text{csch}(c+dx)}{2a^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Coth[c + d*x]*Csch[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a*b*Csch[c + d*x] - a^2*Csch[c + d*x]^2 + 2*b^2*(Log[Sinh[c + d*x]] - Lo
g[a + b*Sinh[c + d*x]]))/(2*a^3*d)
```

fricas [B] time = 1.54, size = 545, normalized size = 7.57

$$2\,ab\cosh(dx+c)^3 + 2\,ab\sinh(dx+c)^3 - 2\,a^2\cosh(dx+c)^2 - 2\,ab\cosh(dx+c) + 2\left(3\,ab\cosh(dx+c) - a^2\right)\text{si}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (2*a*b*cosh(d*x + c)^3 + 2*a*b*sinh(d*x + c)^3 - 2*a^2*cosh(d*x + c)^2 - 2*
a*b*cosh(d*x + c) + 2*(3*a*b*cosh(d*x + c) - a^2)*sinh(d*x + c)^2 - (b^2*co
sh(d*x + c)^4 + 4*b^2*cosh(d*x + c)*sinh(d*x + c)^3 + b^2*sinh(d*x + c)^4 -
 2*b^2*cosh(d*x + c)^2 + 2*(3*b^2*cosh(d*x + c)^2 - b^2)*sinh(d*x + c)^2 +
b^2 + 4*(b^2*cosh(d*x + c)^3 - b^2*cosh(d*x + c))*sinh(d*x + c))*log(2*(b*s
inh(d*x + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) + (b^2*cosh(d*x + c)^4 +
 4*b^2*cosh(d*x + c)*sinh(d*x + c)^3 + b^2*sinh(d*x + c)^4 - 2*b^2*cosh(d*x
 + c)^2 + 2*(3*b^2*cosh(d*x + c)^2 - b^2)*sinh(d*x + c)^2 + b^2 + 4*(b^2*co
```

```
sh(d*x + c)^3 - b^2*cosh(d*x + c))*sinh(d*x + c))*log(2*sinh(d*x + c)/(cosh
(d*x + c) - sinh(d*x + c))) + 2*(3*a*b*cosh(d*x + c)^2 - 2*a^2*cosh(d*x + c
) - a*b)*sinh(d*x + c))/(a^3*d*cosh(d*x + c)^4 + 4*a^3*d*cosh(d*x + c)*sinh
(d*x + c)^3 + a^3*d*sinh(d*x + c)^4 - 2*a^3*d*cosh(d*x + c)^2 + a^3*d + 2*(
3*a^3*d*cosh(d*x + c)^2 - a^3*d)*sinh(d*x + c)^2 + 4*(a^3*d*cosh(d*x + c)^3
 - a^3*d*cosh(d*x + c))*sinh(d*x + c))
```

giac [A] time = 0.21, size = 134, normalized size = 1.86

$$\frac{\frac{b^2\log\left(e^{(dx+c)}+1\right)}{a^3}-\frac{b^2\log\left(\left|be^{(2\,dx+2\,c)}+2\,ae^{(dx+c)}-b\right|\right)}{a^3}+\frac{b^2\log\left(\left|e^{(dx+c)}-1\right|\right)}{a^3}+\frac{2\left(abe^{(3\,dx+3\,c)}-a^2e^{(2\,dx+2\,c)}-abe^{(dx+c)}\right)}{a^3\left(e^{(dx+c)}+1\right)^2\left(e^{(dx+c)}-1\right)^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] (b^2*log(e^(d*x + c) + 1)/a^3 - b^2*log(abs(b*e^(2*d*x + 2*c) + 2*a*e^(d*x
+ c) - b))/a^3 + b^2*log(abs(e^(d*x + c) - 1))/a^3 + 2*(a*b*e^(3*d*x + 3*c)
 - a^2*e^(2*d*x + 2*c) - a*b*e^(d*x + c))/(a^3*(e^(d*x + c) + 1)^2*(e^(d*x
+ c) - 1)^2))/d
```

maple [A] time = 0.01, size = 73, normalized size = 1.01

$$-\frac{b^2\ln\left(a+b\sinh\left(dx+c\right)\right)}{a^3d}-\frac{1}{2da\sinh\left(dx+c\right)^2}+\frac{b^2\ln\left(\sinh\left(dx+c\right)\right)}{a^3d}+\frac{b}{d\,a^2\sinh\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] -b^2*ln(a+b*sinh(d*x+c))/a^3/d-1/2/d/a/sinh(d*x+c)^2+b^2*ln(sinh(d*x+c))/a^
3/d+1/d/a^2*b/sinh(d*x+c)
```

maxima [B] time = 0.32, size = 161, normalized size = 2.24

$$-\frac{2\left(be^{(-dx-c)}-ae^{(-2\,dx-2\,c)}-be^{(-3\,dx-3\,c)}\right)}{\left(2\,a^2e^{(-2\,dx-2\,c)}-a^2e^{(-4\,dx-4\,c)}-a^2\right)d}-\frac{b^2\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{a^3d}+\frac{b^2\log\left(e^{(-dx-c)}+1\right)}{a^3d}+\frac{b^2\log\left(e\right.}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((2*a^2*e^(-2
*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) - b^2*log(-2*a*e^(-d*x - c) +
```

```
b*e^(-2*d*x - 2*c) - b)/(a^3*d) + b^2*log(e^(-d*x - c) + 1)/(a^3*d) + b^2*l
og(e^(-d*x - c) - 1)/(a^3*d)
```

mupad [B] time = 1.00, size = 470, normalized size = 6.53

$$-\frac{\frac{2}{a\,d}-\frac{2\,b\,e^{c+d\,x}}{a^2\,d}}{e^{2\,c+2\,d\,x}-1}-\frac{\left(2\,\mathrm{atan}\left(-\frac{4\,a^3\,b^5\,\sqrt{-a^6\,d^2}+4\,a\,b^7\,\sqrt{-a^6\,d^2}-4\,b^8\,e^{3\,c}\,e^{3\,d\,x}\,\sqrt{-a^6\,d^2}+4\,b^8\,e^{d\,x}\,e^{c}\,\sqrt{-a^6\,d^2}-8\,a\,b^7\,e^{2\,c}\,e^{2\,d\,x}\,\sqrt{-a^6\,d^2}+4\,a^2\,b^6\,e^{d\,x}\cdots}{4\,a^4\,b\,d\,{\left(b^4\right)}^{3/2}+4\,a^6\,b^3\,d\,\sqrt{b^4}}\right.\right.\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)/(sinh(c + d*x)^2*(a + b*sinh(c + d*x))),x)
```

```
[Out] - (2/(a*d) - (2*b*exp(c + d*x))/(a^2*d))/(exp(2*c + 2*d*x) - 1) - ((2*atan(
-(4*a^3*b^5*(-a^6*d^2)^(1/2) + 4*a*b^7*(-a^6*d^2)^(1/2) - 4*b^8*exp(3*c)*ex
p(3*d*x)*(-a^6*d^2)^(1/2) + 4*b^8*exp(d*x)*exp(c)*(-a^6*d^2)^(1/2) - 8*a*b^
7*exp(2*c)*exp(2*d*x)*(-a^6*d^2)^(1/2) + 4*a^2*b^6*exp(d*x)*exp(c)*(-a^6*d^
2)^(1/2) - 8*a^3*b^5*exp(2*c)*exp(2*d*x)*(-a^6*d^2)^(1/2) - 4*a^2*b^6*exp(3
*c)*exp(3*d*x)*(-a^6*d^2)^(1/2))/(4*a^4*b*d*(b^4)^(3/2) + 4*a^6*b^3*d*(b^4)
^(1/2))) + 2*atan((4*a^4*b^5*d*(b^4)^(1/2)*(-a^6*d^2)^(1/2) + 4*a^6*b^3*d*(
b^4)^(1/2)*(-a^6*d^2)^(1/2))*(1/(8*a^5*b^5*d^2*(a^2 + b^2)^2) - exp(d*x)*ex
p(c)*(1/(16*a^4*b^6*d^2*(a^2 + b^2)^2) - (a^2 + 2*b^2)^2/(16*a^8*b^6*d^2*(a
^2 + b^2)^2)) + (a^2 + 2*b^2)/(8*a^7*b^5*d^2*(a^2 + b^2)^2))))*(b^4)^(1/2))
/(-a^6*d^2)^(1/2) - 2/(a*d*(exp(4*c + 4*d*x) - 2*exp(2*c + 2*d*x) + 1))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth\left(c+dx\right)\operatorname{csch}^{2}\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(coth(c + d*x)*csch(c + d*x)**2/(a + b*sinh(c + d*x)), x)
```

3.480 $\int \frac{\coth(c+dx)\operatorname{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{\coth(c+dx)\operatorname{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(coth(d*x+c)*csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\coth(c+dx)\operatorname{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Coth[c + d*x]*Csch[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Coth[c + d*x]*Csch[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\coth(c+dx)\operatorname{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\coth(c+dx)\operatorname{csch}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Coth[c + d*x]*Csch[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 2.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\coth(dx+c)\operatorname{csch}(dx+c)^2}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(coth(d*x + c)*csch(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 2.46, size = 0, normalized size = 0.00

$$\int \frac{\coth\left(dx+c\right)\operatorname{csch}\left(dx+c\right)^{2}}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)*csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(coth(d*x+c)*csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{af-2\left(bdfxe^{(3c)}+bdee^{(3c)}\right)e^{(3dx)}+\left(2\,adfxe^{(2c)}+\left(2\,de-f\right)ae^{(2c)}\right)e^{(2dx)}+2\left(bdfxe^{c}+bd\right.}{a^{2}d^{2}f^{2}x^{2}+2\,a^{2}d^{2}efx+a^{2}d^{2}e^{2}+\left(a^{2}d^{2}f^{2}x^{2}e^{(4c)}+2\,a^{2}d^{2}efxe^{(4c)}+a^{2}d^{2}e^{2}e^{(4c)}\right)e^{(4dx)}-2\left(a^{2}d^{2}f^{2}x^{2}e^{(2c)}+2\,a^{2}d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -(a*f - 2*(b*d*f*x*e^(3*c) + b*d*e*e^(3*c))*e^(3*d*x) + (2*a*d*f*x*e^(2*c)
+ (2*d*e - f)*a*e^(2*c))*e^(2*d*x) + 2*(b*d*f*x*e^c + b*d*e*e^c)*e^(d*x))/(
a^2*d^2*f^2*x^2 + 2*a^2*d^2*e*f*x + a^2*d^2*e^2 + (a^2*d^2*f^2*x^2*e^(4*c)
+ 2*a^2*d^2*e*f*x*e^(4*c) + a^2*d^2*e^2*e^(4*c))*e^(4*d*x) - 2*(a^2*d^2*f^2
*x^2*e^(2*c) + 2*a^2*d^2*e*f*x*e^(2*c) + a^2*d^2*e^2*e^(2*c))*e^(2*d*x)) +
4*integrate(-1/4*(b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + a*b*d*e*f + a^2*f^2 + (2*
```

```
b^2*d^2*e*f + a*b*d*f^2)*x)/(a^3*d^2*f^3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3*
d^2*e^2*f*x + a^3*d^2*e^3 - (a^3*d^2*f^3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c
+ 3*a^3*d^2*e^2*f*x*e^c + a^3*d^2*e^3*e^c)*e^(d*x)), x) - 4*integrate(1/4*(
b^2*d^2*f^2*x^2 + b^2*d^2*e^2 - a*b*d*e*f + a^2*f^2 + (2*b^2*d^2*e*f - a*b*
d*f^2)*x)/(a^3*d^2*f^3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3*d^2*e^2*f*x + a^3*
d^2*e^3 + (a^3*d^2*f^3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c + 3*a^3*d^2*e^2*f*
x*e^c + a^3*d^2*e^3*e^c)*e^(d*x)), x) + 4*integrate(-1/2*(a*b^2*e^(d*x + c)
 - b^3)/(a^3*b*f*x + a^3*b*e - (a^3*b*f*x*e^(2*c) + a^3*b*e*e^(2*c))*e^(2*d
*x) - 2*(a^4*f*x*e^c + a^4*e*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\coth(c+d\,x)}{\sinh(c+d\,x)^2\,\left(e+f\,x\right)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)/(sinh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(coth(c + d*x)/(sinh(c + d*x)^2*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth(c+dx)\operatorname{csch}^2(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)*csch(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(coth(c + d*x)*csch(c + d*x)**2/((a + b*sinh(c + d*x))*(e + f*x)),
x)
```

3.481 $\int \frac{(e+fx)^3 \coth^2(c+dx)\mathbf{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1038

$$-\frac{3\text{Li}_2\left(-e^{c+dx}\right)f^3}{ad^4}+\frac{3\text{Li}_2\left(e^{c+dx}\right)f^3}{ad^4}+\frac{3b\text{Li}_3\left(e^{2(c+dx)}\right)f^3}{2a^2d^4}-\frac{6b^2\text{Li}_4\left(-e^{c+dx}\right)f^3}{a^3d^4}-\frac{3\text{Li}_4\left(-e^{c+dx}\right)f^3}{ad^4}+\frac{6b^2\text{Li}_4\left(e^{c+dx}\right)f^3}{a^3d^4}$$

```
[Out] -3*b*f*(f*x+e)^2*ln(1-exp(2*d*x+2*c))/a^2/d^2-2*b^2*(f*x+e)^3*arctanh(exp(d
*x+c))/a^3/d+3/2*b*f^3*polylog(3,exp(2*d*x+2*c))/a^2/d^4-6*b^2*f^3*polylog(
4,-exp(d*x+c))/a^3/d^4+6*b^2*f^3*polylog(4,exp(d*x+c))/a^3/d^4-3*b^2*f*(f*x
+e)^2*polylog(2,-exp(d*x+c))/a^3/d^2+3*b^2*f*(f*x+e)^2*polylog(2,exp(d*x+c)
)/a^3/d^2-3*b*f^2*(f*x+e)*polylog(2,exp(2*d*x+2*c))/a^2/d^3+6*b^2*f^2*(f*x+
e)*polylog(3,-exp(d*x+c))/a^3/d^3-6*b^2*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a
^3/d^3-6*f^2*(f*x+e)*arctanh(exp(d*x+c))/a/d^3-3/2*f*(f*x+e)^2*csch(d*x+c)/
a/d^2-1/2*(f*x+e)^3*coth(d*x+c)*csch(d*x+c)/a/d-3/2*f*(f*x+e)^2*polylog(2,-
exp(d*x+c))/a/d^2+3/2*f*(f*x+e)^2*polylog(2,exp(d*x+c))/a/d^2+3*f^2*(f*x+e)
*polylog(3,-exp(d*x+c))/a/d^3-3*f^2*(f*x+e)*polylog(3,exp(d*x+c))/a/d^3-3*f
^3*polylog(2,-exp(d*x+c))/a/d^4+3*f^3*polylog(2,exp(d*x+c))/a/d^4-(f*x+e)^3
*arctanh(exp(d*x+c))/a/d-3*f^3*polylog(4,-exp(d*x+c))/a/d^4+3*f^3*polylog(4
,exp(d*x+c))/a/d^4-b*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+
b^2)^(1/2)/a^3/d+b*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^
2)^(1/2)/a^3/d-6*b*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^
2)^(1/2)/a^3/d^4+6*b*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+
b^2)^(1/2)/a^3/d^4-3*b*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/
2)))*(a^2+b^2)^(1/2)/a^3/d^2+3*b*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^
2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^3/d^2+6*b*f^2*(f*x+e)*polylog(3,-b*exp(d*x
+c)/(a-(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^3/d^3-6*b*f^2*(f*x+e)*polylog(3,
-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^3/d^3+b*(f*x+e)^3/a^2/
d+b*(f*x+e)^3*coth(d*x+c)/a^2/d
```

Rubi [A] time = 2.24, antiderivative size = 1038, normalized size of antiderivative = 1.00, number of steps used = 67, number of rules used = 22, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.647, Rules used = {5587, 5457, 4182, 2531, 6609, 2282, 6589, 4186, 2279, 2391, 5569, 3720, 3716, 2190, 32, 5585, 5450, 3296, 2637, 5565, 3322, 2264}

$$-\frac{3\text{PolyLog}\left(2,-e^{c+dx}\right)f^3}{ad^4}+\frac{3\text{PolyLog}\left(2,e^{c+dx}\right)f^3}{ad^4}+\frac{3b\text{PolyLog}\left(3,e^{2(c+dx)}\right)f^3}{2a^2d^4}-\frac{6b^2\text{PolyLog}\left(4,-e^{c+dx}\right)f^3}{a^3d^4}-3\text{Po}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Coth[c + d*x]^2*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(e + f*x)^3)/(a^2*d) - (6*f^2*(e + f*x)*ArcTanh[E^(c + d*x)])/(a*d^3) -
((e + f*x)^3*ArcTanh[E^(c + d*x)])/(a*d) - (2*b^2*(e + f*x)^3*ArcTanh[E^(c
```

```
+ d*x)])/(a^3*d) + (b*(e + f*x)^3*Coth[c + d*x])/(a^2*d) - (3*f*(e + f*x)^2
*Csch[c + d*x])/(2*a*d^2) - ((e + f*x)^3*Coth[c + d*x]*Csch[c + d*x])/(2*a*
d) - (b*Sqrt[a^2 + b^2]*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2])])/(a^3*d) + (b*Sqrt[a^2 + b^2]*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(
a + Sqrt[a^2 + b^2])])/(a^3*d) - (3*b*f*(e + f*x)^2*Log[1 - E^(2*(c + d*x))
])/(a^2*d^2) - (3*f^3*PolyLog[2, -E^(c + d*x)])/(a*d^4) - (3*f*(e + f*x)^2*
PolyLog[2, -E^(c + d*x)])/(2*a*d^2) - (3*b^2*f*(e + f*x)^2*PolyLog[2, -E^(c
 + d*x)])/(a^3*d^2) + (3*f^3*PolyLog[2, E^(c + d*x)])/(a*d^4) + (3*f*(e + f
*x)^2*PolyLog[2, E^(c + d*x)])/(2*a*d^2) + (3*b^2*f*(e + f*x)^2*PolyLog[2,
E^(c + d*x)])/(a^3*d^2) - (3*b*Sqrt[a^2 + b^2]*f*(e + f*x)^2*PolyLog[2, -((
b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^2) + (3*b*Sqrt[a^2 + b^2]*f*
(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^2)
 - (3*b*f^2*(e + f*x)*PolyLog[2, E^(2*(c + d*x))])/(a^2*d^3) + (3*f^2*(e +
f*x)*PolyLog[3, -E^(c + d*x)])/(a*d^3) + (6*b^2*f^2*(e + f*x)*PolyLog[3, -E
^(c + d*x)])/(a^3*d^3) - (3*f^2*(e + f*x)*PolyLog[3, E^(c + d*x)])/(a*d^3)
- (6*b^2*f^2*(e + f*x)*PolyLog[3, E^(c + d*x)])/(a^3*d^3) + (6*b*Sqrt[a^2 +
 b^2]*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(
a^3*d^3) - (6*b*Sqrt[a^2 + b^2]*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/
(a + Sqrt[a^2 + b^2]))])/(a^3*d^3) + (3*b*f^3*PolyLog[3, E^(2*(c + d*x))])/
(2*a^2*d^4) - (3*f^3*PolyLog[4, -E^(c + d*x)])/(a*d^4) - (6*b^2*f^3*PolyLog
[4, -E^(c + d*x)])/(a^3*d^4) + (3*f^3*PolyLog[4, E^(c + d*x)])/(a*d^4) + (6
*b^2*f^3*PolyLog[4, E^(c + d*x)])/(a^3*d^4) - (6*b*Sqrt[a^2 + b^2]*f^3*Poly
Log[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^4) + (6*b*Sqrt[a^2
 + b^2]*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^4)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5457

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_)*Csch[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(
x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Csch[a + b*x]*Coth[a + b*x]^(p - 2
```

```
), x] + Int[(c + d*x)^m*Csch[a + b*x]^3*Coth[a + b*x]^(p - 2), x] /; FreeQ[
{a, b, c, d, m}, x] && IGtQ[p/2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 5587

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*Csch[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Csch[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Csch[c + d*x]^(p - 1)*Coth[c + d*x]^n)/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\coth^2(c+dx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\coth^2(c+dx)\operatorname{csch}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^3\operatorname{csch}(c+dx)\,dx}{a} + \frac{\int (e+fx)^3\operatorname{csch}^3(c+dx)\,dx}{a} - \frac{b\int (e+$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad} + \frac{b(e+fx)^3\coth(c+dx)}{a^2d} - \frac{3f(e+fx)^2}{2}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{b(e+fx)^4}{4a^2f} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} - \frac{(e+fx)^3\,\mathrm{ta}}{}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} - \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} - \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} - \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} - \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} - \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} - \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}$$

$$= \frac{b(e+fx)^3}{a^2d} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad^3} - \frac{(e+fx)^3\tanh^{-1}\left(e^{c+dx}\right)}{ad}$$

Mathematica [C] time = 42.75, size = 2383, normalized size = 2.30

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Coth[c + d*x]^2*Csch[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (e^3*Log[Tanh[(c + d*x)/2]])/(2*a*d) + (b^2*e^3*Log[Tanh[(c + d*x)/2]])/(a^
3*d) + (3*e*f^2*Log[Tanh[(c + d*x)/2]])/(a*d^3) + (3*e^2*f*(-(c*Log[Tanh[(c
 + d*x)/2]]) - I*((I*c + I*d*x)*(Log[1 - E^(I*(I*c + I*d*x))] - Log[1 + E^(
I*(I*c + I*d*x))]) + I*(PolyLog[2, -E^(I*(I*c + I*d*x))] - PolyLog[2, E^(I*
(I*c + I*d*x))]))))/(2*a*d^2) + (3*b^2*e^2*f*(-(c*Log[Tanh[(c + d*x)/2]]) -
 I*((I*c + I*d*x)*(Log[1 - E^(I*(I*c + I*d*x))] - Log[1 + E^(I*(I*c + I*d*x
))]) + I*(PolyLog[2, -E^(I*(I*c + I*d*x))] - PolyLog[2, E^(I*(I*c + I*d*x))
]))))/(a^3*d^2) + (3*f^3*(-(c*Log[Tanh[(c + d*x)/2]]) - I*((I*c + I*d*x)*(L
og[1 - E^(I*(I*c + I*d*x))] - Log[1 + E^(I*(I*c + I*d*x))]) + I*(PolyLog[2,
 -E^(I*(I*c + I*d*x))] - PolyLog[2, E^(I*(I*c + I*d*x))]))))/(a*d^4) + (b*E
^c*f^3*Csch[c]*((2*d^3*x^3)/E^(2*c) - 3*d^2*(1 - E^(-2*c))*x^2*Log[1 - E^(-
c - d*x)] - 3*d^2*(1 - E^(-2*c))*x^2*Log[1 + E^(-c - d*x)] + 6*(1 - E^(-2*c
))*(d*x*PolyLog[2, -E^(-c - d*x)] + PolyLog[3, -E^(-c - d*x)]) + 6*(1 - E^(
-2*c))*(d*x*PolyLog[2, E^(-c - d*x)] + PolyLog[3, E^(-c - d*x)])))/(2*a^2*d
^4) - (3*e*f^2*(d^2*x^2*ArcTanh[Cosh[c + d*x] + Sinh[c + d*x]] + d*x*PolyLo
g[2, -Cosh[c + d*x] - Sinh[c + d*x]] - d*x*PolyLog[2, Cosh[c + d*x] + Sinh[
c + d*x]] - PolyLog[3, -Cosh[c + d*x] - Sinh[c + d*x]] + PolyLog[3, Cosh[c
+ d*x] + Sinh[c + d*x]]))/(a*d^3) - (6*b^2*e*f^2*(d^2*x^2*ArcTanh[Cosh[c +
d*x] + Sinh[c + d*x]] + d*x*PolyLog[2, -Cosh[c + d*x] - Sinh[c + d*x]] - d*
x*PolyLog[2, Cosh[c + d*x] + Sinh[c + d*x]] - PolyLog[3, -Cosh[c + d*x] - S
inh[c + d*x]] + PolyLog[3, Cosh[c + d*x] + Sinh[c + d*x]]))/(a^3*d^3) + (b*
Sqrt[a^2 + b^2]*(2*d^3*e^3*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 3
*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - 3*d^3*e*f^2*x
^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] - d^3*f^3*x^3*Log[1 + (b*
E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 3*d^3*e^2*f*x*Log[1 + (b*E^(c + d*x))
/(a + Sqrt[a^2 + b^2])] + 3*d^3*e*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2])] + d^3*f^3*x^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]
 - 3*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] +
3*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] +
6*d*e*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 6*d*f^3*x*Po
lyLog[3, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] - 6*d*e*f^2*PolyLog[3, -((
b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))] - 6*d*f^3*x*PolyLog[3, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))] - 6*f^3*PolyLog[4, (b*E^(c + d*x))/(-a + Sqrt[
a^2 + b^2])] + 6*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))
/(a^3*d^4) + (f^3*(-2*d^3*x^3*ArcTanh[Cosh[c + d*x] + Sinh[c + d*x]] - 3*d^
2*x^2*PolyLog[2, -Cosh[c + d*x] - Sinh[c + d*x]] + 3*d^2*x^2*PolyLog[2, Cos
h[c + d*x] + Sinh[c + d*x]] + 6*d*x*PolyLog[3, -Cosh[c + d*x] - Sinh[c + d*
x]] - 6*d*x*PolyLog[3, Cosh[c + d*x] + Sinh[c + d*x]] - 6*PolyLog[4, -Cosh[
c + d*x] - Sinh[c + d*x]] + 6*PolyLog[4, Cosh[c + d*x] + Sinh[c + d*x]]))/(
2*a*d^4) + (b^2*f^3*(-2*d^3*x^3*ArcTanh[Cosh[c + d*x] + Sinh[c + d*x]] - 3*
d^2*x^2*PolyLog[2, -Cosh[c + d*x] - Sinh[c + d*x]] + 3*d^2*x^2*PolyLog[2, C
osh[c + d*x] + Sinh[c + d*x]] + 6*d*x*PolyLog[3, -Cosh[c + d*x] - Sinh[c +
d*x]] - 6*d*x*PolyLog[3, Cosh[c + d*x] + Sinh[c + d*x]] - 6*PolyLog[4, -Cos
h[c + d*x] - Sinh[c + d*x]] + 6*PolyLog[4, Cosh[c + d*x] + Sinh[c + d*x]]))
/(a^3*d^4) + (3*b*e^2*f*Csch[c]*(-(d*x*Cosh[c]) + Log[Cosh[d*x]*Sinh[c] + C
```

```
osh[c]*Sinh[d*x]]*Sinh[c]))/(a^2*d^2*(-Cosh[c]^2 + Sinh[c]^2)) + (Csch[c]*C
sch[c + d*x]^2*(2*b*d*e^3*Cosh[c] + 6*b*d*e^2*f*x*Cosh[c] + 6*b*d*e*f^2*x^2
*Cosh[c] + 2*b*d*f^3*x^3*Cosh[c] + 3*a*e^2*f*Cosh[d*x] + 6*a*e*f^2*x*Cosh[d
*x] + 3*a*f^3*x^2*Cosh[d*x] - 3*a*e^2*f*Cosh[2*c + d*x] - 6*a*e*f^2*x*Cosh[
2*c + d*x] - 3*a*f^3*x^2*Cosh[2*c + d*x] - 2*b*d*e^3*Cosh[c + 2*d*x] - 6*b*
d*e^2*f*x*Cosh[c + 2*d*x] - 6*b*d*e*f^2*x^2*Cosh[c + 2*d*x] - 2*b*d*f^3*x^3
*Cosh[c + 2*d*x] + a*d*e^3*Sinh[d*x] + 3*a*d*e^2*f*x*Sinh[d*x] + 3*a*d*e*f^
2*x^2*Sinh[d*x] + a*d*f^3*x^3*Sinh[d*x] - a*d*e^3*Sinh[2*c + d*x] - 3*a*d*e
^2*f*x*Sinh[2*c + d*x] - 3*a*d*e*f^2*x^2*Sinh[2*c + d*x] - a*d*f^3*x^3*Sinh
[2*c + d*x]))/(4*a^2*d^2) + (3*b*e*f^2*Csch[c]*Sech[c]*((d^2*x^2)/E^ArcTanh
[Tanh[c]] - (I*(-(d*x*(-Pi + (2*I)*ArcTanh[Tanh[c]])) - Pi*Log[1 + E^(2*d*x
)] - 2*(I*d*x + I*ArcTanh[Tanh[c]])*Log[1 - E^((2*I)*(I*d*x + I*ArcTanh[Tan
h[c]]))] + Pi*Log[Cosh[d*x]] + (2*I)*ArcTanh[Tanh[c]]*Log[I*Sinh[d*x + ArcT
anh[Tanh[c]]]] + I*PolyLog[2, E^((2*I)*(I*d*x + I*ArcTanh[Tanh[c]]))])*Tanh
[c])/Sqrt[1 - Tanh[c]^2]))/(a^2*d^3*Sqrt[Sech[c]^2*(Cosh[c]^2 - Sinh[c]^2)]
)
```

fricas [C] time = 1.50, size = 13504, normalized size = 13.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -1/2*(4*a*b*d^3*e^3 - 12*a*b*c*d^2*e^2*f + 12*a*b*c^2*d*e*f^2 - 4*a*b*c^3*f
^3 - 4*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + 3*a*b*c
*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)*cosh(d*x + c)^4 - 4*(a*b*d^3*
f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + 3*a*b*c*d^2*e^2*f - 3*a
*b*c^2*d*e*f^2 + a*b*c^3*f^3)*sinh(d*x + c)^4 + 2*(a^2*d^3*f^3*x^3 + a^2*d^
3*e^3 + 3*a^2*d^2*e^2*f + 3*(a^2*d^3*e*f^2 + a^2*d^2*f^3)*x^2 + 3*(a^2*d^3*
e^2*f + 2*a^2*d^2*e*f^2)*x)*cosh(d*x + c)^3 + 2*(a^2*d^3*f^3*x^3 + a^2*d^3*
e^3 + 3*a^2*d^2*e^2*f + 3*(a^2*d^3*e*f^2 + a^2*d^2*f^3)*x^2 + 3*(a^2*d^3*e^
2*f + 2*a^2*d^2*e*f^2)*x - 8*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b
*d^3*e^2*f*x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)*cosh(d*
x + c))*sinh(d*x + c)^3 + 4*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*
d^3*e^2*f*x - a*b*d^3*e^3 + 6*a*b*c*d^2*e^2*f - 6*a*b*c^2*d*e*f^2 + 2*a*b*c
^3*f^3)*cosh(d*x + c)^2 + 2*(2*a*b*d^3*f^3*x^3 + 6*a*b*d^3*e*f^2*x^2 + 6*a*
b*d^3*e^2*f*x - 2*a*b*d^3*e^3 + 12*a*b*c*d^2*e^2*f - 12*a*b*c^2*d*e*f^2 + 4
*a*b*c^3*f^3 - 12*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*
x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)*cosh(d*x + c)^2 +
3*(a^2*d^3*f^3*x^3 + a^2*d^3*e^3 + 3*a^2*d^2*e^2*f + 3*(a^2*d^3*e*f^2 + a^2
*d^2*f^3)*x^2 + 3*(a^2*d^3*e^2*f + 2*a^2*d^2*e*f^2)*x)*cosh(d*x + c))*sinh(
d*x + c)^2 + 6*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f + (b^2*
d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^4 + 4*(b^2*d
```

```
^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c)
^3 + (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*sinh(d*x + c)^4
- 2*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^2 -
 2*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f - 3*(b^2*d^2*f^3*x^
2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4
*((b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^3 - (
b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c))*sinh(d*
x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b
*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 6*(b^
2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f + (b^2*d^2*f^3*x^2 + 2*b^
2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^4 + 4*(b^2*d^2*f^3*x^2 + 2*b^2
*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^2*f^3*
x^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*sinh(d*x + c)^4 - 2*(b^2*d^2*f^3*x
^2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^3*x^
2 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f - 3*(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^
2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^2*f^3*x^2
 + 2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c)^3 - (b^2*d^2*f^3*x^2 +
2*b^2*d^2*e*f^2*x + b^2*d^2*e^2*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b
*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(b^2*d^3*e^3 - 3*b^2*
c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3 + (b^2*d^3*e^3 - 3*b^2*c*d^2*
e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^4 + 4*(b^2*d^3*e^3 -
 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)*sinh(d*
x + c)^3 + (b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f
^3)*sinh(d*x + c)^4 - 2*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^
2 - b^2*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b
^2*c^2*d*e*f^2 - b^2*c^3*f^3 - 3*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c
^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^3*e^
3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^3 -
(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*
x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*si
nh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(b^2*d^3*e^3 - 3*b^2*c*d
^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3 + (b^2*d^3*e^3 - 3*b^2*c*d^2*e^2
*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^4 + 4*(b^2*d^3*e^3 - 3*
b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)*sinh(d*x +
 c)^3 + (b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)
*sinh(d*x + c)^4 - 2*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 -
 b^2*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*
c^2*d*e*f^2 - b^2*c^3*f^3 - 3*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*
d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^3*e^3 -
 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x + c)^3 - (b^
2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*cosh(d*x +
 c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(
d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^
3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b
```

```
^2*c^3*f^3 + (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3
*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^4 + 4*(b^
2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f
 - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^
3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3
*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*sinh(d*x + c)^4 - 2*(b^2*d^3*f^3*x^3 + 3*b^
2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2
 + b^2*c^3*f^3)*cosh(d*x + c)^2 - 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2
+ 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3 -
 3*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2
*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2
+ 4*((b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d
^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^3 - (b^2*d^3*f^3*
x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c
^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^
2)*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b) - 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*
x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f
^3 + (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d
^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^4 + 4*(b^2*d^3*f^
3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2
*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^3*f^3*x^
3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2
*d*e*f^2 + b^2*c^3*f^3)*sinh(d*x + c)^4 - 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*
f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c
^3*f^3)*cosh(d*x + c)^2 - 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*
d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3 - 3*(b^2*
d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f -
 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^
2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f
 - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*cosh(d*x + c)^3 - (b^2*d^3*f^3*x^3 + 3*
b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f
^2 + b^2*c^3*f^3)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-
(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sq
rt((a^2 + b^2)/b^2) - b)/b) + 12*(b^2*f^3*cosh(d*x + c)^4 + 4*b^2*f^3*cosh(
d*x + c)*sinh(d*x + c)^3 + b^2*f^3*sinh(d*x + c)^4 - 2*b^2*f^3*cosh(d*x + c
)^2 + b^2*f^3 + 2*(3*b^2*f^3*cosh(d*x + c)^2 - b^2*f^3)*sinh(d*x + c)^2 + 4
*(b^2*f^3*cosh(d*x + c)^3 - b^2*f^3*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x +
c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(b^2*f^3*cosh(d*x + c)
^4 + 4*b^2*f^3*cosh(d*x + c)*sinh(d*x + c)^3 + b^2*f^3*sinh(d*x + c)^4 - 2*
b^2*f^3*cosh(d*x + c)^2 + b^2*f^3 + 2*(3*b^2*f^3*cosh(d*x + c)^2 - b^2*f^3)
*sinh(d*x + c)^2 + 4*(b^2*f^3*cosh(d*x + c)^3 - b^2*f^3*cosh(d*x + c))*sinh
(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(4, (a*cosh(d*x + c) + a*sinh(d*x +
 c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 12*(b
```

^2*d*f^3*x + b^2*d*e*f^2 + (b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^4 + 4*
(b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*f^3*x +
b^2*d*e*f^2)*sinh(d*x + c)^4 - 2*(b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^
2 - 2*(b^2*d*f^3*x + b^2*d*e*f^2 - 3*(b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x +
 c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^3 - (
b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*si
nh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 12*(b^2*d*f^3*x + b^2*d*e*f^2 + (b
^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^4 + 4*(b^2*d*f^3*x + b^2*d*e*f^2)*c
osh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*f^3*x + b^2*d*e*f^2)*sinh(d*x + c)^4
 - 2*(b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^2 - 2*(b^2*d*f^3*x + b^2*d*e*
f^2 - 3*(b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((
b^2*d*f^3*x + b^2*d*e*f^2)*cosh(d*x + c)^3 - (b^2*d*f^3*x + b^2*d*e*f^2)*co
sh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x +
c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)
/b^2))/b) + 2*(a^2*d^3*f^3*x^3 + a^2*d^3*e^3 - 3*a^2*d^2*e^2*f + 3*(a^2*d^3
*e*f^2 - a^2*d^2*f^3)*x^2 + 3*(a^2*d^3*e^2*f - 2*a^2*d^2*e*f^2)*x)*cosh(d*x
 + c) - 3*((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^2*f - 4*a*b*d*e*
f^2 + 2*a^2*f^3 + ((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^2*f - 4*
a*b*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)*d^2*e*f^2 - 2*a*b*d*f^3)*x)*cosh
(d*x + c)^4 + 4*((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^2*f - 4*a*
b*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)*d^2*e*f^2 - 2*a*b*d*f^3)*x)*cosh(d
*x + c)*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^
2*f - 4*a*b*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)*d^2*e*f^2 - 2*a*b*d*f^3)
*x)*sinh(d*x + c)^4 - 2*((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^2*
f - 4*a*b*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)*d^2*e*f^2 - 2*a*b*d*f^3)*x
)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^2*f
 - 4*a*b*d*e*f^2 + 2*a^2*f^3 - 3*((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2 + 2*b^2)*
d^2*e^2*f - 4*a*b*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)*d^2*e*f^2 - 2*a*b*
d*f^3)*x)*cosh(d*x + c)^2 + 2*((a^2 + 2*b^2)*d^2*e*f^2 - 2*a*b*d*f^3)*x)*si
nh(d*x + c)^2 + 2*((a^2 + 2*b^2)*d^2*e*f^2 - 2*a*b*d*f^3)*x + 4*(((a^2 + 2*
b^2)*d^2*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^2*f - 4*a*b*d*e*f^2 + 2*a^2*f^3 + 2*
((a^2 + 2*b^2)*d^2*e*f^2 - 2*a*b*d*f^3)*x)*cosh(d*x + c)^3 - ((a^2 + 2*b^2)
*d^2*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^2*f - 4*a*b*d*e*f^2 + 2*a^2*f^3 + 2*((a^
2 + 2*b^2)*d^2*e*f^2 - 2*a*b*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c))*dilog(
cosh(d*x + c) + sinh(d*x + c)) + 3*((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2 + 2*b^
2)*d^2*e^2*f + 4*a*b*d*e*f^2 + 2*a^2*f^3 + ((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^
2 + 2*b^2)*d^2*e^2*f + 4*a*b*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)*d^2*e*f
^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2
 + 2*b^2)*d^2*e^2*f + 4*a*b*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)*d^2*e*f^2
 + 2*a*b*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*d^2*f^3*x
^2 + (a^2 + 2*b^2)*d^2*e^2*f + 4*a*b*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)
*d^2*e*f^2 + 2*a*b*d*f^3)*x)*sinh(d*x + c)^4 - 2*((a^2 + 2*b^2)*d^2*f^3*x^2
 + (a^2 + 2*b^2)*d^2*e^2*f + 4*a*b*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)*d
^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d^2*f^3*x^2 +

(a^2 + 2*b^2)*d^2*e^2*f + 4*a*b*d*e*f^2 + 2*a^2*f^3 - 3*((a^2 + 2*b^2)*d^2
*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^2*f + 4*a*b*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 +
2*b^2)*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x + c)^2 + 2*((a^2 + 2*b^2)*d^2*e
*f^2 + 2*a*b*d*f^3)*x)*sinh(d*x + c)^2 + 2*((a^2 + 2*b^2)*d^2*e*f^2 + 2*a*b
*d*f^3)*x + 4*(((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^2*f + 4*a*b
*d*e*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*
x + c)^3 - ((a^2 + 2*b^2)*d^2*f^3*x^2 + (a^2 + 2*b^2)*d^2*e^2*f + 4*a*b*d*e
*f^2 + 2*a^2*f^3 + 2*((a^2 + 2*b^2)*d^2*e*f^2 + 2*a*b*d*f^3)*x)*cosh(d*x +
c))*sinh(d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) + ((a^2 + 2*b^2)*d
^3*f^3*x^3 + (a^2 + 2*b^2)*d^3*e^3 + 6*a*b*d^2*e^2*f + 6*a^2*d*e*f^2 + ((a^
2 + 2*b^2)*d^3*f^3*x^3 + (a^2 + 2*b^2)*d^3*e^3 + 6*a*b*d^2*e^2*f + 6*a^2*d*
e*f^2 + 3*((a^2 + 2*b^2)*d^3*e*f^2 + 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2)*
d^3*e^2*f + 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*cosh(d*x + c)^4 + 4*((a^2 + 2
*b^2)*d^3*f^3*x^3 + (a^2 + 2*b^2)*d^3*e^3 + 6*a*b*d^2*e^2*f + 6*a^2*d*e*f^2
 + 3*((a^2 + 2*b^2)*d^3*e*f^2 + 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2)*d^3*e
^2*f + 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + ((
a^2 + 2*b^2)*d^3*f^3*x^3 + (a^2 + 2*b^2)*d^3*e^3 + 6*a*b*d^2*e^2*f + 6*a^2*
d*e*f^2 + 3*((a^2 + 2*b^2)*d^3*e*f^2 + 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2
)*d^3*e^2*f + 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*sinh(d*x + c)^4 + 3*((a^2 +
 2*b^2)*d^3*e*f^2 + 2*a*b*d^2*f^3)*x^2 - 2*((a^2 + 2*b^2)*d^3*f^3*x^3 + (a^
2 + 2*b^2)*d^3*e^3 + 6*a*b*d^2*e^2*f + 6*a^2*d*e*f^2 + 3*((a^2 + 2*b^2)*d^3
*e*f^2 + 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f + 4*a*b*d^2*e*f^2
+ 2*a^2*d*f^3)*x)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d^3*f^3*x^3 + (a^2 + 2
*b^2)*d^3*e^3 + 6*a*b*d^2*e^2*f + 6*a^2*d*e*f^2 + 3*((a^2 + 2*b^2)*d^3*e*f^
2 + 2*a*b*d^2*f^3)*x^2 - 3*((a^2 + 2*b^2)*d^3*f^3*x^3 + (a^2 + 2*b^2)*d^3*e
^3 + 6*a*b*d^2*e^2*f + 6*a^2*d*e*f^2 + 3*((a^2 + 2*b^2)*d^3*e*f^2 + 2*a*b*d
^2*f^3)*x^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f + 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x
)*cosh(d*x + c)^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f + 4*a*b*d^2*e*f^2 + 2*a^2*d*
f^3)*x)*sinh(d*x + c)^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f + 4*a*b*d^2*e*f^2 + 2*
a^2*d*f^3)*x + 4*(((a^2 + 2*b^2)*d^3*f^3*x^3 + (a^2 + 2*b^2)*d^3*e^3 + 6*a*
b*d^2*e^2*f + 6*a^2*d*e*f^2 + 3*((a^2 + 2*b^2)*d^3*e*f^2 + 2*a*b*d^2*f^3)*x
^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f + 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*cosh(d*
x + c)^3 - ((a^2 + 2*b^2)*d^3*f^3*x^3 + (a^2 + 2*b^2)*d^3*e^3 + 6*a*b*d^2*e
^2*f + 6*a^2*d*e*f^2 + 3*((a^2 + 2*b^2)*d^3*e*f^2 + 2*a*b*d^2*f^3)*x^2 + 3*
((a^2 + 2*b^2)*d^3*e^2*f + 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*cosh(d*x + c))
*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) - ((a^2 + 2*b^2)*d^3
e^3 - 3(2*a*b + (a^2 + 2*b^2)*c)*d^2*e^2*f + 3*(4*a*b*c + (a^2 + 2*b^2)*c
^2 + 2*a^2)*d*e*f^2 + ((a^2 + 2*b^2)*d^3*e^3 - 3*(2*a*b + (a^2 + 2*b^2)*c)*
d^2*e^2*f + 3*(4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*d*e*f^2 - (6*a*b*c^2 +
(a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3)*cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)*d^3*e^
3 - 3*(2*a*b + (a^2 + 2*b^2)*c)*d^2*e^2*f + 3*(4*a*b*c + (a^2 + 2*b^2)*c^2
+ 2*a^2)*d*e*f^2 - (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3)*cosh(d*x
+ c)*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*d^3*e^3 - 3*(2*a*b + (a^2 + 2*b^2)*c)
*d^2*e^2*f + 3*(4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*d*e*f^2 - (6*a*b*c^2 +
 (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3)*sinh(d*x + c)^4 - (6*a*b*c^2 + (a^2 + 2*

b^2)*c^3 + 6*a^2*c)*f^3 - 2*((a^2 + 2*b^2)*d^3*e^3 - 3*(2*a*b + (a^2 + 2*b^2)*c)*d^2*e^2*f + 3*(4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*d*e*f^2 - (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d^3*e^3 - 3*(2*a*b + (a^2 + 2*b^2)*c)*d^2*e^2*f + 3*(4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*d*e*f^2 - (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3 - 3*((a^2 + 2*b^2)*d^3*e^3 - 3*(2*a*b + (a^2 + 2*b^2)*c)*d^2*e^2*f + 3*(4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*d*e*f^2 - (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + 2*b^2)*d^3*e^3 - 3*(2*a*b + (a^2 + 2*b^2)*c)*d^2*e^2*f + 3*(4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*d*e*f^2 - (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3)*cosh(d*x + c)^3 - ((a^2 + 2*b^2)*d^3*e^3 - 3*(2*a*b + (a^2 + 2*b^2)*c)*d^2*e^2*f + 3*(4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*d*e*f^2 - (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - 1) - ((a^2 + 2*b^2)*d^3*f^3*x^3 + 3*(a^2 + 2*b^2)*c*d^2*e^2*f - 3*(4*a*b*c + (a^2 + 2*b^2)*c^2)*d*e*f^2 + ((a^2 + 2*b^2)*d^3*f^3*x^3 + 3*(a^2 + 2*b^2)*c*d^2*e^2*f - 3*(4*a*b*c + (a^2 + 2*b^2)*c^2)*d*e*f^2 + (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3 + 3*((a^2 + 2*b^2)*d^3*e*f^2 - 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f - 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)*d^3*f^3*x^3 + 3*(a^2 + 2*b^2)*c*d^2*e^2*f - 3*(4*a*b*c + (a^2 + 2*b^2)*c^2)*d*e*f^2 + (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3 + 3*((a^2 + 2*b^2)*d^3*e*f^2 - 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f - 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*d^3*f^3*x^3 + 3*(a^2 + 2*b^2)*c*d^2*e^2*f - 3*(4*a*b*c + (a^2 + 2*b^2)*c^2)*d*e*f^2 + (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3 + 3*((a^2 + 2*b^2)*d^3*e*f^2 - 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f - 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*sinh(d*x + c)^4 + (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3 + 3*((a^2 + 2*b^2)*d^3*e*f^2 - 2*a*b*d^2*f^3)*x^2 - 2*((a^2 + 2*b^2)*d^3*f^3*x^3 + 3*(a^2 + 2*b^2)*c*d^2*e^2*f - 3*(4*a*b*c + (a^2 + 2*b^2)*c^2)*d*e*f^2 + (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3 + 3*((a^2 + 2*b^2)*d^3*e*f^2 - 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f - 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d^3*f^3*x^3 + 3*(a^2 + 2*b^2)*c*d^2*e^2*f - 3*(4*a*b*c + (a^2 + 2*b^2)*c^2)*d*e*f^2 + (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3 + 3*((a^2 + 2*b^2)*d^3*e*f^2 - 2*a*b*d^2*f^3)*x^2 - 3*((a^2 + 2*b^2)*d^3*f^3*x^3 + 3*(a^2 + 2*b^2)*c*d^2*e^2*f - 3*(4*a*b*c + (a^2 + 2*b^2)*c^2)*d*e*f^2 + (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3 + 3*((a^2 + 2*b^2)*d^3*e*f^2 - 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f - 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*cosh(d*x + c)^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f - 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*sinh(d*x + c)^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f - 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x + 4*(((a^2 + 2*b^2)*d^3*f^3*x^3 + 3*(a^2 + 2*b^2)*c*d^2*e^2*f - 3*(4*a*b*c + (a^2 + 2*b^2)*c^2)*d*e*f^2 + (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2*c)*f^3 + 3*((a^2 + 2*b^2)*d^3*e*f^2 - 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2)*d^3*e^2*f - 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*cosh(d*x + c)^3 - ((a^2 + 2*b^2)*d^3*f^3*x^3 + 3*(a^2 + 2*b^2)*c*d^2*e^2*f - 3*(4*a*b*c + (a^2 + 2*b^2)*c^2)*d*e*f^2 + (6*a*b*c^2 + (a^2 + 2*b^2)*c^3 + 6*a^2

```
*c)*f^3 + 3*((a^2 + 2*b^2)*d^3*e*f^2 - 2*a*b*d^2*f^3)*x^2 + 3*((a^2 + 2*b^2
)*d^3*e^2*f - 4*a*b*d^2*e*f^2 + 2*a^2*d*f^3)*x)*cosh(d*x + c))*sinh(d*x + c
))*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 6*((a^2 + 2*b^2)*f^3*cosh(d*x
+ c)^4 + 4*(a^2 + 2*b^2)*f^3*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2 + 2*b^2)*
f^3*sinh(d*x + c)^4 - 2*(a^2 + 2*b^2)*f^3*cosh(d*x + c)^2 + (a^2 + 2*b^2)*f
^3 + 2*(3*(a^2 + 2*b^2)*f^3*cosh(d*x + c)^2 - (a^2 + 2*b^2)*f^3)*sinh(d*x +
 c)^2 + 4*((a^2 + 2*b^2)*f^3*cosh(d*x + c)^3 - (a^2 + 2*b^2)*f^3*cosh(d*x +
 c))*sinh(d*x + c))*polylog(4, cosh(d*x + c) + sinh(d*x + c)) + 6*((a^2 + 2
*b^2)*f^3*cosh(d*x + c)^4 + 4*(a^2 + 2*b^2)*f^3*cosh(d*x + c)*sinh(d*x + c)
^3 + (a^2 + 2*b^2)*f^3*sinh(d*x + c)^4 - 2*(a^2 + 2*b^2)*f^3*cosh(d*x + c)^
2 + (a^2 + 2*b^2)*f^3 + 2*(3*(a^2 + 2*b^2)*f^3*cosh(d*x + c)^2 - (a^2 + 2*b
^2)*f^3)*sinh(d*x + c)^2 + 4*((a^2 + 2*b^2)*f^3*cosh(d*x + c)^3 - (a^2 + 2*
b^2)*f^3*cosh(d*x + c))*sinh(d*x + c))*polylog(4, -cosh(d*x + c) - sinh(d*x
 + c)) + 6*((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2 - 2*a*b*f^3 + ((a
^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2 - 2*a*b*f^3)*cosh(d*x + c)^4 +
4*((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2 - 2*a*b*f^3)*cosh(d*x + c)
*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2 - 2*a*b*f
^3)*sinh(d*x + c)^4 - 2*((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2 - 2*
a*b*f^3)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2
 - 2*a*b*f^3 - 3*((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2 - 2*a*b*f^3
)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b
^2)*d*e*f^2 - 2*a*b*f^3)*cosh(d*x + c)^3 - ((a^2 + 2*b^2)*d*f^3*x + (a^2 +
2*b^2)*d*e*f^2 - 2*a*b*f^3)*cosh(d*x + c))*sinh(d*x + c))*polylog(3, cosh(d
*x + c) + sinh(d*x + c)) - 6*((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2
 + 2*a*b*f^3 + ((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2 + 2*a*b*f^3)*
cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2 + 2*a*b*
f^3)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)
*d*e*f^2 + 2*a*b*f^3)*sinh(d*x + c)^4 - 2*((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2
*b^2)*d*e*f^2 + 2*a*b*f^3)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d*f^3*x + (a^
2 + 2*b^2)*d*e*f^2 + 2*a*b*f^3 - 3*((a^2 + 2*b^2)*d*f^3*x + (a^2 + 2*b^2)*d
*e*f^2 + 2*a*b*f^3)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + 2*b^2)*d*
f^3*x + (a^2 + 2*b^2)*d*e*f^2 + 2*a*b*f^3)*cosh(d*x + c)^3 - ((a^2 + 2*b^2)
*d*f^3*x + (a^2 + 2*b^2)*d*e*f^2 + 2*a*b*f^3)*cosh(d*x + c))*sinh(d*x + c))
*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) + 2*(a^2*d^3*f^3*x^3 + a^2*d^3*
e^3 - 3*a^2*d^2*e^2*f - 8*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^
3*e^2*f*x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)*cosh(d*x +
 c)^3 + 3*(a^2*d^3*e*f^2 - a^2*d^2*f^3)*x^2 + 3*(a^2*d^3*f^3*x^3 + a^2*d^3*
e^3 + 3*a^2*d^2*e^2*f + 3*(a^2*d^3*e*f^2 + a^2*d^2*f^3)*x^2 + 3*(a^2*d^3*e^
2*f + 2*a^2*d^2*e*f^2)*x)*cosh(d*x + c)^2 + 3*(a^2*d^3*e^2*f - 2*a^2*d^2*e*
f^2)*x + 4*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x - a*b
*d^3*e^3 + 6*a*b*c*d^2*e^2*f - 6*a*b*c^2*d*e*f^2 + 2*a*b*c^3*f^3)*cosh(d*x
+ c))*sinh(d*x + c))/(a^3*d^4*cosh(d*x + c)^4 + 4*a^3*d^4*cosh(d*x + c)*sin
h(d*x + c)^3 + a^3*d^4*sinh(d*x + c)^4 - 2*a^3*d^4*cosh(d*x + c)^2 + a^3*d^
4 + 2*(3*a^3*d^4*cosh(d*x + c)^2 - a^3*d^4)*sinh(d*x + c)^2 + 4*(a^3*d^4*co
sh(d*x + c)^3 - a^3*d^4*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.50, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \left(\coth^2(dx+c)\right) \operatorname{csch}(dx+c)}{a+b\sinh(dx+c)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] 1/2*e^3*(2*(a*e^(-d*x - c) + 2*b*e^(-2*d*x - 2*c) + a*e^(-3*d*x - 3*c) - 2*
b)/((2*a^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) - (a^2 + 2*b^2
)*log(e^(-d*x - c) + 1)/(a^3*d) + (a^2 + 2*b^2)*log(e^(-d*x - c) - 1)/(a^3*
d) - 2*(a^2*b + b^3)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x
- c) - a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a^3*d)) - (2*b*d*f^3*x^3 + 6*
b*d*e*f^2*x^2 + 6*b*d*e^2*f*x + (a*d*f^3*x^3*e^(3*c) + 3*a*e^2*f*e^(3*c) +
3*(d*e*f^2 + f^3)*a*x^2*e^(3*c) + 3*(d*e^2*f + 2*e*f^2)*a*x*e^(3*c))*e^(3*d
*x) - 2*(b*d*f^3*x^3*e^(2*c) + 3*b*d*e*f^2*x^2*e^(2*c) + 3*b*d*e^2*f*x*e^(2
*c))*e^(2*d*x) + (a*d*f^3*x^3*e^c - 3*a*e^2*f*e^c + 3*(d*e*f^2 - f^3)*a*x^2
*e^c + 3*(d*e^2*f - 2*e*f^2)*a*x*e^c)*e^(d*x))/(a^2*d^2*e^(4*d*x + 4*c) - 2
*a^2*d^2*e^(2*d*x + 2*c) + a^2*d^2) + 3*(b*d*e^2*f + a*e*f^2)*x/(a^2*d^2) +
 3*(b*d*e^2*f - a*e*f^2)*x/(a^2*d^2) - 3*(b*d*e^2*f + a*e*f^2)*log(e^(d*x +
 c) + 1)/(a^2*d^3) - 3*(b*d*e^2*f - a*e*f^2)*log(e^(d*x + c) - 1)/(a^2*d^3)
 - 1/2*(d^3*x^3*log(e^(d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*
x*polylog(3, -e^(d*x + c)) + 6*polylog(4, -e^(d*x + c)))*(a^2*f^3 + 2*b^2*f
```

```
^3)/(a^3*d^4) + 1/2*(d^3*x^3*log(-e^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^(d*x
 + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*polylog(4, e^(d*x + c)))*(a^2*f^
3 + 2*b^2*f^3)/(a^3*d^4) - 3/2*(a^2*d*e*f^2 + 2*b^2*d*e*f^2 + 2*a*b*f^3)*(d
^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(
d*x + c)))/(a^3*d^4) + 3/2*(a^2*d*e*f^2 + 2*b^2*d*e*f^2 - 2*a*b*f^3)*(d^2*x
^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x +
 c)))/(a^3*d^4) - 3/2*(2*b^2*d^2*e^2*f + 4*a*b*d*e*f^2 + (d^2*e^2*f + 2*f^3
)*a^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^3*d^4) + 3/2*(2*
b^2*d^2*e^2*f - 4*a*b*d*e*f^2 + (d^2*e^2*f + 2*f^3)*a^2)*(d*x*log(-e^(d*x +
 c) + 1) + dilog(e^(d*x + c)))/(a^3*d^4) + 1/8*((a^2*f^3 + 2*b^2*f^3)*d^4*x
^4 + 4*(a^2*d*e*f^2 + 2*b^2*d*e*f^2 + 2*a*b*f^3)*d^3*x^3 + 6*(2*b^2*d^2*e^2
*f + 4*a*b*d*e*f^2 + (d^2*e^2*f + 2*f^3)*a^2)*d^2*x^2)/(a^3*d^4) - 1/8*((a^
2*f^3 + 2*b^2*f^3)*d^4*x^4 + 4*(a^2*d*e*f^2 + 2*b^2*d*e*f^2 - 2*a*b*f^3)*d^
3*x^3 + 6*(2*b^2*d^2*e^2*f - 4*a*b*d*e*f^2 + (d^2*e^2*f + 2*f^3)*a^2)*d^2*x
^2)/(a^3*d^4) - integrate(2*((a^2*b*f^3*e^c + b^3*f^3*e^c)*x^3 + 3*(a^2*b*e
*f^2*e^c + b^3*e*f^2*e^c)*x^2 + 3*(a^2*b*e^2*f*e^c + b^3*e^2*f*e^c)*x)*e^(d
*x)/(a^3*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x + c) - a^3*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth(c+d\,x)^2\,\left(e+f\,x\right)^3}{\sinh(c+d\,x)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)^2*(e + f*x)^3)/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int((coth(c + d*x)^2*(e + f*x)^3)/(sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*coth(d*x+c)**2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.482 $\int \frac{(e+fx)^2 \coth^2(c+dx)\textbf{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=714

$$\frac{2b^2f^2\text{Li}_3\left(-e^{c+dx}\right)}{a^3d^3}-\frac{2b^2f^2\text{Li}_3\left(e^{c+dx}\right)}{a^3d^3}-\frac{2b^2f(e+fx)\text{Li}_2\left(-e^{c+dx}\right)}{a^3d^2}+\frac{2b^2f(e+fx)\text{Li}_2\left(e^{c+dx}\right)}{a^3d^2}-\frac{2b^2(e+fx)^2\tanh^{-1}}{a^3d}$$

```
[Out] b*(f*x+e)^2/a^2/d-(f*x+e)^2*arctanh(exp(d*x+c))/a/d-2*b^2*(f*x+e)^2*arctanh
(exp(d*x+c))/a^3/d-f^2*arctanh(cosh(d*x+c))/a/d^3+b*(f*x+e)^2*coth(d*x+c)/a
^2/d-f*(f*x+e)*csch(d*x+c)/a/d^2-1/2*(f*x+e)^2*coth(d*x+c)*csch(d*x+c)/a/d-
2*b*f*(f*x+e)*ln(1-exp(2*d*x+2*c))/a^2/d^2-f*(f*x+e)*polylog(2,-exp(d*x+c))
/a/d^2-2*b^2*f*(f*x+e)*polylog(2,-exp(d*x+c))/a^3/d^2+f*(f*x+e)*polylog(2,e
xp(d*x+c))/a/d^2+2*b^2*f*(f*x+e)*polylog(2,exp(d*x+c))/a^3/d^2-b*f^2*polylo
g(2,exp(2*d*x+2*c))/a^2/d^3+f^2*polylog(3,-exp(d*x+c))/a/d^3+2*b^2*f^2*poly
log(3,-exp(d*x+c))/a^3/d^3-f^2*polylog(3,exp(d*x+c))/a/d^3-2*b^2*f^2*polylo
g(3,exp(d*x+c))/a^3/d^3-b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))*
(a^2+b^2)^(1/2)/a^3/d+b*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(a
^2+b^2)^(1/2)/a^3/d-2*b*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2
)))*(a^2+b^2)^(1/2)/a^3/d^2+2*b*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/(a+(a^2+b
^2)^(1/2)))*(a^2+b^2)^(1/2)/a^3/d^2+2*b*f^2*polylog(3,-b*exp(d*x+c)/(a-(a^2
+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^3/d^3-2*b*f^2*polylog(3,-b*exp(d*x+c)/(a+(a
^2+b^2)^(1/2)))*(a^2+b^2)^(1/2)/a^3/d^3
```

Rubi [A] time = 1.73, antiderivative size = 714, normalized size of antiderivative = 1.00, number of steps used = 52, number of rules used = 22, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.647, Rules used = {5587, 5457, 4182, 2531, 2282, 6589, 4186, 3770, 5569, 3720, 3716, 2190, 2279, 2391, 32, 5585, 5450, 3296, 2638, 5565, 3322, 2264}

$$-\frac{2b^2f(e+fx)\text{PolyLog}\left(2,-e^{c+dx}\right)}{a^3d^2}+\frac{2b^2f(e+fx)\text{PolyLog}\left(2,e^{c+dx}\right)}{a^3d^2}-\frac{2bf\sqrt{a^2+b^2}\,(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+}}{a-\sqrt{a^2}}\right.}{a^3d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Coth[c + d*x]^2*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(e + f*x)^2)/(a^2*d) - ((e + f*x)^2*ArcTanh[E^(c + d*x)])/(a*d) - (2*b^2
*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a^3*d) - (f^2*ArcTanh[Cosh[c + d*x]])/(
a*d^3) + (b*(e + f*x)^2*Coth[c + d*x])/(a^2*d) - (f*(e + f*x)*Csch[c + d*x]
)/(a*d^2) - ((e + f*x)^2*Coth[c + d*x]*Csch[c + d*x])/(2*a*d) - (b*Sqrt[a^2
 + b^2]*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*d)
 + (b*Sqrt[a^2 + b^2]*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b
^2])])/(a^3*d) - (2*b*f*(e + f*x)*Log[1 - E^(2*(c + d*x))])/(a^2*d^2) - (f*
(e + f*x)*PolyLog[2, -E^(c + d*x)])/(a*d^2) - (2*b^2*f*(e + f*x)*PolyLog[2,
```

```
 -E^(c + d*x)])/(a^3*d^2) + (f*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a*d^2) +
 (2*b^2*f*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a^3*d^2) - (2*b*Sqrt[a^2 + b^
2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d
^2) + (2*b*Sqrt[a^2 + b^2]*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a + Sq
rt[a^2 + b^2]))])/(a^3*d^2) - (b*f^2*PolyLog[2, E^(2*(c + d*x))])/(a^2*d^3)
 + (f^2*PolyLog[3, -E^(c + d*x)])/(a*d^3) + (2*b^2*f^2*PolyLog[3, -E^(c + d
*x)])/(a^3*d^3) - (f^2*PolyLog[3, E^(c + d*x)])/(a*d^3) - (2*b^2*f^2*PolyLo
g[3, E^(c + d*x)])/(a^3*d^3) + (2*b*Sqrt[a^2 + b^2]*f^2*PolyLog[3, -((b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^3) - (2*b*Sqrt[a^2 + b^2]*f^2*Pol
yLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^3)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
```

```
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5457

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_)*Csch[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(
x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Csch[a + b*x]*Coth[a + b*x]^(p - 2
), x] + Int[(c + d*x)^m*Csch[a + b*x]^3*Coth[a + b*x]^(p - 2), x] /; FreeQ[
{a, b, c, d, m}, x] && IGtQ[p/2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
```

```
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 5587

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*Csch[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Csch[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Csch[c + d*x]^(p - 1)*Coth[c + d*x]^n)/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\coth^2(c+dx)\text{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\coth^2(c+dx)\text{csch}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^2\text{csch}(c+dx)\,dx}{a} + \frac{\int (e+fx)^2\text{csch}^3(c+dx)\,dx}{a} - \frac{b\int (e+$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} + \frac{b(e+fx)^2\coth(c+dx)}{a^2d} - \frac{f(e+fx)\text{cs}}{ad}$$

$$= \frac{b(e+fx)^2}{a^2d} - \frac{b(e+fx)^3}{3a^2f} - \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{f^2\tanh^{-1}(\cos}{ad^3}$$

$$= \frac{b(e+fx)^2}{a^2d} - \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d}$$

$$= \frac{b(e+fx)^2}{a^2d} - \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d}$$

$$= \frac{b(e+fx)^2}{a^2d} - \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d}$$

$$= \frac{b(e+fx)^2}{a^2d} - \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d}$$

$$= \frac{b(e+fx)^2}{a^2d} - \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d}$$

$$= \frac{b(e+fx)^2}{a^2d} - \frac{(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)^2\tanh^{-1}\left(e^{c+dx}\right)}{a^3d}$$

Mathematica [B] time = 24.58, size = 1529, normalized size = 2.14

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Coth[c + d*x]^2*Csch[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (8*a*b*d^2*e*E^(2*c)*f*x + 4*a*b*d^2*E^(2*c)*f^2*x^2 + 2*a^2*d^2*e^2*ArcTan
h[E^(c + d*x)] + 4*b^2*d^2*e^2*ArcTanh[E^(c + d*x)] - 2*a^2*d^2*e^2*E^(2*c)
```

```
*ArcTanh[E^(c + d*x)] - 4*b^2*d^2*e^2*E^(2*c)*ArcTanh[E^(c + d*x)] + 4*a^2*
f^2*ArcTanh[E^(c + d*x)] - 4*a^2*E^(2*c)*f^2*ArcTanh[E^(c + d*x)] - 2*a^2*d
^2*e*f*x*Log[1 - E^(c + d*x)] - 4*b^2*d^2*e*f*x*Log[1 - E^(c + d*x)] + 2*a^
2*d^2*e*E^(2*c)*f*x*Log[1 - E^(c + d*x)] + 4*b^2*d^2*e*E^(2*c)*f*x*Log[1 -
E^(c + d*x)] - a^2*d^2*f^2*x^2*Log[1 - E^(c + d*x)] - 2*b^2*d^2*f^2*x^2*Log
[1 - E^(c + d*x)] + a^2*d^2*E^(2*c)*f^2*x^2*Log[1 - E^(c + d*x)] + 2*b^2*d^
2*E^(2*c)*f^2*x^2*Log[1 - E^(c + d*x)] + 2*a^2*d^2*e*f*x*Log[1 + E^(c + d*x
)] + 4*b^2*d^2*e*f*x*Log[1 + E^(c + d*x)] - 2*a^2*d^2*e*E^(2*c)*f*x*Log[1 +
 E^(c + d*x)] - 4*b^2*d^2*e*E^(2*c)*f*x*Log[1 + E^(c + d*x)] + a^2*d^2*f^2*
x^2*Log[1 + E^(c + d*x)] + 2*b^2*d^2*f^2*x^2*Log[1 + E^(c + d*x)] - a^2*d^2
*E^(2*c)*f^2*x^2*Log[1 + E^(c + d*x)] - 2*b^2*d^2*E^(2*c)*f^2*x^2*Log[1 + E
^(c + d*x)] + 4*a*b*d*e*f*Log[1 - E^(2*(c + d*x))] - 4*a*b*d*e*E^(2*c)*f*Lo
g[1 - E^(2*(c + d*x))] + 4*a*b*d*f^2*x*Log[1 - E^(2*(c + d*x))] - 4*a*b*d*E
^(2*c)*f^2*x*Log[1 - E^(2*(c + d*x))] - 2*(a^2 + 2*b^2)*d*(-1 + E^(2*c))*f*
(e + f*x)*PolyLog[2, -E^(c + d*x)] + 2*(a^2 + 2*b^2)*d*(-1 + E^(2*c))*f*(e
+ f*x)*PolyLog[2, E^(c + d*x)] + 2*a*b*f^2*PolyLog[2, E^(2*(c + d*x))] - 2*
a*b*E^(2*c)*f^2*PolyLog[2, E^(2*(c + d*x))] - 2*a^2*f^2*PolyLog[3, -E^(c +
d*x)] - 4*b^2*f^2*PolyLog[3, -E^(c + d*x)] + 2*a^2*E^(2*c)*f^2*PolyLog[3, -
E^(c + d*x)] + 4*b^2*E^(2*c)*f^2*PolyLog[3, -E^(c + d*x)] + 2*a^2*f^2*PolyL
og[3, E^(c + d*x)] + 4*b^2*f^2*PolyLog[3, E^(c + d*x)] - 2*a^2*E^(2*c)*f^2*
PolyLog[3, E^(c + d*x)] - 4*b^2*E^(2*c)*f^2*PolyLog[3, E^(c + d*x)])/(2*a^3
*d^3*(-1 + E^(2*c))) + (b*Sqrt[a^2 + b^2]*(2*d^2*e^2*ArcTanh[(a + b*E^(c +
d*x))/Sqrt[a^2 + b^2]] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2
+ b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*d
^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1
 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 2*d*f*(e + f*x)*PolyLog[2, (b*E
^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c
+ d*x))/(a + Sqrt[a^2 + b^2]))] + 2*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sq
rt[a^2 + b^2])] - 2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))
]))/(a^3*d^3) + (Csch[c]*Csch[c + d*x]^2*(2*b*d*e^2*Cosh[c] + 4*b*d*e*f*x*C
osh[c] + 2*b*d*f^2*x^2*Cosh[c] + 2*a*e*f*Cosh[d*x] + 2*a*f^2*x*Cosh[d*x] -
2*a*e*f*Cosh[2*c + d*x] - 2*a*f^2*x*Cosh[2*c + d*x] - 2*b*d*e^2*Cosh[c + 2*
d*x] - 4*b*d*e*f*x*Cosh[c + 2*d*x] - 2*b*d*f^2*x^2*Cosh[c + 2*d*x] + a*d*e^
2*Sinh[d*x] + 2*a*d*e*f*x*Sinh[d*x] + a*d*f^2*x^2*Sinh[d*x] - a*d*e^2*Sinh[
2*c + d*x] - 2*a*d*e*f*x*Sinh[2*c + d*x] - a*d*f^2*x^2*Sinh[2*c + d*x]))/(4
*a^2*d^2)
```

fricas [C] time = 0.69, size = 7726, normalized size = 10.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] -1/2*(4*a*b*d^2*e^2 - 8*a*b*c*d*e*f + 4*a*b*c^2*f^2 - 4*(a*b*d^2*f^2*x^2 +
2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f - a*b*c^2*f^2)*cosh(d*x + c)^4 - 4*(a*b*d^2
*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f - a*b*c^2*f^2)*sinh(d*x + c)^4 +
 2*(a^2*d^2*f^2*x^2 + a^2*d^2*e^2 + 2*a^2*d*e*f + 2*(a^2*d^2*e*f + a^2*d*f^
2)*x)*cosh(d*x + c)^3 + 2*(a^2*d^2*f^2*x^2 + a^2*d^2*e^2 + 2*a^2*d*e*f + 2*
(a^2*d^2*e*f + a^2*d*f^2)*x - 8*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*
c*d*e*f - a*b*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*(a*b*d^2*f^2*x^2
+ 2*a*b*d^2*e*f*x - a*b*d^2*e^2 + 4*a*b*c*d*e*f - 2*a*b*c^2*f^2)*cosh(d*x +
 c)^2 + 2*(2*a*b*d^2*f^2*x^2 + 4*a*b*d^2*e*f*x - 2*a*b*d^2*e^2 + 8*a*b*c*d*
e*f - 4*a*b*c^2*f^2 - 12*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f
 - a*b*c^2*f^2)*cosh(d*x + c)^2 + 3*(a^2*d^2*f^2*x^2 + a^2*d^2*e^2 + 2*a^2*
d*e*f + 2*(a^2*d^2*e*f + a^2*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c)^2 + 4*(
b^2*d*f^2*x + b^2*d*e*f + (b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c)^4 + 4*(b^
2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*f^2*x + b^2*d
*e*f)*sinh(d*x + c)^4 - 2*(b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c)^2 - 2*(b^
2*d*f^2*x + b^2*d*e*f - 3*(b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c)^2)*sinh(d
*x + c)^2 + 4*((b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c)^3 - (b^2*d*f^2*x + b
^2*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh
(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
 + b^2)/b^2) - b)/b + 1) - 4*(b^2*d*f^2*x + b^2*d*e*f + (b^2*d*f^2*x + b^2*
d*e*f)*cosh(d*x + c)^4 + 4*(b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c)*sinh(d*x
 + c)^3 + (b^2*d*f^2*x + b^2*d*e*f)*sinh(d*x + c)^4 - 2*(b^2*d*f^2*x + b^2*
d*e*f)*cosh(d*x + c)^2 - 2*(b^2*d*f^2*x + b^2*d*e*f - 3*(b^2*d*f^2*x + b^2*
d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*f^2*x + b^2*d*e*f)*cosh
(d*x + c)^3 - (b^2*d*f^2*x + b^2*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt(
(a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c
) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - 2*(b^2*d^2*e^2 - 2
*b^2*c*d*e*f + b^2*c^2*f^2 + (b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*co
sh(d*x + c)^4 + 4*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c)
*sinh(d*x + c)^3 + (b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*sinh(d*x + c
)^4 - 2*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^
2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2 - 3*(b^2*d^2*e^2 - 2*b^2*c*d*e*f +
b^2*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^2*e^2 - 2*b^2*c*d
*e*f + b^2*c^2*f^2)*cosh(d*x + c)^3 - (b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^
2*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x
 + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(b^2*d^2*e
^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2 + (b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f
^2)*cosh(d*x + c)^4 + 4*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*
x + c)*sinh(d*x + c)^3 + (b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*sinh(d
*x + c)^4 - 2*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c)^2 -
 2*(b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2 - 3*(b^2*d^2*e^2 - 2*b^2*c*d*
e*f + b^2*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^2*e^2 - 2*b
^2*c*d*e*f + b^2*c^2*f^2)*cosh(d*x + c)^3 - (b^2*d^2*e^2 - 2*b^2*c*d*e*f +
b^2*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*co
sh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) + 2*(b^2
```

```
*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2 + (b^2*d^2*f^2
*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)^4 + 4*(
b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x +
 c)*sinh(d*x + c)^3 + (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f -
b^2*c^2*f^2)*sinh(d*x + c)^4 - 2*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2
*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*
f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2 - 3*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x +
2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d^2
*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)^3 -
 (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x
 + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c) + a*sinh(
d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b
) - 2*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2 + (b
^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x +
c)^4 + 4*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*
cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*
c*d*e*f - b^2*c^2*f^2)*sinh(d*x + c)^4 - 2*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f
*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^2*d^2*f^2*x^2 + 2*
b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2 - 3*(b^2*d^2*f^2*x^2 + 2*b^2*d^
2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4
*((b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*cosh(d*
x + c)^3 - (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2
)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(d*x + c)
 + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b
^2) - b)/b) - 4*(b^2*f^2*cosh(d*x + c)^4 + 4*b^2*f^2*cosh(d*x + c)*sinh(d*x
 + c)^3 + b^2*f^2*sinh(d*x + c)^4 - 2*b^2*f^2*cosh(d*x + c)^2 + b^2*f^2 + 2
*(3*b^2*f^2*cosh(d*x + c)^2 - b^2*f^2)*sinh(d*x + c)^2 + 4*(b^2*f^2*cosh(d*
x + c)^3 - b^2*f^2*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*poly
log(3, (a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x +
 c))*sqrt((a^2 + b^2)/b^2))/b) + 4*(b^2*f^2*cosh(d*x + c)^4 + 4*b^2*f^2*cos
h(d*x + c)*sinh(d*x + c)^3 + b^2*f^2*sinh(d*x + c)^4 - 2*b^2*f^2*cosh(d*x +
 c)^2 + b^2*f^2 + 2*(3*b^2*f^2*cosh(d*x + c)^2 - b^2*f^2)*sinh(d*x + c)^2 +
 4*(b^2*f^2*cosh(d*x + c)^3 - b^2*f^2*cosh(d*x + c))*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2)*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x
+ c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 2*(a^2*d^2*f^2*x^2 + a^
2*d^2*e^2 - 2*a^2*d*e*f + 2*(a^2*d^2*e*f - a^2*d*f^2)*x)*cosh(d*x + c) - 2*
((a^2 + 2*b^2)*d*f^2*x + ((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f - 2*a
*b*f^2)*cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f -
2*a*b*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*d*f^2*x + (a^2 +
2*b^2)*d*e*f - 2*a*b*f^2)*sinh(d*x + c)^4 + (a^2 + 2*b^2)*d*e*f - 2*a*b*f^2
 - 2*((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f - 2*a*b*f^2)*cosh(d*x + c
)^2 - 2*((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f - 2*a*b*f^2 - 3*((a^2
+ 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f - 2*a*b*f^2)*cosh(d*x + c)^2)*sinh(d
*x + c)^2 + 4*(((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f - 2*a*b*f^2)*co
sh(d*x + c)^3 - ((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f - 2*a*b*f^2)*c
```

osh(d*x + c))*sinh(d*x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) + 2*((a^2 + 2*b^2)*d*f^2*x + ((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f + 2*a*b*f^2)*cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f + 2*a*b *f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f + 2*a*b*f^2)*sinh(d*x + c)^4 + (a^2 + 2*b^2)*d*e*f + 2*a*b*f^2 - 2* ((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f + 2*a*b*f^2)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f + 2*a*b*f^2 - 3*((a^2 + 2*b ^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f + 2*a*b*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f + 2*a*b*f^2)*cosh(d* x + c)^3 - ((a^2 + 2*b^2)*d*f^2*x + (a^2 + 2*b^2)*d*e*f + 2*a*b*f^2)*cosh(d *x + c))*sinh(d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) + ((a^2 + 2*b ^2)*d^2*f^2*x^2 + (a^2 + 2*b^2)*d^2*e^2 + 4*a*b*d*e*f + ((a^2 + 2*b^2)*d^2* f^2*x^2 + (a^2 + 2*b^2)*d^2*e^2 + 4*a*b*d*e*f + 2*a^2*f^2 + 2*((a^2 + 2*b^2)*d^2*e*f + 2*a*b*d*f^2)*x)*cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)*d^2*f^2*x^2 + (a^2 + 2*b^2)*d^2*e^2 + 4*a*b*d*e*f + 2*a^2*f^2 + 2*((a^2 + 2*b^2)*d^2*e* f + 2*a*b*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*d^2*f^2* x^2 + (a^2 + 2*b^2)*d^2*e^2 + 4*a*b*d*e*f + 2*a^2*f^2 + 2*((a^2 + 2*b^2)*d^ 2*e*f + 2*a*b*d*f^2)*x)*sinh(d*x + c)^4 + 2*a^2*f^2 - 2*((a^2 + 2*b^2)*d^2* f^2*x^2 + (a^2 + 2*b^2)*d^2*e^2 + 4*a*b*d*e*f + 2*a^2*f^2 + 2*((a^2 + 2*b^2)*d^2*e*f + 2*a*b*d*f^2)*x)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d^2*f^2*x^2 + (a^2 + 2*b^2)*d^2*e^2 + 4*a*b*d*e*f + 2*a^2*f^2 - 3*((a^2 + 2*b^2)*d^2*f^ 2*x^2 + (a^2 + 2*b^2)*d^2*e^2 + 4*a*b*d*e*f + 2*a^2*f^2 + 2*((a^2 + 2*b^2)* d^2*e*f + 2*a*b*d*f^2)*x)*cosh(d*x + c)^2 + 2*((a^2 + 2*b^2)*d^2*e*f + 2*a* b*d*f^2)*x)*sinh(d*x + c)^2 + 2*((a^2 + 2*b^2)*d^2*e*f + 2*a*b*d*f^2)*x + 4 *(((a^2 + 2*b^2)*d^2*f^2*x^2 + (a^2 + 2*b^2)*d^2*e^2 + 4*a*b*d*e*f + 2*a^2* f^2 + 2*((a^2 + 2*b^2)*d^2*e*f + 2*a*b*d*f^2)*x)*cosh(d*x + c)^3 - ((a^2 + 2*b^2)*d^2*f^2*x^2 + (a^2 + 2*b^2)*d^2*e^2 + 4*a*b*d*e*f + 2*a^2*f^2 + 2*((a^2 + 2*b^2)*d^2*e*f + 2*a*b*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))*log(co sh(d*x + c) + sinh(d*x + c) + 1) - ((a^2 + 2*b^2)*d^2*e^2 + ((a^2 + 2*b^2)* d^2*e^2 - 2*(2*a*b + (a^2 + 2*b^2)*c)*d*e*f + (4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*f^2)*cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)*d^2*e^2 - 2*(2*a*b + (a^2 + 2*b^2)*c)*d*e*f + (4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*d^2*e^2 - 2*(2*a*b + (a^2 + 2*b^2)*c)*d* e*f + (4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*f^2)*sinh(d*x + c)^4 - 2*(2*a*b + (a^2 + 2*b^2)*c)*d*e*f + (4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*f^2 - 2*((a^2 + 2*b^2)*d^2*e^2 - 2*(2*a*b + (a^2 + 2*b^2)*c)*d*e*f + (4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*f^2)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d^2*e^2 - 2* (2*a*b + (a^2 + 2*b^2)*c)*d*e*f + (4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*f^2 - 3*((a^2 + 2*b^2)*d^2*e^2 - 2*(2*a*b + (a^2 + 2*b^2)*c)*d*e*f + (4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a ^2 + 2*b^2)*d^2*e^2 - 2*(2*a*b + (a^2 + 2*b^2)*c)*d*e*f + (4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*f^2)*cosh(d*x + c)^3 - ((a^2 + 2*b^2)*d^2*e^2 - 2*(2*a *b + (a^2 + 2*b^2)*c)*d*e*f + (4*a*b*c + (a^2 + 2*b^2)*c^2 + 2*a^2)*f^2)*co sh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - 1) - ((a^2 + 2*b^2)*d^2*f^2*x^2 + 2*(a^2 + 2*b^2)*c*d*e*f + ((a^2 + 2*b^2)*d^2*f^2*x^2

```
 + 2*(a^2 + 2*b^2)*c*d*e*f - (4*a*b*c + (a^2 + 2*b^2)*c^2)*f^2 + 2*((a^2 +
2*b^2)*d^2*e*f - 2*a*b*d*f^2)*x)*cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)*d^2*f^2
*x^2 + 2*(a^2 + 2*b^2)*c*d*e*f - (4*a*b*c + (a^2 + 2*b^2)*c^2)*f^2 + 2*((a^
2 + 2*b^2)*d^2*e*f - 2*a*b*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2
+ 2*b^2)*d^2*f^2*x^2 + 2*(a^2 + 2*b^2)*c*d*e*f - (4*a*b*c + (a^2 + 2*b^2)*c
^2)*f^2 + 2*((a^2 + 2*b^2)*d^2*e*f - 2*a*b*d*f^2)*x)*sinh(d*x + c)^4 - (4*a
*b*c + (a^2 + 2*b^2)*c^2)*f^2 - 2*((a^2 + 2*b^2)*d^2*f^2*x^2 + 2*(a^2 + 2*b
^2)*c*d*e*f - (4*a*b*c + (a^2 + 2*b^2)*c^2)*f^2 + 2*((a^2 + 2*b^2)*d^2*e*f
- 2*a*b*d*f^2)*x)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d^2*f^2*x^2 + 2*(a^2 +
 2*b^2)*c*d*e*f - (4*a*b*c + (a^2 + 2*b^2)*c^2)*f^2 - 3*((a^2 + 2*b^2)*d^2*
f^2*x^2 + 2*(a^2 + 2*b^2)*c*d*e*f - (4*a*b*c + (a^2 + 2*b^2)*c^2)*f^2 + 2*(
(a^2 + 2*b^2)*d^2*e*f - 2*a*b*d*f^2)*x)*cosh(d*x + c)^2 + 2*((a^2 + 2*b^2)*
d^2*e*f - 2*a*b*d*f^2)*x)*sinh(d*x + c)^2 + 2*((a^2 + 2*b^2)*d^2*e*f - 2*a*
b*d*f^2)*x + 4*(((a^2 + 2*b^2)*d^2*f^2*x^2 + 2*(a^2 + 2*b^2)*c*d*e*f - (4*a
*b*c + (a^2 + 2*b^2)*c^2)*f^2 + 2*((a^2 + 2*b^2)*d^2*e*f - 2*a*b*d*f^2)*x)*
cosh(d*x + c)^3 - ((a^2 + 2*b^2)*d^2*f^2*x^2 + 2*(a^2 + 2*b^2)*c*d*e*f - (4
*a*b*c + (a^2 + 2*b^2)*c^2)*f^2 + 2*((a^2 + 2*b^2)*d^2*e*f - 2*a*b*d*f^2)*x
)*cosh(d*x + c))*sinh(d*x + c))*log(-cosh(d*x + c) - sinh(d*x + c) + 1) + 2
*((a^2 + 2*b^2)*f^2*cosh(d*x + c)^4 + 4*(a^2 + 2*b^2)*f^2*cosh(d*x + c)*sin
h(d*x + c)^3 + (a^2 + 2*b^2)*f^2*sinh(d*x + c)^4 - 2*(a^2 + 2*b^2)*f^2*cosh
(d*x + c)^2 + (a^2 + 2*b^2)*f^2 + 2*(3*(a^2 + 2*b^2)*f^2*cosh(d*x + c)^2 -
(a^2 + 2*b^2)*f^2)*sinh(d*x + c)^2 + 4*((a^2 + 2*b^2)*f^2*cosh(d*x + c)^3 -
 (a^2 + 2*b^2)*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, cosh(d*x + c) +
 sinh(d*x + c)) - 2*((a^2 + 2*b^2)*f^2*cosh(d*x + c)^4 + 4*(a^2 + 2*b^2)*f^
2*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2 + 2*b^2)*f^2*sinh(d*x + c)^4 - 2*(a^
2 + 2*b^2)*f^2*cosh(d*x + c)^2 + (a^2 + 2*b^2)*f^2 + 2*(3*(a^2 + 2*b^2)*f^2
*cosh(d*x + c)^2 - (a^2 + 2*b^2)*f^2)*sinh(d*x + c)^2 + 4*((a^2 + 2*b^2)*f^
2*cosh(d*x + c)^3 - (a^2 + 2*b^2)*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog
(3, -cosh(d*x + c) - sinh(d*x + c)) + 2*(a^2*d^2*f^2*x^2 + a^2*d^2*e^2 - 2*
a^2*d*e*f - 8*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f - a*b*c^2*
f^2)*cosh(d*x + c)^3 + 3*(a^2*d^2*f^2*x^2 + a^2*d^2*e^2 + 2*a^2*d*e*f + 2*(
a^2*d^2*e*f + a^2*d*f^2)*x)*cosh(d*x + c)^2 + 2*(a^2*d^2*e*f - a^2*d*f^2)*x
 + 4*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x - a*b*d^2*e^2 + 4*a*b*c*d*e*f - 2*a
*b*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))/(a^3*d^3*cosh(d*x + c)^4 + 4*a^3*
d^3*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*d^3*sinh(d*x + c)^4 - 2*a^3*d^3*cos
h(d*x + c)^2 + a^3*d^3 + 2*(3*a^3*d^3*cosh(d*x + c)^2 - a^3*d^3)*sinh(d*x +
 c)^2 + 4*(a^3*d^3*cosh(d*x + c)^3 - a^3*d^3*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

[Out] Timed out

maple [F] time = 1.55, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\left(\coth^{2}\left(dx+c\right)\right)\operatorname{csch}\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] 1/2*e^2*(2*(a*e^(-d*x - c) + 2*b*e^(-2*d*x - 2*c) + a*e^(-3*d*x - 3*c) - 2*
b)/((2*a^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) - (a^2 + 2*b^2
)*log(e^(-d*x - c) + 1)/(a^3*d) + (a^2 + 2*b^2)*log(e^(-d*x - c) - 1)/(a^3*
d) - 2*(a^2*b + b^3)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x
- c) - a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a^3*d)) - (2*b*d*f^2*x^2 + 4*
b*d*e*f*x + (a*d*f^2*x^2*e^(3*c) + 2*a*e*f*e^(3*c) + 2*(d*e*f + f^2)*a*x*e^
(3*c))*e^(3*d*x) - 2*(b*d*f^2*x^2*e^(2*c) + 2*b*d*e*f*x*e^(2*c))*e^(2*d*x)
+ (a*d*f^2*x^2*e^c - 2*a*e*f*e^c + 2*(d*e*f - f^2)*a*x*e^c)*e^(d*x))/(a^2*d
^2*e^(4*d*x + 4*c) - 2*a^2*d^2*e^(2*d*x + 2*c) + a^2*d^2) + (2*b*d*e*f + a*
f^2)*x/(a^2*d^2) + (2*b*d*e*f - a*f^2)*x/(a^2*d^2) - (2*b*d*e*f + a*f^2)*lo
g(e^(d*x + c) + 1)/(a^2*d^3) - (2*b*d*e*f - a*f^2)*log(e^(d*x + c) - 1)/(a^
2*d^3) - 1/2*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*
polylog(3, -e^(d*x + c)))*(a^2*f^2 + 2*b^2*f^2)/(a^3*d^3) + 1/2*(d^2*x^2*lo
g(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))
*(a^2*f^2 + 2*b^2*f^2)/(a^3*d^3) - (a^2*d*e*f + 2*b^2*d*e*f + 2*a*b*f^2)*(d
*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^3*d^3) + (a^2*d*e*f + 2*b
^2*d*e*f - 2*a*b*f^2)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^3
*d^3) + 1/6*((a^2*f^2 + 2*b^2*f^2)*d^3*x^3 + 3*(a^2*d*e*f + 2*b^2*d*e*f + 2
*a*b*f^2)*d^2*x^2)/(a^3*d^3) - 1/6*((a^2*f^2 + 2*b^2*f^2)*d^3*x^3 + 3*(a^2*
d*e*f + 2*b^2*d*e*f - 2*a*b*f^2)*d^2*x^2)/(a^3*d^3) - integrate(2*((a^2*b*f
^2*e^c + b^3*f^2*e^c)*x^2 + 2*(a^2*b*e*f*e^c + b^3*e*f*e^c)*x)*e^(d*x)/(a^3
*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x + c) - a^3*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth\left(c+d\,x\right)^2\,{\left(e+f\,x\right)}^2}{\mathrm{sinh}\left(c+d\,x\right)\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)^2*(e + f*x)^2)/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
[Out] int((coth(c + d*x)^2*(e + f*x)^2)/(sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*coth(d*x+c)**2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.483 $\int \frac{(e+fx)\coth^2(c+dx)\mathbf{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=413

$$-\frac{b^2 f\operatorname{Li}_2\left(-e^{c+dx}\right)}{a^3d^2}+\frac{b^2 f\operatorname{Li}_2\left(e^{c+dx}\right)}{a^3d^2}-\frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d}-\frac{bf\log(\sinh(c+dx))}{a^2d^2}+\frac{b(e+fx)\coth(c+dx)}{a^2d}-\frac{bj}{}$$

```
[Out] -(f*x+e)*arctanh(exp(d*x+c))/a/d-2*b^2*(f*x+e)*arctanh(exp(d*x+c))/a^3/d+b*
(f*x+e)*coth(d*x+c)/a^2/d-1/2*f*csch(d*x+c)/a/d^2-1/2*(f*x+e)*coth(d*x+c)*c
sch(d*x+c)/a/d-b*f*ln(sinh(d*x+c))/a^2/d^2-1/2*f*polylog(2,-exp(d*x+c))/a/d
^2-b^2*f*polylog(2,-exp(d*x+c))/a^3/d^2+1/2*f*polylog(2,exp(d*x+c))/a/d^2+b
^2*f*polylog(2,exp(d*x+c))/a^3/d^2-b*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)
^(1/2)))*(a^2+b^2)^(1/2)/a^3/d+b*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/
2)))*(a^2+b^2)^(1/2)/a^3/d-b*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))
*(a^2+b^2)^(1/2)/a^3/d^2+b*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))*(
a^2+b^2)^(1/2)/a^3/d^2
```

Rubi [A] time = 0.93, antiderivative size = 413, normalized size of antiderivative = 1.00, number of steps used = 38, number of rules used = 17, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.531, Rules used = {5587, 5457, 4182, 2279, 2391, 4185, 5569, 3720, 3475, 5585, 5450, 3296, 2637, 5565, 3322, 2264, 2190}

$$-\frac{b^2 f\operatorname{PolyLog}\left(2,-e^{c+dx}\right)}{a^3d^2}+\frac{b^2 f\operatorname{PolyLog}\left(2,e^{c+dx}\right)}{a^3d^2}-\frac{bf\sqrt{a^2+b^2}\operatorname{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^3d^2}+\frac{bf\sqrt{a^2+b^2}\operatorname{PolyLog}\left(\right.}{a^3d^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Coth[c + d*x]^2*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -(((e + f*x)*ArcTanh[E^(c + d*x)])/(a*d)) - (2*b^2*(e + f*x)*ArcTanh[E^(c +
 d*x)])/(a^3*d) + (b*(e + f*x)*Coth[c + d*x])/(a^2*d) - (f*Csch[c + d*x])/(
2*a*d^2) - ((e + f*x)*Coth[c + d*x]*Csch[c + d*x])/(2*a*d) - (b*Sqrt[a^2 +
b^2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*d) + (b
*Sqrt[a^2 + b^2]*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/
(a^3*d) - (b*f*Log[Sinh[c + d*x]])/(a^2*d^2) - (f*PolyLog[2, -E^(c + d*x)])
/(2*a*d^2) - (b^2*f*PolyLog[2, -E^(c + d*x)])/(a^3*d^2) + (f*PolyLog[2, E^(
c + d*x)])/(2*a*d^2) + (b^2*f*PolyLog[2, E^(c + d*x)])/(a^3*d^2) - (b*Sqrt[
a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^2
) + (b*Sqrt[a^2 + b^2]*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])
)])/(a^3*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5457

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_)*Csch[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(
x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Csch[a + b*x]*Coth[a + b*x]^(p - 2
), x] + Int[(c + d*x)^m*Csch[a + b*x]^3*Coth[a + b*x]^(p - 2), x] /; FreeQ[
{a, b, c, d, m}, x] && IGtQ[p/2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
```

```
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 5587

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*Csch[(c_.) + (d_.)*(x_)]^(p_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Csch[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Csch[c + d*x]^(p - 1)*Coth[c + d*x]^n)/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\coth^2(c+dx)\text{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\coth^2(c+dx)\text{csch}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)\text{csch}(c+dx)\,dx}{a} + \frac{\int (e+fx)\text{csch}^3(c+dx)\,dx}{a} - \frac{b\int (e+fx}{}$$

$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} + \frac{b(e+fx)\coth(c+dx)}{a^2d} - \frac{f\text{csch}(c+dx)}{2ad^2}$$

$$= -\frac{bex}{a^2} - \frac{bfx^2}{2a^2} - \frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} + \frac{b(e+fx)\coth(c+dx)}{a^2d} - \frac{f}{}$$

$$= -\frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} + \frac{b(e+fx)\text{co}}{a^2}$$

$$= -\frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} + \frac{b(e+fx)\text{co}}{a^2}$$

$$= -\frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} + \frac{b(e+fx)\text{co}}{a^2}$$

$$= -\frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} + \frac{b(e+fx)\text{co}}{a^2}$$

$$= -\frac{(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{ad} - \frac{2b^2(e+fx)\tanh^{-1}\left(e^{c+dx}\right)}{a^3d} + \frac{b(e+fx)\text{co}}{a^2}$$

Mathematica [C] time = 8.09, size = 734, normalized size = 1.78

$$-\frac{ib^2f\left(i\left(\text{Li}_2\left(-e^{-c-dx}\right) - \text{Li}_2\left(e^{-c-dx}\right)\right) + i(c+dx)\left(\log\left(1-e^{-c-dx}\right) - \log\left(e^{-c-dx}+1\right)\right)\right)}{a^3d^2} - \frac{b^2cf\log\left(\tanh\left(\frac{1}{2}(c+dx\right.\right.}{a^3d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Coth[c + d*x]^2*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] ((2*b*d*e*Cosh[(c + d*x)/2] - a*f*Cosh[(c + d*x)/2] - 2*b*c*f*Cosh[(c + d*x
)/2] + 2*b*f*(c + d*x)*Cosh[(c + d*x)/2])*Csch[(c + d*x)/2])/(4*a^2*d^2) +
((-(d*e) + c*f - f*(c + d*x))*Csch[(c + d*x)/2]^2)/(8*a*d^2) - (b*f*Log[Sin
```

```
h[c + d*x]])/(a^2*d^2) + (e*Log[Tanh[(c + d*x)/2]])/(2*a*d) + (b^2*e*Log[Ta
nh[(c + d*x)/2]])/(a^3*d) - (c*f*Log[Tanh[(c + d*x)/2]])/(2*a*d^2) - (b^2*c
*f*Log[Tanh[(c + d*x)/2]])/(a^3*d^2) - ((I/2)*f*(I*(c + d*x)*(Log[1 - E^(-c
 - d*x)] - Log[1 + E^(-c - d*x)]) + I*(PolyLog[2, -E^(-c - d*x)] - PolyLog[
2, E^(-c - d*x)])))/(a*d^2) - (I*b^2*f*(I*(c + d*x)*(Log[1 - E^(-c - d*x)]
- Log[1 + E^(-c - d*x)]) + I*(PolyLog[2, -E^(-c - d*x)] - PolyLog[2, E^(-c
- d*x)])))/(a^3*d^2) + (b*Sqrt[a^2 + b^2]*(2*d*e*ArcTanh[(a + b*E^(c + d*x)
)/Sqrt[a^2 + b^2]] - 2*c*f*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - f
*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log
[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - f*PolyLog[2, (b*E^(c + d*x))/
(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^
2]))]))/(a^3*d^2) + ((-(d*e) + c*f - f*(c + d*x))*Sech[(c + d*x)/2]^2)/(8*a
*d^2) + (Sech[(c + d*x)/2]*(2*b*d*e*Sinh[(c + d*x)/2] + a*f*Sinh[(c + d*x)/
2] - 2*b*c*f*Sinh[(c + d*x)/2] + 2*b*f*(c + d*x)*Sinh[(c + d*x)/2]))/(4*a^2
*d^2)
```

fricas [B] time = 0.79, size = 3585, normalized size = 8.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] 1/2*(4*(a*b*d*f*x + a*b*c*f)*cosh(d*x + c)^4 + 4*(a*b*d*f*x + a*b*c*f)*sinh
(d*x + c)^4 - 4*a*b*d*e + 4*a*b*c*f - 2*(a^2*d*f*x + a^2*d*e + a^2*f)*cosh(
d*x + c)^3 - 2*(a^2*d*f*x + a^2*d*e + a^2*f - 8*(a*b*d*f*x + a*b*c*f)*cosh(
d*x + c))*sinh(d*x + c)^3 - 4*(a*b*d*f*x - a*b*d*e + 2*a*b*c*f)*cosh(d*x +
c)^2 - 2*(2*a*b*d*f*x - 2*a*b*d*e + 4*a*b*c*f - 12*(a*b*d*f*x + a*b*c*f)*co
sh(d*x + c)^2 + 3*(a^2*d*f*x + a^2*d*e + a^2*f)*cosh(d*x + c))*sinh(d*x + c
)^2 - 2*(b^2*f*cosh(d*x + c)^4 + 4*b^2*f*cosh(d*x + c)*sinh(d*x + c)^3 + b^
2*f*sinh(d*x + c)^4 - 2*b^2*f*cosh(d*x + c)^2 + b^2*f + 2*(3*b^2*f*cosh(d*x
 + c)^2 - b^2*f)*sinh(d*x + c)^2 + 4*(b^2*f*cosh(d*x + c)^3 - b^2*f*cosh(d*
x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sin
h(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)
/b + 1) + 2*(b^2*f*cosh(d*x + c)^4 + 4*b^2*f*cosh(d*x + c)*sinh(d*x + c)^3
+ b^2*f*sinh(d*x + c)^4 - 2*b^2*f*cosh(d*x + c)^2 + b^2*f + 2*(3*b^2*f*cosh
(d*x + c)^2 - b^2*f)*sinh(d*x + c)^2 + 4*(b^2*f*cosh(d*x + c)^3 - b^2*f*cos
h(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a
*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)
- b)/b + 1) + 2*((b^2*d*e - b^2*c*f)*cosh(d*x + c)^4 + 4*(b^2*d*e - b^2*c*f
)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*e - b^2*c*f)*sinh(d*x + c)^4 + b^2
*d*e - b^2*c*f - 2*(b^2*d*e - b^2*c*f)*cosh(d*x + c)^2 - 2*(b^2*d*e - b^2*c
*f - 3*(b^2*d*e - b^2*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*e -
 b^2*c*f)*cosh(d*x + c)^3 - (b^2*d*e - b^2*c*f)*cosh(d*x + c))*sinh(d*x + c
```

))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sq
rt((a^2 + b^2)/b^2) + 2*a) - 2*((b^2*d*e - b^2*c*f)*cosh(d*x + c)^4 + 4*(b^
2*d*e - b^2*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d*e - b^2*c*f)*sinh(d
*x + c)^4 + b^2*d*e - b^2*c*f - 2*(b^2*d*e - b^2*c*f)*cosh(d*x + c)^2 - 2*(
b^2*d*e - b^2*c*f - 3*(b^2*d*e - b^2*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2
+ 4*((b^2*d*e - b^2*c*f)*cosh(d*x + c)^3 - (b^2*d*e - b^2*c*f)*cosh(d*x + c
))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*
x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(b^2*d*f*x + (b^2*d*f*x + b^2
*c*f)*cosh(d*x + c)^4 + 4*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)*sinh(d*x + c)
^3 + (b^2*d*f*x + b^2*c*f)*sinh(d*x + c)^4 + b^2*c*f - 2*(b^2*d*f*x + b^2*c
*f)*cosh(d*x + c)^2 - 2*(b^2*d*f*x + b^2*c*f - 3*(b^2*d*f*x + b^2*c*f)*cosh
(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^3 - (
b^2*d*f*x + b^2*c*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*lo
g(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))
sqrt((a^2 + b^2)/b^2) - b)/b) + 2(b^2*d*f*x + (b^2*d*f*x + b^2*c*f)*cosh(
d*x + c)^4 + 4*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^2*d
*f*x + b^2*c*f)*sinh(d*x + c)^4 + b^2*c*f - 2*(b^2*d*f*x + b^2*c*f)*cosh(d*
x + c)^2 - 2*(b^2*d*f*x + b^2*c*f - 3*(b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^2
)*sinh(d*x + c)^2 + 4*((b^2*d*f*x + b^2*c*f)*cosh(d*x + c)^3 - (b^2*d*f*x +
 b^2*c*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cosh(
d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2
+ b^2)/b^2) - b)/b) - 2*(a^2*d*f*x + a^2*d*e - a^2*f)*cosh(d*x + c) + ((a^2
 + 2*b^2)*f*cosh(d*x + c)^4 + 4*(a^2 + 2*b^2)*f*cosh(d*x + c)*sinh(d*x + c)
^3 + (a^2 + 2*b^2)*f*sinh(d*x + c)^4 - 2*(a^2 + 2*b^2)*f*cosh(d*x + c)^2 +
2*(3*(a^2 + 2*b^2)*f*cosh(d*x + c)^2 - (a^2 + 2*b^2)*f)*sinh(d*x + c)^2 + (
a^2 + 2*b^2)*f + 4*((a^2 + 2*b^2)*f*cosh(d*x + c)^3 - (a^2 + 2*b^2)*f*cosh(
d*x + c))*sinh(d*x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) - ((a^2 + 2*b
^2)*f*cosh(d*x + c)^4 + 4*(a^2 + 2*b^2)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (
a^2 + 2*b^2)*f*sinh(d*x + c)^4 - 2*(a^2 + 2*b^2)*f*cosh(d*x + c)^2 + 2*(3*(
a^2 + 2*b^2)*f*cosh(d*x + c)^2 - (a^2 + 2*b^2)*f)*sinh(d*x + c)^2 + (a^2 +
2*b^2)*f + 4*((a^2 + 2*b^2)*f*cosh(d*x + c)^3 - (a^2 + 2*b^2)*f*cosh(d*x +
c))*sinh(d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) - (((a^2 + 2*b^2)*
d*f*x + (a^2 + 2*b^2)*d*e + 2*a*b*f)*cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)*d*f
*x + (a^2 + 2*b^2)*d*e + 2*a*b*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + 2
*b^2)*d*f*x + (a^2 + 2*b^2)*d*e + 2*a*b*f)*sinh(d*x + c)^4 + (a^2 + 2*b^2)*
d*f*x + (a^2 + 2*b^2)*d*e + 2*a*b*f - 2*((a^2 + 2*b^2)*d*f*x + (a^2 + 2*b^2
)*d*e + 2*a*b*f)*cosh(d*x + c)^2 - 2*((a^2 + 2*b^2)*d*f*x + (a^2 + 2*b^2)*d
*e + 2*a*b*f - 3*((a^2 + 2*b^2)*d*f*x + (a^2 + 2*b^2)*d*e + 2*a*b*f)*cosh(d
*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + 2*b^2)*d*f*x + (a^2 + 2*b^2)*d*e +
2*a*b*f)*cosh(d*x + c)^3 - ((a^2 + 2*b^2)*d*f*x + (a^2 + 2*b^2)*d*e + 2*a*b
*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) +
(((a^2 + 2*b^2)*d*e - (2*a*b + (a^2 + 2*b^2)*c)*f)*cosh(d*x + c)^4 + 4*((a^
2 + 2*b^2)*d*e - (2*a*b + (a^2 + 2*b^2)*c)*f)*cosh(d*x + c)*sinh(d*x + c)^3
 + ((a^2 + 2*b^2)*d*e - (2*a*b + (a^2 + 2*b^2)*c)*f)*sinh(d*x + c)^4 + (a^2
 + 2*b^2)*d*e - 2*((a^2 + 2*b^2)*d*e - (2*a*b + (a^2 + 2*b^2)*c)*f)*cosh(d*

```
x + c)^2 - 2*((a^2 + 2*b^2)*d*e - 3*((a^2 + 2*b^2)*d*e - (2*a*b + (a^2 + 2*
b^2)*c)*f)*cosh(d*x + c)^2 - (2*a*b + (a^2 + 2*b^2)*c)*f)*sinh(d*x + c)^2 -
 (2*a*b + (a^2 + 2*b^2)*c)*f + 4*(((a^2 + 2*b^2)*d*e - (2*a*b + (a^2 + 2*b^
2)*c)*f)*cosh(d*x + c)^3 - ((a^2 + 2*b^2)*d*e - (2*a*b + (a^2 + 2*b^2)*c)*f
)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - 1) + ((
(a^2 + 2*b^2)*d*f*x + (a^2 + 2*b^2)*c*f)*cosh(d*x + c)^4 + 4*((a^2 + 2*b^2)
*d*f*x + (a^2 + 2*b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + 2*b^2)*
d*f*x + (a^2 + 2*b^2)*c*f)*sinh(d*x + c)^4 + (a^2 + 2*b^2)*d*f*x + (a^2 + 2
*b^2)*c*f - 2*((a^2 + 2*b^2)*d*f*x + (a^2 + 2*b^2)*c*f)*cosh(d*x + c)^2 - 2
*((a^2 + 2*b^2)*d*f*x + (a^2 + 2*b^2)*c*f - 3*((a^2 + 2*b^2)*d*f*x + (a^2 +
 2*b^2)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + 2*b^2)*d*f*x + (
a^2 + 2*b^2)*c*f)*cosh(d*x + c)^3 - ((a^2 + 2*b^2)*d*f*x + (a^2 + 2*b^2)*c*
f)*cosh(d*x + c))*sinh(d*x + c))*log(-cosh(d*x + c) - sinh(d*x + c) + 1) -
2*(a^2*d*f*x + a^2*d*e - 8*(a*b*d*f*x + a*b*c*f)*cosh(d*x + c)^3 - a^2*f +
3*(a^2*d*f*x + a^2*d*e + a^2*f)*cosh(d*x + c)^2 + 4*(a*b*d*f*x - a*b*d*e +
2*a*b*c*f)*cosh(d*x + c))*sinh(d*x + c))/(a^3*d^2*cosh(d*x + c)^4 + 4*a^3*d
^2*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*d^2*sinh(d*x + c)^4 - 2*a^3*d^2*cosh
(d*x + c)^2 + a^3*d^2 + 2*(3*a^3*d^2*cosh(d*x + c)^2 - a^3*d^2)*sinh(d*x +
c)^2 + 4*(a^3*d^2*cosh(d*x + c)^3 - a^3*d^2*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [B] time = 0.34, size = 1284, normalized size = 3.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/2/a/d*e*ln(exp(d*x+c)+1)+1/2/a/d*e*ln(exp(d*x+c)-1)-(a*d*f*x*exp(3*d*x+3
*c)+a*d*e*exp(3*d*x+3*c)-2*b*d*f*x*exp(2*d*x+2*c)+a*d*f*x*exp(d*x+c)+a*f*ex
p(3*d*x+3*c)-2*b*d*e*exp(2*d*x+2*c)+a*d*e*exp(d*x+c)+2*b*d*f*x-a*f*exp(d*x+
c)+2*b*d*e)/d^2/a^2/(exp(2*d*x+2*c)-1)^2+2/d*e*b/a/(a^2+b^2)^(1/2)*arctanh(
1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d^2*f*b/a/(a^2+b^2)^(1/2)*dilog
((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d^2*f*b/a/(a^2+b
^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/d*f
```

```
*b/a/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/
2)))*x-1/d^2*f*b/a/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a
+(a^2+b^2)^(1/2)))*c+1/d*f*b/a/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(
1/2)+a)/(a+(a^2+b^2)^(1/2)))*x+1/d^2*f*b/a/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)
+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-2/d^2*f*c*b/a/(a^2+b^2)^(1/2)*ar
ctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d/a^3*b^2*f*ln(exp(d*x+c)
+1)*x+2/d/a^3*b^3*e/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b
^2)^(1/2))-1/d^2/a^3*b^2*f*c*ln(exp(d*x+c)-1)-1/d^2/a^3*b^3*f/(a^2+b^2)^(1/
2)*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))+1/d^2/a^3*
b^3*f/(a^2+b^2)^(1/2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(
1/2)))-1/2/d^2*f/a*dilog(exp(d*x+c)+1)-1/2/d^2*f*dilog(exp(d*x+c))/a+1/d^2/
a^3*b^3*f/(a^2+b^2)^(1/2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^
(1/2)))*c-2/d^2/a^3*b^3*f*c/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a
)/(a^2+b^2)^(1/2))-1/d/a^3*b^3*f/(a^2+b^2)^(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2
)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+1/d/a^3*b^3*f/(a^2+b^2)^(1/2)*ln((b*exp(
d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2/a^3*b^3*f/(a^2+b^2)^
(1/2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/2/a/d*
ln(exp(d*x+c)+1)*f*x-1/2/a/d^2*f*c*ln(exp(d*x+c)-1)-1/d/a^3*b^2*e*ln(exp(d*
x+c)+1)+1/d/a^3*b^2*e*ln(exp(d*x+c)-1)-1/d^2/a^3*b^2*f*dilog(exp(d*x+c)+1)-
1/d^2/a^3*b^2*f*dilog(exp(d*x+c))+2/d^2/a^2*b*f*ln(exp(d*x+c))-1/d^2/a^2*b*
f*ln(exp(d*x+c)+1)-1/d^2/a^2*b*f*ln(exp(d*x+c)-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\left(2\,a^2 d \int \frac{x}{4\left(a^3 d e^{(dx+c)} + a^3 d\right)}\,dx + 4\,b^2 d \int \frac{x}{4\left(a^3 d e^{(dx+c)} + a^3 d\right)}\,dx + 2\,a^2 d \int \frac{x}{4\left(a^3 d e^{(dx+c)} - a^3 d\right)}\,dx + 4\,b^2 d \int \frac{}{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] (2*a^2*d*integrate(1/4*x/(a^3*d*e^(d*x + c) + a^3*d), x) + 4*b^2*d*integrat
e(1/4*x/(a^3*d*e^(d*x + c) + a^3*d), x) + 2*a^2*d*integrate(1/4*x/(a^3*d*e^
(d*x + c) - a^3*d), x) + 4*b^2*d*integrate(1/4*x/(a^3*d*e^(d*x + c) - a^3*d
), x) + a*b*((d*x + c)/(a^3*d^2) - log(e^(d*x + c) + 1)/(a^3*d^2)) + a*b*((
d*x + c)/(a^3*d^2) - log(e^(d*x + c) - 1)/(a^3*d^2)) - 2*(a^2*b*e^c + b^3*e
^c)*integrate(x*e^(d*x)/(a^3*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x + c) - a^3*b)
, x) + (2*b*d*x*e^(2*d*x + 2*c) - 2*b*d*x - (a*d*x*e^(3*c) + a*e^(3*c))*e^(
3*d*x) - (a*d*x*e^c - a*e^c)*e^(d*x))/(a^2*d^2*e^(4*d*x + 4*c) - 2*a^2*d^2*
e^(2*d*x + 2*c) + a^2*d^2))*f + 1/2*e*(2*(a*e^(-d*x - c) + 2*b*e^(-2*d*x -
2*c) + a*e^(-3*d*x - 3*c) - 2*b)/((2*a^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x -
 4*c) - a^2)*d) - (a^2 + 2*b^2)*log(e^(-d*x - c) + 1)/(a^3*d) + (a^2 + 2*b^
```

```
2)*log(e^(-d*x - c) - 1)/(a^3*d) - 2*(a^2*b + b^3)*log((b*e^(-d*x - c) - a
- sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)
*a^3*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth(c+dx)^2 \left(e+fx\right)}{\sinh(c+dx)\ (a+b\sinh(c+dx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)^2*(e + f*x))/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((coth(c + d*x)^2*(e + f*x))/(sinh(c + d*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\coth^2(c+dx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)**2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*coth(c + d*x)**2*csch(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.484 $\int \frac{\coth^2(c+dx)\mathbf{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=111

$$\frac{b\coth(c+dx)}{a^2d}+\frac{2b\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^3d}-\frac{\left(a^2+2b^2\right)\tanh^{-1}(\cosh(c+dx))}{2a^3d}-\frac{\coth(c+dx)\text{csch}(c+a}{2ad}$$

```
[Out] -1/2*(a^2+2*b^2)*arctanh(cosh(d*x+c))/a^3/d+b*coth(d*x+c)/a^2/d-1/2*coth(d*
x+c)*csch(d*x+c)/a/d+2*b*arctanh((b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))
*(a^2+b^2)^(1/2)/a^3/d
```

Rubi [A] time = 0.57, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {2889, 3056, 3055, 3001, 3770, 2660, 618, 204}

$$\frac{2b\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^3d}-\frac{\left(a^2+2b^2\right)\tanh^{-1}(\cosh(c+dx))}{2a^3d}+\frac{b\coth(c+dx)}{a^2d}-\frac{\coth(c+dx)\text{csch}(c+a}{2ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Coth[c + d*x]^2*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] -((a^2 + 2*b^2)*ArcTanh[Cosh[c + d*x]])/(2*a^3*d) + (2*b*Sqrt[a^2 + b^2]*Ar
cTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(a^3*d) + (b*Coth[c + d*x
])/(a^2*d) - (Coth[c + d*x]*Csch[c + d*x])/(2*a*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
```

```
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2889

```
Int[cos[(e_.) + (f_.)*(x_)]^2*((d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)*((a_) +
(b_.)*sin[(e_.) + (f_.)*(x_)])^(m_), x_Symbol] :> Int[(d*Sin[e + f*x])^n*(a
 + b*Sin[e + f*x])^m*(1 - Sin[e + f*x]^2), x] /; FreeQ[{a, b, d, e, f, m, n
}, x] && NeQ[a^2 - b^2, 0] && (IGtQ[m, 0] || IntegersQ[2*m, 2*n])
```

Rule 3001

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])), x_Symbol] :> Dist[(A*b
- a*B)/(b*c - a*d), Int[1/(a + b*Sin[e + f*x]), x], x] + Dist[(B*c - A*d)/(
b*c - a*d), Int[1/(c + d*Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f,
A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3055

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((A*b^2 - a*b*B + a^2*C)*Cos[e + f*x]
*(a + b*Sin[e + f*x])^(m + 1)*(c + d*Sin[e + f*x])^(n + 1))/(f*(m + 1)*(b*c
 - a*d)*(a^2 - b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 - b^2)), Int[(a
 + b*Sin[e + f*x])^(m + 1)*(c + d*Sin[e + f*x])^n*Simp[(m + 1)*(b*c - a*d)*
(a*A - b*B + a*C) + d*(A*b^2 - a*b*B + a^2*C)*(m + n + 2) - (c*(A*b^2 - a*b
*B + a^2*C) + (m + 1)*(b*c - a*d)*(A*b - a*B + b*C))*Sin[e + f*x] - d*(A*b^
2 - a*b*B + a^2*C)*(m + n + 3)*Sin[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c
, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ
[c^2 - d^2, 0] && LtQ[m, -1] && ((EqQ[a, 0] && IntegerQ[m] &&  !IntegerQ[n]
) ||  !(IntegerQ[2*n] && LtQ[n, -1] && ((IntegerQ[n] &&  !IntegerQ[m]) || E
qQ[a, 0])))
```

Rule 3056

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
-Simp[((A*b^2 + a^2*C)*Cos[e + f*x]*(a + b*Sin[e + f*x])^(m + 1)*(c + d*Sin
[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 - b^2)), x] + Dist[1/((m +
1)*(b*c - a*d)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^(m + 1)*(c + d*Sin[e
+ f*x])^n*Simp[a*(m + 1)*(b*c - a*d)*(A + C) + d*(A*b^2 + a^2*C)*(m + n + 2
) - (c*(A*b^2 + a^2*C) + b*(m + 1)*(b*c - a*d)*(A + C))*Sin[e + f*x] - d*(A
*b^2 + a^2*C)*(m + n + 3)*Sin[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d,
e, f, A, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d
```

```
^2, 0] && LtQ[m, -1] && ((EqQ[a, 0] && IntegerQ[m] && !IntegerQ[n]) || !(
IntegerQ[2*n] && LtQ[n, -1] && ((IntegerQ[n] && !IntegerQ[m]) || EqQ[a, 0]
)))
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\coth^2(c+dx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx = \int \frac{\operatorname{csch}^3(c+dx)\left(1+\sinh^2(c+dx)\right)}{a+b\sinh(c+dx)}\,dx$$

$$= -\frac{\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} + \frac{i\int \frac{\operatorname{csch}^2(c+dx)\left(2ib-ia\sinh(c+dx)+ib\sinh^2(c+dx)\right)}{a+b\sinh(c+dx)}\,dx}{2a}$$

$$= \frac{b\coth(c+dx)}{a^2d} - \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} - \frac{\int \frac{\operatorname{csch}(c+dx)\left(-a^2-2b^2+ab\sinh(c+dx)\right)}{a+b\sinh(c+dx)}}{2a^2}$$

$$= \frac{b\coth(c+dx)}{a^2d} - \frac{\coth(c+dx)\operatorname{csch}(c+dx)}{2ad} - \frac{\left(b\left(a^2+b^2\right)\right)\int \frac{1}{a+b\sinh(c+dx)}\,dx}{a^3}$$

$$= -\frac{\left(a^2+2b^2\right)\tanh^{-1}(\cosh(c+dx))}{2a^3d} + \frac{b\coth(c+dx)}{a^2d} - \frac{\coth(c+dx)\operatorname{csch}(c+}{2ad}$$

$$= -\frac{\left(a^2+2b^2\right)\tanh^{-1}(\cosh(c+dx))}{2a^3d} + \frac{b\coth(c+dx)}{a^2d} - \frac{\coth(c+dx)\operatorname{csch}(c+}{2ad}$$

$$= -\frac{\left(a^2+2b^2\right)\tanh^{-1}(\cosh(c+dx))}{2a^3d} + \frac{2b\sqrt{a^2+b^2}\,\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^3d} +$$

Mathematica [A] time = 1.22, size = 145, normalized size = 1.31

$$\frac{4\left(a^2+2b^2\right)\log\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)+16b\sqrt{-a^2-b^2}\,\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)-a^2\operatorname{csch}^2\left(\frac{1}{2}(c+dx)\right)-a^2\operatorname{sech}^2\left(\frac{1}{2}(\right.}{8a^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Coth[c + d*x]^2*Csch[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (16*b*Sqrt[-a^2 - b^2]*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]] +
 4*a*b*Coth[(c + d*x)/2] - a^2*Csch[(c + d*x)/2]^2 + 4*(a^2 + 2*b^2)*Log[Ta
nh[(c + d*x)/2]] - a^2*Sech[(c + d*x)/2]^2 + 4*a*b*Tanh[(c + d*x)/2])/(8*a^
3*d)
```

fricas [B] time = 0.55, size = 892, normalized size = 8.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] -1/2*(2*a^2*cosh(d*x + c)^3 + 2*a^2*sinh(d*x + c)^3 - 4*a*b*cosh(d*x + c)^2
 + 2*a^2*cosh(d*x + c) + 2*(3*a^2*cosh(d*x + c) - 2*a*b)*sinh(d*x + c)^2 -
2*(b*cosh(d*x + c)^4 + 4*b*cosh(d*x + c)*sinh(d*x + c)^3 + b*sinh(d*x + c)^
4 - 2*b*cosh(d*x + c)^2 + 2*(3*b*cosh(d*x + c)^2 - b)*sinh(d*x + c)^2 + 4*(
b*cosh(d*x + c)^3 - b*cosh(d*x + c))*sinh(d*x + c) + b)*sqrt(a^2 + b^2)*log
((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2 +
 b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x + c) + 2*sqrt(a^2 + b^2)*(b*cos
h(d*x + c) + b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2 +
 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) + 4*a*b +
((a^2 + 2*b^2)*cosh(d*x + c)^4 + 4*(a^2 + 2*b^2)*cosh(d*x + c)*sinh(d*x + c
)^3 + (a^2 + 2*b^2)*sinh(d*x + c)^4 - 2*(a^2 + 2*b^2)*cosh(d*x + c)^2 + 2*(
3*(a^2 + 2*b^2)*cosh(d*x + c)^2 - a^2 - 2*b^2)*sinh(d*x + c)^2 + a^2 + 2*b^
2 + 4*((a^2 + 2*b^2)*cosh(d*x + c)^3 - (a^2 + 2*b^2)*cosh(d*x + c))*sinh(d*
x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) - ((a^2 + 2*b^2)*cosh(d*x +
c)^4 + 4*(a^2 + 2*b^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2 + 2*b^2)*sinh(d
*x + c)^4 - 2*(a^2 + 2*b^2)*cosh(d*x + c)^2 + 2*(3*(a^2 + 2*b^2)*cosh(d*x +
 c)^2 - a^2 - 2*b^2)*sinh(d*x + c)^2 + a^2 + 2*b^2 + 4*((a^2 + 2*b^2)*cosh(
d*x + c)^3 - (a^2 + 2*b^2)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c)
+ sinh(d*x + c) - 1) + 2*(3*a^2*cosh(d*x + c)^2 - 4*a*b*cosh(d*x + c) + a^2
)*sinh(d*x + c))/(a^3*d*cosh(d*x + c)^4 + 4*a^3*d*cosh(d*x + c)*sinh(d*x +
c)^3 + a^3*d*sinh(d*x + c)^4 - 2*a^3*d*cosh(d*x + c)^2 + a^3*d + 2*(3*a^3*d
*cosh(d*x + c)^2 - a^3*d)*sinh(d*x + c)^2 + 4*(a^3*d*cosh(d*x + c)^3 - a^3*
d*cosh(d*x + c))*sinh(d*x + c))
```

giac [B] time = 1.85, size = 221, normalized size = 1.99

$$-\frac{\frac{\left(a^2e^c+2\,b^2e^c\right)e^{(-c)}\log\left(e^{(dx+c)}+1\right)}{a^3}-\frac{\left(a^2e^c+2\,b^2e^c\right)e^{(-c)}\log\left(\left|e^{(dx+c)}-1\right|\right)}{a^3}+\frac{2\left(a^2be^c+b^3e^c\right)e^{(-c)}\log\left(\frac{\left|2\,be^{(dx+2\,c)}+2\,ae^c-2\,\sqrt{a^2+b^2}\,e^c\right|}{\left|2\,be^{(dx+2\,c)}+2\,ae^c+2\,\sqrt{a^2+b^2}\,e^c\right|}\right)}{\sqrt{a^2+b^2}\,a^3}+\frac{2\left(ae^{(3\,dx+3\,c)}\cdots\right.}{a\cdots}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*((a^2*e^c + 2*b^2*e^c)*e^(-c)*log(e^(d*x + c) + 1)/a^3 - (a^2*e^c + 2*
b^2*e^c)*e^(-c)*log(abs(e^(d*x + c) - 1))/a^3 + 2*(a^2*b*e^c + b^3*e^c)*e^(
-c)*log(abs(2*b*e^(d*x + 2*c) + 2*a*e^c - 2*sqrt(a^2 + b^2)*e^c)/abs(2*b*e^
(d*x + 2*c) + 2*a*e^c + 2*sqrt(a^2 + b^2)*e^c))/(sqrt(a^2 + b^2)*a^3) + 2*(
a*e^(3*d*x + 3*c) - 2*b*e^(2*d*x + 2*c) + a*e^(d*x + c) + 2*b)/(a^2*(e^(2*d
*x + 2*c) - 1)^2))/d
```

maple [A] time = 0.00, size = 162, normalized size = 1.46

$$\frac{\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)}{8da}+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b}{2d\,a^2}-\frac{2b\sqrt{a^2+b^2}\ \operatorname{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{d\,a^3}-\frac{1}{8da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}+\frac{\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right.\right.}{2da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/8/d/a*tanh(1/2*d*x+1/2*c)^2+1/2/d/a^2*tanh(1/2*d*x+1/2*c)*b-2/d*b*(a^2+b^
2)^(1/2)/a^3*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))-1/8
/d/a/tanh(1/2*d*x+1/2*c)^2+1/2/d/a*ln(tanh(1/2*d*x+1/2*c))+1/d/a^3*ln(tanh(
1/2*d*x+1/2*c))*b^2+1/2/d*b/a^2/tanh(1/2*d*x+1/2*c)
```

maxima [B] time = 0.40, size = 217, normalized size = 1.95

$$\frac{ae^{(-dx-c)}+2\,be^{(-2\,dx-2\,c)}+ae^{(-3\,dx-3\,c)}-2\,b}{\left(2\,a^2e^{(-2\,dx-2\,c)}-a^2e^{(-4\,dx-4\,c)}-a^2\right)d}-\frac{\left(a^2+2\,b^2\right)\log\left(e^{(-dx-c)}+1\right)}{2\,a^3d}+\frac{\left(a^2+2\,b^2\right)\log\left(e^{(-dx-c)}-1\right)}{2\,a^3d}-\frac{\left(a^2b+b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2*csch(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] (a*e^(-d*x - c) + 2*b*e^(-2*d*x - 2*c) + a*e^(-3*d*x - 3*c) - 2*b)/((2*a^2*
e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) - 1/2*(a^2 + 2*b^2)*log(e
^(-d*x - c) + 1)/(a^3*d) + 1/2*(a^2 + 2*b^2)*log(e^(-d*x - c) - 1)/(a^3*d)
- (a^2*b + b^3)*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c)
- a + sqrt(a^2 + b^2)))/(sqrt(a^2 + b^2)*a^3*d)
```

mupad [B] time = 0.69, size = 628, normalized size = 5.66

$$\frac{e^{c+d\,x}}{a\,d-a\,d\,e^{2\,c+2\,d\,x}}-\frac{2\,e^{c+d\,x}}{a\,d-2\,a\,d\,e^{2\,c+2\,d\,x}+a\,d\,e^{4\,c+4\,d\,x}}-\frac{2\,b}{a^2\,d-a^2\,d\,e^{2\,c+2\,d\,x}}+\frac{\ln\left(4\,a^4+8\,b^4+12\,a^2\,b^2-4\,a^4\,e^{d\,x}\,e^c-\right.}{2\,a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)^2/(sinh(c + d*x)*(a + b*sinh(c + d*x))),x)
```

```
[Out] exp(c + d*x)/(a*d - a*d*exp(2*c + 2*d*x)) - (2*exp(c + d*x))/(a*d - 2*a*d*e
xp(2*c + 2*d*x) + a*d*exp(4*c + 4*d*x)) - (2*b)/(a^2*d - a^2*d*exp(2*c + 2*
d*x)) + log(4*a^4 + 8*b^4 + 12*a^2*b^2 - 4*a^4*exp(d*x)*exp(c) - 8*b^4*exp(
d*x)*exp(c) - 12*a^2*b^2*exp(d*x)*exp(c))/(2*a*d) - log(4*a^4 + 8*b^4 + 12*
a^2*b^2 + 4*a^4*exp(d*x)*exp(c) + 8*b^4*exp(d*x)*exp(c) + 12*a^2*b^2*exp(d*
x)*exp(c))/(2*a*d) + (b^2*log(4*a^4 + 8*b^4 + 12*a^2*b^2 - 4*a^4*exp(d*x)*e
xp(c) - 8*b^4*exp(d*x)*exp(c) - 12*a^2*b^2*exp(d*x)*exp(c)))/(a^3*d) - (b^2
*log(4*a^4 + 8*b^4 + 12*a^2*b^2 + 4*a^4*exp(d*x)*exp(c) + 8*b^4*exp(d*x)*ex
p(c) + 12*a^2*b^2*exp(d*x)*exp(c)))/(a^3*d) - (b*log(32*a^4*exp(d*x)*exp(c)
 - 16*a*b^3 - 16*a^3*b - 8*b^3*(a^2 + b^2)^(1/2) + 8*b^4*exp(d*x)*exp(c) -
16*a^2*b*(a^2 + b^2)^(1/2) + 40*a^2*b^2*exp(d*x)*exp(c) + 32*a^3*exp(d*x)*e
xp(c)*(a^2 + b^2)^(1/2) + 24*a*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2))*(a^2
+ b^2)^(1/2))/(a^3*d) + (b*log(8*b^3*(a^2 + b^2)^(1/2) - 16*a*b^3 - 16*a^3*
b + 32*a^4*exp(d*x)*exp(c) + 8*b^4*exp(d*x)*exp(c) + 16*a^2*b*(a^2 + b^2)^(
1/2) + 40*a^2*b^2*exp(d*x)*exp(c) - 32*a^3*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2
) - 24*a*b^2*exp(d*x)*exp(c)*(a^2 + b^2)^(1/2))*(a^2 + b^2)^(1/2))/(a^3*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth^2(c+dx)\operatorname{csch}(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)**2*csch(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(coth(c + d*x)**2*csch(c + d*x)/(a + b*sinh(c + d*x)), x)
```

3.485 $\int \frac{\coth^2(c+dx)\mathbf{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\text{Int}\left(\frac{\coth^2(c+dx)\text{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(coth(d*x+c)^2*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\coth^2(c+dx)\text{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Coth[c + d*x]^2*Csch[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Coth[c + d*x]^2*Csch[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\coth^2(c+dx)\text{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\coth^2(c+dx)\text{csch}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Coth[c + d*x]^2*Csch[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 1.04, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\coth(dx+c)^2\,\text{csch}(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(coth(d*x + c)^2*csch(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 2.37, size = 0, normalized size = 0.00

$$\int \frac{\left(\coth^{2}\left(dx+c\right)\right)\operatorname{csch}\left(dx+c\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)^2*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(coth(d*x+c)^2*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-2\left(a^{2}be^{c}+b^{3}e^{c}\right)\int -\frac{e^{(dx)}}{a^{3}bfx+a^{3}be-\left(a^{3}bfxe^{(2c)}+a^{3}bee^{(2c)}\right)e^{(2dx)}-2\left(a^{4}fxe^{c}+a^{4}ee^{c}\right)e^{(dx)}}\,dx-\frac{2}{a^{2}d^{2}f^{2}x^{2}+2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^2*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -2*(a^2*b*e^c + b^3*e^c)*integrate(-e^(d*x)/(a^3*b*f*x + a^3*b*e - (a^3*b*f
*x*e^(2*c) + a^3*b*e*e^(2*c))*e^(2*d*x) - 2*(a^4*f*x*e^c + a^4*e*e^c)*e^(d*
x)), x) - (2*b*d*f*x + 2*b*d*e + (a*d*f*x*e^(3*c) + (d*e - f)*a*e^(3*c))*e^
(3*d*x) - 2*(b*d*f*x*e^(2*c) + b*d*e*e^(2*c))*e^(2*d*x) + (a*d*f*x*e^c + (d
*e + f)*a*e^c)*e^(d*x))/(a^2*d^2*f^2*x^2 + 2*a^2*d^2*e*f*x + a^2*d^2*e^2 +
(a^2*d^2*f^2*x^2*e^(4*c) + 2*a^2*d^2*e*f*x*e^(4*c) + a^2*d^2*e^2*e^(4*c))*e
```

```
^(4*d*x) - 2*(a^2*d^2*f^2*x^2*e^(2*c) + 2*a^2*d^2*e*f*x*e^(2*c) + a^2*d^2*e
^2*e^(2*c))*e^(2*d*x)) + 2*integrate(-1/4*(2*b^2*d^2*e^2 + 2*a*b*d*e*f + (d
^2*e^2 + 2*f^2)*a^2 + (a^2*d^2*f^2 + 2*b^2*d^2*f^2)*x^2 + 2*(a^2*d^2*e*f +
2*b^2*d^2*e*f + a*b*d*f^2)*x)/(a^3*d^2*f^3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^
3*d^2*e^2*f*x + a^3*d^2*e^3 - (a^3*d^2*f^3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^
c + 3*a^3*d^2*e^2*f*x*e^c + a^3*d^2*e^3*e^c)*e^(d*x)), x) + 2*integrate(1/4
*(2*b^2*d^2*e^2 - 2*a*b*d*e*f + (d^2*e^2 + 2*f^2)*a^2 + (a^2*d^2*f^2 + 2*b^
2*d^2*f^2)*x^2 + 2*(a^2*d^2*e*f + 2*b^2*d^2*e*f - a*b*d*f^2)*x)/(a^3*d^2*f^
3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3*d^2*e^2*f*x + a^3*d^2*e^3 + (a^3*d^2*f^
3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c + 3*a^3*d^2*e^2*f*x*e^c + a^3*d^2*e^3*e
^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\coth\left(c+d\,x\right)^2}{\sinh\left(c+d\,x\right)\,\left(e+f\,x\right)\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)^2/(sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(coth(c + d*x)^2/(sinh(c + d*x)*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth^{2}{\left(c + dx \right)} \operatorname{csch}{\left(c + dx \right)}}{\left(a + b \sinh{\left(c + dx \right)}\right) \left(e + fx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)**2*csch(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(coth(c + d*x)**2*csch(c + d*x)/((a + b*sinh(c + d*x))*(e + f*x)),
x)
```

3.486 $\int \frac{(e+fx)^3 \coth^3(c+dx)}{a+b\sinh(c+dx)} dx$

Optimal. Leaf size=972

$$-\frac{b^2(e+fx)^4}{4a^3f}+\frac{\left(a^2+b^2\right)(e+fx)^4}{4a^3f}-\frac{(e+fx)^4}{4af}-\frac{\coth^2(c+dx)(e+fx)^3}{2ad}+\frac{b\operatorname{csch}(c+dx)(e+fx)^3}{a^2d}-\frac{\left(a^2+b^2\right)\log\left(\right.}{}$$

```
[Out] b*(f*x+e)^3*csch(d*x+c)/a^2/d+6*b*f*(f*x+e)^2*arctanh(exp(d*x+c))/a^2/d^2+6
*b*f^2*(f*x+e)*polylog(2,-exp(d*x+c))/a^2/d^3-6*b*f^2*(f*x+e)*polylog(2,exp
(d*x+c))/a^2/d^3+3/2*b^2*f*(f*x+e)^2*polylog(2,exp(2*d*x+2*c))/a^3/d^2-3/2*
b^2*f^2*(f*x+e)*polylog(3,exp(2*d*x+2*c))/a^3/d^3-3/2*f*(f*x+e)^2*coth(d*x+
c)/a/d^2-6*b*f^3*polylog(3,-exp(d*x+c))/a^2/d^4+6*b*f^3*polylog(3,exp(d*x+c
))/a^2/d^4+3/4*b^2*f^3*polylog(4,exp(2*d*x+2*c))/a^3/d^4-3/2*f^2*(f*x+e)*po
lylog(3,exp(2*d*x+2*c))/a/d^3+3/2*f*(f*x+e)^2*polylog(2,exp(2*d*x+2*c))/a/d
^2-1/4*b^2*(f*x+e)^4/a^3/f+1/4*(a^2+b^2)*(f*x+e)^4/a^3/f-1/2*(f*x+e)^3*coth
(d*x+c)^2/a/d+3/2*f^3*polylog(2,exp(2*d*x+2*c))/a/d^4+3/4*f^3*polylog(4,exp
(2*d*x+2*c))/a/d^4+1/2*(f*x+e)^3/a/d-1/4*(f*x+e)^4/a/f-3/2*f*(f*x+e)^2/a/d^
2-3*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/
d^2-3*(a^2+b^2)*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^
3/d^2+6*(a^2+b^2)*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/
a^3/d^3+6*(a^2+b^2)*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2))
)/a^3/d^3+(f*x+e)^3*ln(1-exp(2*d*x+2*c))/a/d-(a^2+b^2)*(f*x+e)^3*ln(1+b*exp
(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d-(a^2+b^2)*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a
+(a^2+b^2)^(1/2)))/a^3/d-6*(a^2+b^2)*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^
2)^(1/2)))/a^3/d^4-6*(a^2+b^2)*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/
2)))/a^3/d^4+3*f^2*(f*x+e)*ln(1-exp(2*d*x+2*c))/a/d^3+b^2*(f*x+e)^3*ln(1-ex
p(2*d*x+2*c))/a^3/d
```

Rubi [A] time = 2.20, antiderivative size = 972, normalized size of antiderivative = 1.00, number of steps used = 62, number of rules used = 23, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.821, Rules used = {5569, 3720, 3716, 2190, 2279, 2391, 32, 2531, 6609, 2282, 6589, 5585, 5450, 3296, 2638, 5452, 4182, 5446, 3311, 2635, 8, 5565, 5561}

$$-\frac{b^2(e+fx)^4}{4a^3f}+\frac{\left(a^2+b^2\right)(e+fx)^4}{4a^3f}-\frac{(e+fx)^4}{4af}-\frac{\coth^2(c+dx)(e+fx)^3}{2ad}+\frac{b\operatorname{csch}(c+dx)(e+fx)^3}{a^2d}-\frac{\left(a^2+b^2\right)\log\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Coth[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-3*f*(e + f*x)^2)/(2*a*d^2) + (e + f*x)^3/(2*a*d) - (e + f*x)^4/(4*a*f) -
(b^2*(e + f*x)^4)/(4*a^3*f) + ((a^2 + b^2)*(e + f*x)^4)/(4*a^3*f) + (6*b*f*
```

```
(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a^2*d^2) - (3*f*(e + f*x)^2*Coth[c + d*x
])/(2*a*d^2) - ((e + f*x)^3*Coth[c + d*x]^2)/(2*a*d) + (b*(e + f*x)^3*Csch[
c + d*x])/(a^2*d) - ((a^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - S
qrt[a^2 + b^2])])/(a^3*d) - ((a^2 + b^2)*(e + f*x)^3*Log[1 + (b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2])])/(a^3*d) + (3*f^2*(e + f*x)*Log[1 - E^(2*(c + d*x)
)])/(a*d^3) + ((e + f*x)^3*Log[1 - E^(2*(c + d*x))])/(a*d) + (b^2*(e + f*x)
^3*Log[1 - E^(2*(c + d*x))])/(a^3*d) + (6*b*f^2*(e + f*x)*PolyLog[2, -E^(c
+ d*x)])/(a^2*d^3) - (6*b*f^2*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a^2*d^3)
- (3*(a^2 + b^2)*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 +
 b^2]))])/(a^3*d^2) - (3*(a^2 + b^2)*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^2) + (3*f^3*PolyLog[2, E^(2*(c + d*x))
])/(2*a*d^4) + (3*f*(e + f*x)^2*PolyLog[2, E^(2*(c + d*x))])/(2*a*d^2) + (3
*b^2*f*(e + f*x)^2*PolyLog[2, E^(2*(c + d*x))])/(2*a^3*d^2) - (6*b*f^3*Poly
Log[3, -E^(c + d*x)])/(a^2*d^4) + (6*b*f^3*PolyLog[3, E^(c + d*x)])/(a^2*d^
4) + (6*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^
2 + b^2]))])/(a^3*d^3) + (6*(a^2 + b^2)*f^2*(e + f*x)*PolyLog[3, -((b*E^(c
+ d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^3) - (3*f^2*(e + f*x)*PolyLog[3, E^
(2*(c + d*x))])/(2*a*d^3) - (3*b^2*f^2*(e + f*x)*PolyLog[3, E^(2*(c + d*x))
])/(2*a^3*d^3) - (6*(a^2 + b^2)*f^3*PolyLog[4, -((b*E^(c + d*x))/(a - Sqrt[
a^2 + b^2]))])/(a^3*d^4) - (6*(a^2 + b^2)*f^3*PolyLog[4, -((b*E^(c + d*x))/
(a + Sqrt[a^2 + b^2]))])/(a^3*d^4) + (3*f^3*PolyLog[4, E^(2*(c + d*x))])/(4
*a*d^4) + (3*b^2*f^3*PolyLog[4, E^(2*(c + d*x))])/(4*a^3*d^4)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
```

```
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
```

```
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\coth^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\coth^3(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^3\coth^2(c+dx)}{2ad} + \frac{\int (e+fx)^3\coth(c+dx)\,dx}{a} - \frac{b\int (e+fx)^3\cosh(c+ \ldots}{a^2 \ldots}$$

$$= -\frac{(e+fx)^4}{4af} - \frac{3f(e+fx)^2\coth(c+dx)}{2ad^2} - \frac{(e+fx)^3\coth^2(c+dx)}{2ad} - \frac{2\int \frac{e^{2(c+dx)}(e+ \ldots}{1-e^{2(c+ \ldots}}}{a}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} - \frac{(e+fx)^4}{4af} - \frac{3f(e+fx)^2\coth(c+dx)}{2ad^2} - \frac{(e+fx)^3 \mathrm{c}\ldots}{2\ldots}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} - \frac{(e+fx)^4}{4af} - \frac{b^2(e+fx)^4}{4a^3f} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4a^3f} + \frac{6b\ldots}{\ldots}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} - \frac{(e+fx)^4}{4af} - \frac{b^2(e+fx)^4}{4a^3f} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4a^3f} + \frac{6b\ldots}{\ldots}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} - \frac{(e+fx)^4}{4af} - \frac{b^2(e+fx)^4}{4a^3f} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4a^3f} + \frac{6b\ldots}{\ldots}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} - \frac{(e+fx)^4}{4af} - \frac{b^2(e+fx)^4}{4a^3f} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4a^3f} + \frac{6b\ldots}{\ldots}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} - \frac{(e+fx)^4}{4af} - \frac{b^2(e+fx)^4}{4a^3f} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4a^3f} + \frac{6b\ldots}{\ldots}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} - \frac{(e+fx)^4}{4af} - \frac{b^2(e+fx)^4}{4a^3f} + \frac{\left(a^2+b^2\right)(e+fx)^4}{4a^3f} + \frac{6b\ldots}{\ldots}$$

Mathematica [B] time = 75.76, size = 3657, normalized size = 3.76

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Coth[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(e + f*x)^3*Csch[c])/(a^2*d) - ((e + f*x)^3*Csch[(c + d*x)/2]^2)/(8*a*d)
 - (8*a^2*d^4*e^3*E^(2*c)*x + 8*b^2*d^4*e^3*E^(2*c)*x + 24*a^2*d^2*e*E^(2*c
)*f^2*x + 12*a^2*d^4*e^2*E^(2*c)*f*x^2 + 12*b^2*d^4*e^2*E^(2*c)*f*x^2 + 12*
a^2*d^2*E^(2*c)*f^3*x^2 + 8*a^2*d^4*e*E^(2*c)*f^2*x^3 + 8*b^2*d^4*e*E^(2*c)
*f^2*x^3 + 2*a^2*d^4*E^(2*c)*f^3*x^4 + 2*b^2*d^4*E^(2*c)*f^3*x^4 + 24*a*b*d
^2*e^2*f*ArcTanh[E^(c + d*x)] - 24*a*b*d^2*e^2*E^(2*c)*f*ArcTanh[E^(c + d*x
)] - 24*a*b*d^2*e*f^2*x*Log[1 - E^(c + d*x)] + 24*a*b*d^2*e*E^(2*c)*f^2*x*L
og[1 - E^(c + d*x)] - 12*a*b*d^2*f^3*x^2*Log[1 - E^(c + d*x)] + 12*a*b*d^2*
E^(2*c)*f^3*x^2*Log[1 - E^(c + d*x)] + 24*a*b*d^2*e*f^2*x*Log[1 + E^(c + d*
x)] - 24*a*b*d^2*e*E^(2*c)*f^2*x*Log[1 + E^(c + d*x)] + 12*a*b*d^2*f^3*x^2*
Log[1 + E^(c + d*x)] - 12*a*b*d^2*E^(2*c)*f^3*x^2*Log[1 + E^(c + d*x)] + 4*
a^2*d^3*e^3*Log[1 - E^(2*(c + d*x))] + 4*b^2*d^3*e^3*Log[1 - E^(2*(c + d*x)
)] - 4*a^2*d^3*e^3*E^(2*c)*Log[1 - E^(2*(c + d*x))] - 4*b^2*d^3*e^3*E^(2*c)
*Log[1 - E^(2*(c + d*x))] + 12*a^2*d*e*f^2*Log[1 - E^(2*(c + d*x))] - 12*a^
2*d*e*E^(2*c)*f^2*Log[1 - E^(2*(c + d*x))] + 12*a^2*d^3*e^2*f*x*Log[1 - E^(
2*(c + d*x))] + 12*b^2*d^3*e^2*f*x*Log[1 - E^(2*(c + d*x))] - 12*a^2*d^3*e^
2*E^(2*c)*f*x*Log[1 - E^(2*(c + d*x))] - 12*b^2*d^3*e^2*E^(2*c)*f*x*Log[1 -
 E^(2*(c + d*x))] + 12*a^2*d*f^3*x*Log[1 - E^(2*(c + d*x))] - 12*a^2*d*E^(2
*c)*f^3*x*Log[1 - E^(2*(c + d*x))] + 12*a^2*d^3*e*f^2*x^2*Log[1 - E^(2*(c +
 d*x))] + 12*b^2*d^3*e*f^2*x^2*Log[1 - E^(2*(c + d*x))] - 12*a^2*d^3*e*E^(2
*c)*f^2*x^2*Log[1 - E^(2*(c + d*x))] - 12*b^2*d^3*e*E^(2*c)*f^2*x^2*Log[1 -
 E^(2*(c + d*x))] + 4*a^2*d^3*f^3*x^3*Log[1 - E^(2*(c + d*x))] + 4*b^2*d^3*
f^3*x^3*Log[1 - E^(2*(c + d*x))] - 4*a^2*d^3*E^(2*c)*f^3*x^3*Log[1 - E^(2*(
c + d*x))] - 4*b^2*d^3*E^(2*c)*f^3*x^3*Log[1 - E^(2*(c + d*x))] - 24*a*b*d*
(-1 + E^(2*c))*f^2*(e + f*x)*PolyLog[2, -E^(c + d*x)] + 24*a*b*d*(-1 + E^(2
*c))*f^2*(e + f*x)*PolyLog[2, E^(c + d*x)] + 6*a^2*d^2*e^2*f*PolyLog[2, E^(
2*(c + d*x))] + 6*b^2*d^2*e^2*f*PolyLog[2, E^(2*(c + d*x))] - 6*a^2*d^2*e^2
*E^(2*c)*f*PolyLog[2, E^(2*(c + d*x))] - 6*b^2*d^2*e^2*E^(2*c)*f*PolyLog[2,
 E^(2*(c + d*x))] + 6*a^2*f^3*PolyLog[2, E^(2*(c + d*x))] - 6*a^2*E^(2*c)*f
^3*PolyLog[2, E^(2*(c + d*x))] + 12*a^2*d^2*e*f^2*x*PolyLog[2, E^(2*(c + d*
x))] + 12*b^2*d^2*e*f^2*x*PolyLog[2, E^(2*(c + d*x))] - 12*a^2*d^2*e*E^(2*c
)*f^2*x*PolyLog[2, E^(2*(c + d*x))] - 12*b^2*d^2*e*E^(2*c)*f^2*x*PolyLog[2,
 E^(2*(c + d*x))] + 6*a^2*d^2*f^3*x^2*PolyLog[2, E^(2*(c + d*x))] + 6*b^2*d
^2*f^3*x^2*PolyLog[2, E^(2*(c + d*x))] - 6*a^2*d^2*E^(2*c)*f^3*x^2*PolyLog[
2, E^(2*(c + d*x))] - 6*b^2*d^2*E^(2*c)*f^3*x^2*PolyLog[2, E^(2*(c + d*x))]
 - 24*a*b*f^3*PolyLog[3, -E^(c + d*x)] + 24*a*b*E^(2*c)*f^3*PolyLog[3, -E^(
c + d*x)] + 24*a*b*f^3*PolyLog[3, E^(c + d*x)] - 24*a*b*E^(2*c)*f^3*PolyLog
```

[3, E^(c + d*x)] - 6*a^2*d*e*f^2*PolyLog[3, E^(2*(c + d*x))] - 6*b^2*d*e*f^2*PolyLog[3, E^(2*(c + d*x))] + 6*a^2*d*e*E^(2*c)*f^2*PolyLog[3, E^(2*(c + d*x))] + 6*b^2*d*e*E^(2*c)*f^2*PolyLog[3, E^(2*(c + d*x))] - 6*a^2*d*f^3*x*PolyLog[3, E^(2*(c + d*x))] - 6*b^2*d*f^3*x*PolyLog[3, E^(2*(c + d*x))] + 6*a^2*d*E^(2*c)*f^3*x*PolyLog[3, E^(2*(c + d*x))] + 6*b^2*d*E^(2*c)*f^3*x*PolyLog[3, E^(2*(c + d*x))] + 3*a^2*f^3*PolyLog[4, E^(2*(c + d*x))] + 3*b^2*f^3*PolyLog[4, E^(2*(c + d*x))] - 3*a^2*E^(2*c)*f^3*PolyLog[4, E^(2*(c + d*x))] - 3*b^2*E^(2*c)*f^3*PolyLog[4, E^(2*(c + d*x))])/(4*a^3*d^4*(-1 + E^(2*c))) + ((a^2 + b^2)*(4*e^3*E^(2*c)*x + 6*e^2*E^(2*c)*f*x^2 + 4*e*E^(2*c)*f^2*x^3 + E^(2*c)*f^3*x^4 + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTan[(a + b*E^(c + d*x))/Sqrt[-a^2 - b^2]])/((a^2 + b^2)^(3/2)*d) + (4*a*Sqrt[-(a^2 + b^2)^2]*e^3*E^(2*c)*ArcTanh[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]])/((-a^2 - b^2)^(3/2)*d) + (2*e^3*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))])/d - (2*e^3*E^(2*c)*Log[2*a*E^(c + d*x) + b*(-1 + E^(2*(c + d*x)))])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e^2*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e^2*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (6*e*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*e*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d + (2*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (2*E^(2*c)*f^3*x^3*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])])/d - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (6*(-1 + E^(2*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^2 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*e*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*e*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 - (12*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*E^(2*c)*f^3*x*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^3 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 + (12*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4 - (12*E^(2*c)*f^3*PolyLog[4, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))])/d^4))/(2*a^3*(-1 + E^(2*c))) + ((e + f*x)^3*Se

```
ch[(c + d*x)/2]^2)/(8*a*d) + ((e + f*x)^2*(3*a*f - 2*b*d*(e + f*x))*Csch[c/
2]*Csch[(c + d*x)/2]*Sinh[(d*x)/2])/(4*a^2*d^2) - ((e + f*x)^2*(3*a*f + 2*b
*d*(e + f*x))*Sech[c/2]*Sech[(c + d*x)/2]*Sinh[(d*x)/2])/(4*a^2*d^2)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.51, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\coth^{3}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -e^3*(2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((2*a^2*
e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) + (a^2 + b^2)*log(-2*a*e^
(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a^3*d) - (a^2 + b^2)*log(e^(-d*x - c)
 + 1)/(a^3*d) - (a^2 + b^2)*log(e^(-d*x - c) - 1)/(a^3*d)) + (3*a*f^3*x^2 +
 6*a*e*f^2*x + 3*a*e^2*f + 2*(b*d*f^3*x^3*e^(3*c) + 3*b*d*e*f^2*x^2*e^(3*c)
```

```
 + 3*b*d*e^2*f*x*e^(3*c))*e^(3*d*x) - (2*a*d*f^3*x^3*e^(2*c) + 3*a*e^2*f*e^
(2*c) + 3*(2*d*e*f^2 + f^3)*a*x^2*e^(2*c) + 6*(d*e^2*f + e*f^2)*a*x*e^(2*c)
)*e^(2*d*x) - 2*(b*d*f^3*x^3*e^c + 3*b*d*e*f^2*x^2*e^c + 3*b*d*e^2*f*x*e^c)
*e^(d*x))/(a^2*d^2*e^(4*d*x + 4*c) - 2*a^2*d^2*e^(2*d*x + 2*c) + a^2*d^2) -
 3*(b*d*e^2*f + a*e*f^2)*x/(a^2*d^2) + 3*(b*d*e^2*f - a*e*f^2)*x/(a^2*d^2)
+ 3*(b*d*e^2*f + a*e*f^2)*log(e^(d*x + c) + 1)/(a^2*d^3) - 3*(b*d*e^2*f - a
*e*f^2)*log(e^(d*x + c) - 1)/(a^2*d^3) + (d^3*x^3*log(e^(d*x + c) + 1) + 3*
d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x + c)) + 6*polylog(4,
 -e^(d*x + c)))*(a^2*f^3 + b^2*f^3)/(a^3*d^4) + (d^3*x^3*log(-e^(d*x + c) +
 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(d*x + c)) + 6*poly
log(4, e^(d*x + c)))*(a^2*f^3 + b^2*f^3)/(a^3*d^4) + 3*(a^2*d*e*f^2 + b^2*d
*e*f^2 + a*b*f^3)*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c))
 - 2*polylog(3, -e^(d*x + c)))/(a^3*d^4) + 3*(a^2*d*e*f^2 + b^2*d*e*f^2 - a
*b*f^3)*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c)) - 2*polyl
og(3, e^(d*x + c)))/(a^3*d^4) + 3*(b^2*d^2*e^2*f + 2*a*b*d*e*f^2 + (d^2*e^2
*f + f^3)*a^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c)))/(a^3*d^4) +
 3*(b^2*d^2*e^2*f - 2*a*b*d*e*f^2 + (d^2*e^2*f + f^3)*a^2)*(d*x*log(-e^(d*x
 + c) + 1) + dilog(e^(d*x + c)))/(a^3*d^4) - 1/4*((a^2*f^3 + b^2*f^3)*d^4*x
^4 + 4*(a^2*d*e*f^2 + b^2*d*e*f^2 + a*b*f^3)*d^3*x^3 + 6*(b^2*d^2*e^2*f + 2
*a*b*d*e*f^2 + (d^2*e^2*f + f^3)*a^2)*d^2*x^2)/(a^3*d^4) - 1/4*((a^2*f^3 +
b^2*f^3)*d^4*x^4 + 4*(a^2*d*e*f^2 + b^2*d*e*f^2 - a*b*f^3)*d^3*x^3 + 6*(b^2
*d^2*e^2*f - 2*a*b*d*e*f^2 + (d^2*e^2*f + f^3)*a^2)*d^2*x^2)/(a^3*d^4) + in
tegrate(-2*((a^2*b*f^3 + b^3*f^3)*x^3 + 3*(a^2*b*e*f^2 + b^3*e*f^2)*x^2 + 3
*(a^2*b*e^2*f + b^3*e^2*f)*x - ((a^3*f^3*e^c + a*b^2*f^3*e^c)*x^3 + 3*(a^3*
e*f^2*e^c + a*b^2*e*f^2*e^c)*x^2 + 3*(a^3*e^2*f*e^c + a*b^2*e^2*f*e^c)*x)*e
^(d*x))/(a^3*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x + c) - a^3*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth(c+d\,x)^3\,\left(e+f\,x\right)^3}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((coth(c + d*x)^3*(e + f*x)^3)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^3\coth^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*coth(d*x+c)**3/(a+b*sinh(d*x+c)),x)
[Out] Integral((e + f*x)**3*coth(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.487 $\int \frac{(e+fx)^2\coth^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=689

$$-\frac{b^2f^2\text{Li}_3\left(e^{2(c+dx)}\right)}{2a^3d^3}+\frac{b^2f(e+fx)\text{Li}_2\left(e^{2(c+dx)}\right)}{a^3d^2}+\frac{b^2(e+fx)^2\log\left(1-e^{2(c+dx)}\right)}{a^3d}-\frac{b^2(e+fx)^3}{3a^3f}+\frac{2bf^2\text{Li}_2\left(-e^{c+dx}\right)}{a^2d^3}-\frac{2b}{}$$

```
[Out] e*f*x/a/d+1/2*f^2*x^2/a/d-1/3*(f*x+e)^3/a/f-1/3*b^2*(f*x+e)^3/a^3/f+1/3*(a^
2+b^2)*(f*x+e)^3/a^3/f+4*b*f*(f*x+e)*arctanh(exp(d*x+c))/a^2/d^2-f*(f*x+e)*
coth(d*x+c)/a/d^2-1/2*(f*x+e)^2*coth(d*x+c)^2/a/d+b*(f*x+e)^2*csch(d*x+c)/a
^2/d+(f*x+e)^2*ln(1-exp(2*d*x+2*c))/a/d+b^2*(f*x+e)^2*ln(1-exp(2*d*x+2*c))/
a^3/d+f^2*ln(sinh(d*x+c))/a/d^3-(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a
^2+b^2)^(1/2)))/a^3/d-(a^2+b^2)*(f*x+e)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1
/2)))/a^3/d+2*b*f^2*polylog(2,-exp(d*x+c))/a^2/d^3-2*b*f^2*polylog(2,exp(d*
x+c))/a^2/d^3+f*(f*x+e)*polylog(2,exp(2*d*x+2*c))/a/d^2+b^2*f*(f*x+e)*polyl
og(2,exp(2*d*x+2*c))/a^3/d^2-2*(a^2+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/
(a-(a^2+b^2)^(1/2)))/a^3/d^2-2*(a^2+b^2)*f*(f*x+e)*polylog(2,-b*exp(d*x+c)/
(a+(a^2+b^2)^(1/2)))/a^3/d^2-1/2*f^2*polylog(3,exp(2*d*x+2*c))/a/d^3-1/2*b^
2*f^2*polylog(3,exp(2*d*x+2*c))/a^3/d^3+2*(a^2+b^2)*f^2*polylog(3,-b*exp(d*
x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d^3+2*(a^2+b^2)*f^2*polylog(3,-b*exp(d*x+c)/(
a+(a^2+b^2)^(1/2)))/a^3/d^3
```

Rubi [A] time = 1.71, antiderivative size = 689, normalized size of antiderivative = 1.00, number of steps used = 47, number of rules used = 20, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.714, Rules used = {5569, 3720, 3475, 3716, 2190, 2531, 2282, 6589, 5585, 5450, 3296, 2637, 5452, 4182, 2279, 2391, 5446, 3310, 5565, 5561}

$$-\frac{2f\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^3d^2}-\frac{2f\left(a^2+b^2\right)(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^3d^2}+\frac{b^2f(e+fx)\text{Poly}}{a^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Coth[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e*f*x)/(a*d) + (f^2*x^2)/(2*a*d) - (e + f*x)^3/(3*a*f) - (b^2*(e + f*x)^3)
/(3*a^3*f) + ((a^2 + b^2)*(e + f*x)^3)/(3*a^3*f) + (4*b*f*(e + f*x)*ArcTanh
[E^(c + d*x)])/(a^2*d^2) - (f*(e + f*x)*Coth[c + d*x])/(a*d^2) - ((e + f*x)
^2*Coth[c + d*x]^2)/(2*a*d) + (b*(e + f*x)^2*Csch[c + d*x])/(a^2*d) - ((a^2
 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*d)
 - ((a^2 + b^2)*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])
/(a^3*d) + ((e + f*x)^2*Log[1 - E^(2*(c + d*x))])/(a*d) + (b^2*(e + f*x)^2*
Log[1 - E^(2*(c + d*x))])/(a^3*d) + (f^2*Log[Sinh[c + d*x]])/(a*d^3) + (2*b
```

```
*f^2*PolyLog[2, -E^(c + d*x)])/(a^2*d^3) - (2*b*f^2*PolyLog[2, E^(c + d*x)]
)/(a^2*d^3) - (2*(a^2 + b^2)*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a -
Sqrt[a^2 + b^2]))])/(a^3*d^2) - (2*(a^2 + b^2)*f*(e + f*x)*PolyLog[2, -((b*
E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^2) + (f*(e + f*x)*PolyLog[2, E
^(2*(c + d*x))])/(a*d^2) + (b^2*f*(e + f*x)*PolyLog[2, E^(2*(c + d*x))])/(a
^3*d^2) + (2*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b
^2]))])/(a^3*d^3) + (2*(a^2 + b^2)*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sq
rt[a^2 + b^2]))])/(a^3*d^3) - (f^2*PolyLog[3, E^(2*(c + d*x))])/(2*a*d^3) -
 (b^2*f^2*PolyLog[3, E^(2*(c + d*x))])/(2*a^3*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
```

```
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
```

```
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2 \coth^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2 \coth^3(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^2\coth^2(c+dx)}{2ad} + \frac{\int (e+fx)^2\coth(c+dx)\,dx}{a} - \frac{b\int (e+fx)^2\cosh(c \cdots}{\cdots}$$

$$= -\frac{(e+fx)^3}{3af} - \frac{f(e+fx)\coth(c+dx)}{ad^2} - \frac{(e+fx)^2\coth^2(c+dx)}{2ad} - \frac{2\int \frac{e^{2(c+dx)}(e+\cdots}{1-e^{2(c+d\cdots}}}{a}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{(e+fx)^3}{3af} - \frac{f(e+fx)\coth(c+dx)}{ad^2} - \frac{(e+fx)^2\coth^2(c+dx)}{2ad} + \cdots$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{(e+fx)^3}{3af} - \frac{b^2(e+fx)^3}{3a^3f} + \frac{(a^2+b^2)(e+fx)^3}{3a^3f} + \frac{4bf(e+fx)\tan\cdots}{a^2d^2\cdots}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{(e+fx)^3}{3af} - \frac{b^2(e+fx)^3}{3a^3f} + \frac{(a^2+b^2)(e+fx)^3}{3a^3f} + \frac{4bf(e+fx)\tan\cdots}{a^2d^2\cdots}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{(e+fx)^3}{3af} - \frac{b^2(e+fx)^3}{3a^3f} + \frac{(a^2+b^2)(e+fx)^3}{3a^3f} + \frac{4bf(e+fx)\tan\cdots}{a^2d^2\cdots}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{(e+fx)^3}{3af} - \frac{b^2(e+fx)^3}{3a^3f} + \frac{(a^2+b^2)(e+fx)^3}{3a^3f} + \frac{4bf(e+fx)\tan\cdots}{a^2d^2\cdots}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{(e+fx)^3}{3af} - \frac{b^2(e+fx)^3}{3a^3f} + \frac{(a^2+b^2)(e+fx)^3}{3a^3f} + \frac{4bf(e+fx)\tan\cdots}{a^2d^2\cdots}$$

Mathematica [B] time = 38.96, size = 2137, normalized size = 3.10

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Coth[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*(e + f*x)^2*Csch[c])/(a^2*d) + ((-e^2 - 2*e*f*x - f^2*x^2)*Csch[c/2 + (d
*x)/2]^2)/(8*a*d) - (12*a^2*d^3*e^2*E^(2*c)*x + 12*b^2*d^3*e^2*E^(2*c)*x +
12*a^2*d*E^(2*c)*f^2*x + 12*a^2*d^3*e*E^(2*c)*f*x^2 + 12*b^2*d^3*e*E^(2*c)*
f*x^2 + 4*a^2*d^3*E^(2*c)*f^2*x^3 + 4*b^2*d^3*E^(2*c)*f^2*x^3 + 24*a*b*d*e*
```

```
f*ArcTanh[E^(c + d*x)] - 24*a*b*d*e*E^(2*c)*f*ArcTanh[E^(c + d*x)] - 12*a*b
*d*f^2*x*Log[1 - E^(c + d*x)] + 12*a*b*d*E^(2*c)*f^2*x*Log[1 - E^(c + d*x)]
 + 12*a*b*d*f^2*x*Log[1 + E^(c + d*x)] - 12*a*b*d*E^(2*c)*f^2*x*Log[1 + E^(
c + d*x)] + 6*a^2*d^2*e^2*Log[1 - E^(2*(c + d*x))] + 6*b^2*d^2*e^2*Log[1 -
E^(2*(c + d*x))] - 6*a^2*d^2*e^2*E^(2*c)*Log[1 - E^(2*(c + d*x))] - 6*b^2*d
^2*e^2*E^(2*c)*Log[1 - E^(2*(c + d*x))] + 6*a^2*f^2*Log[1 - E^(2*(c + d*x))
] - 6*a^2*E^(2*c)*f^2*Log[1 - E^(2*(c + d*x))] + 12*a^2*d^2*e*f*x*Log[1 - E
^(2*(c + d*x))] + 12*b^2*d^2*e*f*x*Log[1 - E^(2*(c + d*x))] - 12*a^2*d^2*e*
E^(2*c)*f*x*Log[1 - E^(2*(c + d*x))] - 12*b^2*d^2*e*E^(2*c)*f*x*Log[1 - E^(
2*(c + d*x))] + 6*a^2*d^2*f^2*x^2*Log[1 - E^(2*(c + d*x))] + 6*b^2*d^2*f^2*
x^2*Log[1 - E^(2*(c + d*x))] - 6*a^2*d^2*E^(2*c)*f^2*x^2*Log[1 - E^(2*(c +
d*x))] - 6*b^2*d^2*E^(2*c)*f^2*x^2*Log[1 - E^(2*(c + d*x))] - 12*a*b*(-1 +
E^(2*c))*f^2*PolyLog[2, -E^(c + d*x)] + 12*a*b*(-1 + E^(2*c))*f^2*PolyLog[2
, E^(c + d*x)] + 6*a^2*d*e*f*PolyLog[2, E^(2*(c + d*x))] + 6*b^2*d*e*f*Poly
Log[2, E^(2*(c + d*x))] - 6*a^2*d*e*E^(2*c)*f*PolyLog[2, E^(2*(c + d*x))] -
 6*b^2*d*e*E^(2*c)*f*PolyLog[2, E^(2*(c + d*x))] + 6*a^2*d*f^2*x*PolyLog[2,
 E^(2*(c + d*x))] + 6*b^2*d*f^2*x*PolyLog[2, E^(2*(c + d*x))] - 6*a^2*d*E^(
2*c)*f^2*x*PolyLog[2, E^(2*(c + d*x))] - 6*b^2*d*E^(2*c)*f^2*x*PolyLog[2, E
^(2*(c + d*x))] - 3*a^2*f^2*PolyLog[3, E^(2*(c + d*x))] - 3*b^2*f^2*PolyLog
[3, E^(2*(c + d*x))] + 3*a^2*E^(2*c)*f^2*PolyLog[3, E^(2*(c + d*x))] + 3*b^
2*E^(2*c)*f^2*PolyLog[3, E^(2*(c + d*x))])/(6*a^3*d^3*(-1 + E^(2*c))) + ((a
^2 + b^2)*(6*d^3*e^2*E^(2*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*
x^3 + 3*d^2*e^2*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^
(2*c)*Log[b - 2*a*E^(c + d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b
*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*
Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*
x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*
E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)
])] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*
c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 +
b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^
2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^
c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2,
 -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2
*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E
^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)
*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(
a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt
[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*
E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))]))/(3*a^3*d^3*(-1 + E^(2*c))) + ((e^2 + 2
*e*f*x + f^2*x^2)*Sech[c/2 + (d*x)/2]^2)/(8*a*d) + (Sech[c/2]*Sech[c/2 + (d
*x)/2]*(-(b*d*e^2*Sinh[(d*x)/2]) - a*e*f*Sinh[(d*x)/2] - 2*b*d*e*f*x*Sinh[(
d*x)/2] - a*f^2*x*Sinh[(d*x)/2] - b*d*f^2*x^2*Sinh[(d*x)/2]))/(2*a^2*d^2) +
 (Csch[c/2]*Csch[c/2 + (d*x)/2]*(-(b*d*e^2*Sinh[(d*x)/2]) + a*e*f*Sinh[(d*x
)/2] - 2*b*d*e*f*x*Sinh[(d*x)/2] + a*f^2*x*Sinh[(d*x)/2] - b*d*f^2*x^2*Sinh
```

[(d*x)/2]))/(2*a^2*d^2)

fricas [C] time = 1.31, size = 7775, normalized size = 11.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*a^2*d*e*f - 2*a^2*c*f^2 - 2*(a^2*d*f^2*x + a^2*c*f^2)*cosh(d*x + c)^4 -
2*(a^2*d*f^2*x + a^2*c*f^2)*sinh(d*x + c)^4 + 2*(a*b*d^2*f^2*x^2 + 2*a*b*d^
2*e*f*x + a*b*d^2*e^2)*cosh(d*x + c)^3 + 2*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f
*x + a*b*d^2*e^2 - 4*(a^2*d*f^2*x + a^2*c*f^2)*cosh(d*x + c))*sinh(d*x + c)
^3 - 2*(a^2*d^2*f^2*x^2 + a^2*d^2*e^2 + a^2*d*e*f - 2*a^2*c*f^2 + (2*a^2*d^
2*e*f - a^2*d*f^2)*x)*cosh(d*x + c)^2 - 2*(a^2*d^2*f^2*x^2 + a^2*d^2*e^2 +
a^2*d*e*f - 2*a^2*c*f^2 + 6*(a^2*d*f^2*x + a^2*c*f^2)*cosh(d*x + c)^2 + (2*
a^2*d^2*e*f - a^2*d*f^2)*x - 3*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + a*b*d^2
*e^2)*cosh(d*x + c))*sinh(d*x + c)^2 - 2*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x
 + a*b*d^2*e^2)*cosh(d*x + c) - 2*((a^2 + b^2)*d*f^2*x + ((a^2 + b^2)*d*f^2
*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d*f^2*x + (a^2 + b
^2)*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + b^2)*d*f^2*x + (a^2 + b^
2)*d*e*f)*sinh(d*x + c)^4 + (a^2 + b^2)*d*e*f - 2*((a^2 + b^2)*d*f^2*x + (a
^2 + b^2)*d*e*f)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e
*f - 3*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)^2)*sinh(d*x
+ c)^2 + 4*(((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)^3 - ((a
^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(
(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sq
rt((a^2 + b^2)/b^2) - b)/b + 1) - 2*((a^2 + b^2)*d*f^2*x + ((a^2 + b^2)*d*f
^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d*f^2*x + (a^2 +
 b^2)*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + b^2)*d*f^2*x + (a^2 +
b^2)*d*e*f)*sinh(d*x + c)^4 + (a^2 + b^2)*d*e*f - 2*((a^2 + b^2)*d*f^2*x +
(a^2 + b^2)*d*e*f)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d
*e*f - 3*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)^2)*sinh(d*
x + c)^2 + 4*(((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c)^3 - (
(a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilo
g((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*
sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*((a^2 + b^2)*d*f^2*x + ((a^2 + b^2)*d
*f^2*x + (a^2 + b^2)*d*e*f - a*b*f^2)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d*f^
2*x + (a^2 + b^2)*d*e*f - a*b*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 +
b^2)*d*f^2*x + (a^2 + b^2)*d*e*f - a*b*f^2)*sinh(d*x + c)^4 + (a^2 + b^2)*d
*e*f - a*b*f^2 - 2*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f - a*b*f^2)*cosh
(d*x + c)^2 - 2*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f - a*b*f^2 - 3*((a^
2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f - a*b*f^2)*cosh(d*x + c)^2)*sinh(d*x +
 c)^2 + 4*(((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f - a*b*f^2)*cosh(d*x + c
)^3 - ((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f - a*b*f^2)*cosh(d*x + c))*si
```

nh(d*x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) + 2*((a^2 + b^2)*d*f^2*x
+ ((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f + a*b*f^2)*cosh(d*x + c)^4 + 4*(
(a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f + a*b*f^2)*cosh(d*x + c)*sinh(d*x +
 c)^3 + ((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f + a*b*f^2)*sinh(d*x + c)^4
 + (a^2 + b^2)*d*e*f + a*b*f^2 - 2*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f
 + a*b*f^2)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f +
a*b*f^2 - 3*((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f + a*b*f^2)*cosh(d*x +
c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f + a*b*f
^2)*cosh(d*x + c)^3 - ((a^2 + b^2)*d*f^2*x + (a^2 + b^2)*d*e*f + a*b*f^2)*c
osh(d*x + c))*sinh(d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) - ((a^2
+ b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2 + ((a^2 + b^2)
*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^4 + 4
*((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d
*x + c)*sinh(d*x + c)^3 + ((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a
^2 + b^2)*c^2*f^2)*sinh(d*x + c)^4 - 2*((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)
*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^2*e^2 -
2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2 - 3*((a^2 + b^2)*d^2*e^2 - 2*(a
^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 +
 4*(((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cos
h(d*x + c)^3 - ((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c
^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x
+ c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - ((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b
^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2 + ((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*
d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d^2*e^2 - 2*(
a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (
(a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*sinh(d*x
 + c)^4 - 2*((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*
f^2)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^
2 + b^2)*c^2*f^2 - 3*((a^2 + b^2)*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 +
b^2)*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + b^2)*d^2*e^2 -
2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^3 - ((a^2 + b^2)
*d^2*e^2 - 2*(a^2 + b^2)*c*d*e*f + (a^2 + b^2)*c^2*f^2)*cosh(d*x + c))*sinh
(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)
/b^2) + 2*a) - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2
+ b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2 + ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 +
b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)
^4 + 4*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c
*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + b^2)*
d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)
*c^2*f^2)*sinh(d*x + c)^4 - 2*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*
e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2 - 2*((
a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f -
(a^2 + b^2)*c^2*f^2 - 3*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x
+ 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x +
c)^2 + 4*(((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2

)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^3 - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2 + ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*sinh(d*x + c)^4 - 2*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2 - 3*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c)^3 - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*d^2*e*f*x + 2*(a^2 + b^2)*c*d*e*f - (a^2 + b^2)*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + ((a^2 + b^2)*d^2*f^2*x^2 + (a^2 + b^2)*d^2*e^2 + 2*a*b*d*e*f + ((a^2 + b^2)*d^2*f^2*x^2 + (a^2 + b^2)*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*((a^2 + b^2)*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d^2*f^2*x^2 + (a^2 + b^2)*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*((a^2 + b^2)*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + b^2)*d^2*f^2*x^2 + (a^2 + b^2)*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*((a^2 + b^2)*d^2*e*f + a*b*d*f^2)*x)*sinh(d*x + c)^4 + a^2*f^2 - 2*((a^2 + b^2)*d^2*f^2*x^2 + (a^2 + b^2)*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*((a^2 + b^2)*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^2*f^2*x^2 + (a^2 + b^2)*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 - 3*((a^2 + b^2)*d^2*f^2*x^2 + (a^2 + b^2)*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*((a^2 + b^2)*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c)^2 + 2*((a^2 + b^2)*d^2*e*f + a*b*d*f^2)*x)*sinh(d*x + c)^2 + 2*((a^2 + b^2)*d^2*e*f + a*b*d*f^2)*x + 4*(((a^2 + b^2)*d^2*f^2*x^2 + (a^2 + b^2)*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*((a^2 + b^2)*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c)^3 - ((a^2 + b^2)*d^2*f^2*x^2 + (a^2 + b^2)*d^2*e^2 + 2*a*b*d*e*f + a^2*f^2 + 2*((a^2 + b^2)*d^2*e*f + a*b*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) + ((a^2 + b^2)*d^2*e^2 + ((a^2 + b^2)*d^2*e^2 - 2*(a*b + (a^2 + b^2)*c)*d*e*f + (2*a*b*c + (a^2 + b^2)*c^2 + a^2)*f^2)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d^2*e^2 - 2*(a*b + (a^2 + b^2)*c)*d*e*f + (2*a*b*c + (a^2 + b^2)*c^2 + a^2)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + b^2)*d^2*e^2 - 2*(a*b + (a^2 + b^2)*c)*d*e*f + (2*a*b*c + (a^2 + b^2)*c^2 + a^2)*f^2)*sinh(d*x + c)^4 - 2*(a*b + (a^2 + b^2)*c)*d*e*f + (2*a*b*c + (a^2 + b^2)*c^2 + a^2)*f^2 - 2*((a^2 + b^2)*d^2*e^2 - 2*(a*b + (a^2 + b^2)*c)*d*e*f + (2*a*b*c + (a^2 + b^2)*c^2 + a^2)*f^2)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d^2*e^2 - 2*(a*b + (a^2 + b^2)*c)*d*e*f + (2*a*b*c + (a^2 + b^2)*c^2 + a^2)*f^2 - 3*((a^2 + b^2)*d^2*e^2

- 2*(a*b + (a^2 + b^2)*c)*d*e*f + (2*a*b*c + (a^2 + b^2)*c^2 + a^2)*f^2)*co
sh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + b^2)*d^2*e^2 - 2*(a*b + (a^2 +
b^2)*c)*d*e*f + (2*a*b*c + (a^2 + b^2)*c^2 + a^2)*f^2)*cosh(d*x + c)^3 - ((
a^2 + b^2)*d^2*e^2 - 2*(a*b + (a^2 + b^2)*c)*d*e*f + (2*a*b*c + (a^2 + b^2)
*c^2 + a^2)*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x
 + c) - 1) + ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*c*d*e*f + ((a^2 + b^2
)*d^2*f^2*x^2 + 2*(a^2 + b^2)*c*d*e*f - (2*a*b*c + (a^2 + b^2)*c^2)*f^2 + 2
*((a^2 + b^2)*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d^2*
f^2*x^2 + 2*(a^2 + b^2)*c*d*e*f - (2*a*b*c + (a^2 + b^2)*c^2)*f^2 + 2*((a^2
 + b^2)*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + b^2
)*d^2*f^2*x^2 + 2*(a^2 + b^2)*c*d*e*f - (2*a*b*c + (a^2 + b^2)*c^2)*f^2 + 2
*((a^2 + b^2)*d^2*e*f - a*b*d*f^2)*x)*sinh(d*x + c)^4 - (2*a*b*c + (a^2 + b
^2)*c^2)*f^2 - 2*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*c*d*e*f - (2*a*b*
c + (a^2 + b^2)*c^2)*f^2 + 2*((a^2 + b^2)*d^2*e*f - a*b*d*f^2)*x)*cosh(d*x
+ c)^2 - 2*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*c*d*e*f - (2*a*b*c + (a
^2 + b^2)*c^2)*f^2 - 3*((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*c*d*e*f - (
2*a*b*c + (a^2 + b^2)*c^2)*f^2 + 2*((a^2 + b^2)*d^2*e*f - a*b*d*f^2)*x)*cos
h(d*x + c)^2 + 2*((a^2 + b^2)*d^2*e*f - a*b*d*f^2)*x)*sinh(d*x + c)^2 + 2*(
(a^2 + b^2)*d^2*e*f - a*b*d*f^2)*x + 4*(((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 +
 b^2)*c*d*e*f - (2*a*b*c + (a^2 + b^2)*c^2)*f^2 + 2*((a^2 + b^2)*d^2*e*f -
a*b*d*f^2)*x)*cosh(d*x + c)^3 - ((a^2 + b^2)*d^2*f^2*x^2 + 2*(a^2 + b^2)*c*
d*e*f - (2*a*b*c + (a^2 + b^2)*c^2)*f^2 + 2*((a^2 + b^2)*d^2*e*f - a*b*d*f^
2)*x)*cosh(d*x + c))*sinh(d*x + c))*log(-cosh(d*x + c) - sinh(d*x + c) + 1)
 + 2*((a^2 + b^2)*f^2*cosh(d*x + c)^4 + 4*(a^2 + b^2)*f^2*cosh(d*x + c)*sin
h(d*x + c)^3 + (a^2 + b^2)*f^2*sinh(d*x + c)^4 - 2*(a^2 + b^2)*f^2*cosh(d*x
 + c)^2 + (a^2 + b^2)*f^2 + 2*(3*(a^2 + b^2)*f^2*cosh(d*x + c)^2 - (a^2 + b
^2)*f^2)*sinh(d*x + c)^2 + 4*((a^2 + b^2)*f^2*cosh(d*x + c)^3 - (a^2 + b^2)
*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x
 + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) + 2*(
(a^2 + b^2)*f^2*cosh(d*x + c)^4 + 4*(a^2 + b^2)*f^2*cosh(d*x + c)*sinh(d*x
+ c)^3 + (a^2 + b^2)*f^2*sinh(d*x + c)^4 - 2*(a^2 + b^2)*f^2*cosh(d*x + c)^
2 + (a^2 + b^2)*f^2 + 2*(3*(a^2 + b^2)*f^2*cosh(d*x + c)^2 - (a^2 + b^2)*f^
2)*sinh(d*x + c)^2 + 4*((a^2 + b^2)*f^2*cosh(d*x + c)^3 - (a^2 + b^2)*f^2*c
osh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x + c)
- (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2*((a^2 +
 b^2)*f^2*cosh(d*x + c)^4 + 4*(a^2 + b^2)*f^2*cosh(d*x + c)*sinh(d*x + c)^3
 + (a^2 + b^2)*f^2*sinh(d*x + c)^4 - 2*(a^2 + b^2)*f^2*cosh(d*x + c)^2 + (a
^2 + b^2)*f^2 + 2*(3*(a^2 + b^2)*f^2*cosh(d*x + c)^2 - (a^2 + b^2)*f^2)*sin
h(d*x + c)^2 + 4*((a^2 + b^2)*f^2*cosh(d*x + c)^3 - (a^2 + b^2)*f^2*cosh(d*
x + c))*sinh(d*x + c))*polylog(3, cosh(d*x + c) + sinh(d*x + c)) - 2*((a^2
+ b^2)*f^2*cosh(d*x + c)^4 + 4*(a^2 + b^2)*f^2*cosh(d*x + c)*sinh(d*x + c)^
3 + (a^2 + b^2)*f^2*sinh(d*x + c)^4 - 2*(a^2 + b^2)*f^2*cosh(d*x + c)^2 + (
a^2 + b^2)*f^2 + 2*(3*(a^2 + b^2)*f^2*cosh(d*x + c)^2 - (a^2 + b^2)*f^2)*si
nh(d*x + c)^2 + 4*((a^2 + b^2)*f^2*cosh(d*x + c)^3 - (a^2 + b^2)*f^2*cosh(d
*x + c))*sinh(d*x + c))*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) - 2*(a*b

```
*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + a*b*d^2*e^2 + 4*(a^2*d*f^2*x + a^2*c*f^2)*
cosh(d*x + c)^3 - 3*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + a*b*d^2*e^2)*cosh(
d*x + c)^2 + 2*(a^2*d^2*f^2*x^2 + a^2*d^2*e^2 + a^2*d*e*f - 2*a^2*c*f^2 + (
2*a^2*d^2*e*f - a^2*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/(a^3*d^3*cosh(d
*x + c)^4 + 4*a^3*d^3*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*d^3*sinh(d*x + c)
^4 - 2*a^3*d^3*cosh(d*x + c)^2 + a^3*d^3 + 2*(3*a^3*d^3*cosh(d*x + c)^2 - a
^3*d^3)*sinh(d*x + c)^2 + 4*(a^3*d^3*cosh(d*x + c)^3 - a^3*d^3*cosh(d*x + c
))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 1.50, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \left(\coth^{3}\left(dx+c\right)\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x)
[Out] int((f*x+e)^2*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] -e^2*(2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((2*a^2*
e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) + (a^2 + b^2)*log(-2*a*e^
(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a^3*d) - (a^2 + b^2)*log(e^(-d*x - c)
 + 1)/(a^3*d) - (a^2 + b^2)*log(e^(-d*x - c) - 1)/(a^3*d)) + 2*(a*f^2*x + a
*e*f + (b*d*f^2*x^2*e^(3*c) + 2*b*d*e*f*x*e^(3*c))*e^(3*d*x) - (a*d*f^2*x^2
*e^(2*c) + a*e*f*e^(2*c) + (2*d*e*f + f^2)*a*x*e^(2*c))*e^(2*d*x) - (b*d*f^
2*x^2*e^c + 2*b*d*e*f*x*e^c)*e^(d*x))/(a^2*d^2*e^(4*d*x + 4*c) - 2*a^2*d^2*
e^(2*d*x + 2*c) + a^2*d^2) - (2*b*d*e*f + a*f^2)*x/(a^2*d^2) + (2*b*d*e*f -
 a*f^2)*x/(a^2*d^2) + (2*b*d*e*f + a*f^2)*log(e^(d*x + c) + 1)/(a^2*d^3) -
```

```
(2*b*d*e*f - a*f^2)*log(e^(d*x + c) - 1)/(a^2*d^3) + (d^2*x^2*log(e^(d*x +
c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*(a^2*f^2
+ b^2*f^2)/(a^3*d^3) + (d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x
+ c)) - 2*polylog(3, e^(d*x + c)))*(a^2*f^2 + b^2*f^2)/(a^3*d^3) + 2*(a^2*d
*e*f + b^2*d*e*f + a*b*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x + c))
)/(a^3*d^3) + 2*(a^2*d*e*f + b^2*d*e*f - a*b*f^2)*(d*x*log(-e^(d*x + c) + 1
) + dilog(e^(d*x + c)))/(a^3*d^3) - 1/3*((a^2*f^2 + b^2*f^2)*d^3*x^3 + 3*(a
^2*d*e*f + b^2*d*e*f + a*b*f^2)*d^2*x^2)/(a^3*d^3) - 1/3*((a^2*f^2 + b^2*f^
2)*d^3*x^3 + 3*(a^2*d*e*f + b^2*d*e*f - a*b*f^2)*d^2*x^2)/(a^3*d^3) + integ
rate(-2*((a^2*b*f^2 + b^3*f^2)*x^2 + 2*(a^2*b*e*f + b^3*e*f)*x - ((a^3*f^2*
e^c + a*b^2*f^2*e^c)*x^2 + 2*(a^3*e*f*e^c + a*b^2*e*f*e^c)*x)*e^(d*x))/(a^3
*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x + c) - a^3*b), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\coth(c+d\,x)^3\,\left(e+f\,x\right)^2}{a+b\sinh(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((coth(c + d*x)^3*(e + f*x)^2)/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2\coth^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*coth(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*coth(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.488 $\int \frac{(e+fx)\coth^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=435

$$\frac{b^2f\text{Li}_2\left(e^{2(c+dx)}\right)}{2a^3d^2}+\frac{b^2(e+fx)\log\left(1-e^{2(c+dx)}\right)}{a^3d}-\frac{b^2(e+fx)^2}{2a^3f}+\frac{bf\tanh^{-1}(\cosh(c+dx))}{a^2d^2}+\frac{b(e+fx)\text{csch}(c+dx)}{a^2d}-$$

```
[Out] 1/2*f*x/a/d-1/2*(f*x+e)^2/a/f-1/2*b^2*(f*x+e)^2/a^3/f+1/2*(a^2+b^2)*(f*x+e)
^2/a^3/f+b*f*arctanh(cosh(d*x+c))/a^2/d^2-1/2*f*coth(d*x+c)/a/d^2-1/2*(f*x+
e)*coth(d*x+c)^2/a/d+b*(f*x+e)*csch(d*x+c)/a^2/d+(f*x+e)*ln(1-exp(2*d*x+2*c
))/a/d+b^2*(f*x+e)*ln(1-exp(2*d*x+2*c))/a^3/d-(a^2+b^2)*(f*x+e)*ln(1+b*exp(
d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/d-(a^2+b^2)*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a
^2+b^2)^(1/2)))/a^3/d+1/2*f*polylog(2,exp(2*d*x+2*c))/a/d^2+1/2*b^2*f*polyl
og(2,exp(2*d*x+2*c))/a^3/d^2-(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^
2)^(1/2)))/a^3/d^2-(a^2+b^2)*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))
/a^3/d^2
```

Rubi [A] time = 0.98, antiderivative size = 435, normalized size of antiderivative = 1.00, number of steps used = 36, number of rules used = 18, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.692, Rules used = {5569, 3720, 3473, 8, 3716, 2190, 2279, 2391, 5585, 5450, 3296, 2638, 5452, 3770, 5446, 2635, 5565, 5561}

$$\frac{b^2f\text{PolyLog}\left(2,e^{2(c+dx)}\right)}{2a^3d^2}-\frac{f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^3d^2}-\frac{f\left(a^2+b^2\right)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^3d^2}+\frac{f\text{PolyLo}}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Coth[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (f*x)/(2*a*d) - (e + f*x)^2/(2*a*f) - (b^2*(e + f*x)^2)/(2*a^3*f) + ((a^2 +
 b^2)*(e + f*x)^2)/(2*a^3*f) + (b*f*ArcTanh[Cosh[c + d*x]])/(a^2*d^2) - (f*
Coth[c + d*x])/(2*a*d^2) - ((e + f*x)*Coth[c + d*x]^2)/(2*a*d) + (b*(e + f*
x)*Csch[c + d*x])/(a^2*d) - ((a^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c + d*x))/
(a - Sqrt[a^2 + b^2])])/(a^3*d) - ((a^2 + b^2)*(e + f*x)*Log[1 + (b*E^(c +
d*x))/(a + Sqrt[a^2 + b^2])])/(a^3*d) + ((e + f*x)*Log[1 - E^(2*(c + d*x))]
)/(a*d) + (b^2*(e + f*x)*Log[1 - E^(2*(c + d*x))])/(a^3*d) - ((a^2 + b^2)*f
*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*d^2) - ((a^2 +
b^2)*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*d^2) + (f
*PolyLog[2, E^(2*(c + d*x))])/(2*a*d^2) + (b^2*f*PolyLog[2, E^(2*(c + d*x))
])/(2*a^3*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 5446

```
Int[Cosh[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sinh[(a_.) + (b_.)*
(x_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sinh[a + b*x]^(n + 1))/(b*(n +
1)), x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sinh[a + b*x]^(n +
1), x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 5450

```
Int[Cosh[(a_.) + (b_.)*(x_)]^(n_.)*Coth[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> Int[(c + d*x)^m*Cosh[a + b*x]^n*Coth[a + b*
x]^(p - 2), x] + Int[(c + d*x)^m*Cosh[a + b*x]^(n - 2)*Coth[a + b*x]^p, x]
/; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 5452

```
Int[Coth[(a_.) + (b_.)*(x_)]^(p_.)*Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) +
(d_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csch[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csch[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
```

```
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5565

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[a/b^2, Int[(e + f*x)^m*Cosh
[c + d*x]^(n - 2), x], x] + (Dist[1/b, Int[(e + f*x)^m*Cosh[c + d*x]^(n - 2
)*Sinh[c + d*x], x], x] + Dist[(a^2 + b^2)/b^2, Int[((e + f*x)^m*Cosh[c + d
*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[n, 1] && NeQ[a^2 + b^2, 0] && IGtQ[m, 0]
```

Rule 5569

```
Int[(Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Coth[c
 + d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Cosh[c + d*x]*Coth[c + d*x]^
(n - 1))/(a + b*Sinh[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && I
GtQ[m, 0] && IGtQ[n, 0]
```

Rule 5585

```
Int[(Cosh[(c_.) + (d_.)*(x_)]^(p_.)*Coth[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) +
 (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Cosh[c + d*x]^p*Coth[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Cosh[c + d*x]^(p + 1)*Coth[c + d*x]^(n - 1))/(a + b*Sinh
[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n,
 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\coth^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\coth^3(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cosh(c+dx)\coth^2(c+dx)}{a+b\sinh(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)\coth^2(c+dx)}{2ad} + \frac{\int (e+fx)\coth(c+dx)\,dx}{a} - \frac{b\int (e+fx)\cosh(c+dx}{a^2}$$

$$= -\frac{(e+fx)^2}{2af} - \frac{f\coth(c+dx)}{2ad^2} - \frac{(e+fx)\coth^2(c+dx)}{2ad} - \frac{2\int \frac{e^{2(c+dx)}(e+fx)}{1-e^{2(c+dx)}}\,dx}{a} - \frac{b}{}$$

$$= \frac{fx}{2ad} - \frac{(e+fx)^2}{2af} - \frac{f\coth(c+dx)}{2ad^2} - \frac{(e+fx)\coth^2(c+dx)}{2ad} + \frac{b(e+fx)\text{csch}(c+}{a^2d}$$

$$= \frac{fx}{2ad} - \frac{(e+fx)^2}{2af} - \frac{b^2(e+fx)^2}{2a^3f} + \frac{\left(a^2+b^2\right)(e+fx)^2}{2a^3f} + \frac{bf\tanh^{-1}(\cosh(c+dx))}{a^2d^2}$$

$$= \frac{fx}{2ad} - \frac{(e+fx)^2}{2af} - \frac{b^2(e+fx)^2}{2a^3f} + \frac{\left(a^2+b^2\right)(e+fx)^2}{2a^3f} + \frac{bf\tanh^{-1}(\cosh(c+dx))}{a^2d^2}$$

$$= \frac{fx}{2ad} - \frac{(e+fx)^2}{2af} - \frac{b^2(e+fx)^2}{2a^3f} + \frac{\left(a^2+b^2\right)(e+fx)^2}{2a^3f} + \frac{bf\tanh^{-1}(\cosh(c+dx))}{a^2d^2}$$

$$= \frac{fx}{2ad} - \frac{(e+fx)^2}{2af} - \frac{b^2(e+fx)^2}{2a^3f} + \frac{\left(a^2+b^2\right)(e+fx)^2}{2a^3f} + \frac{bf\tanh^{-1}(\cosh(c+dx))}{a^2d^2}$$

Mathematica [A] time = 4.26, size = 455, normalized size = 1.05

$$\frac{-8\left(a^2+b^2\right)\left(f\text{Li}_2\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}-a}\right)+f\text{Li}_2\left(-\frac{be^{c+dx}}{a+\sqrt{a^2+b^2}}\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)+f(c+dx)\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Coth[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a*(-(a*f) + 2*b*d*(e + f*x))*Coth[(c + d*x)/2] - a^2*d*(e + f*x)*Csch[(c
 + d*x)/2]^2 + 8*a^2*d*e*Log[Sinh[c + d*x]] + 8*b^2*d*e*Log[Sinh[c + d*x]]
- 8*a^2*c*f*Log[Sinh[c + d*x]] - 8*b^2*c*f*Log[Sinh[c + d*x]] - 8*a*b*f*Log
[Tanh[(c + d*x)/2]] + 4*a^2*f*((c + d*x)*(c + d*x + 2*Log[1 - E^(-2*(c + d*
x))]) - PolyLog[2, E^(-2*(c + d*x))]) + 4*b^2*f*((c + d*x)*(c + d*x + 2*Log
[1 - E^(-2*(c + d*x))]) - PolyLog[2, E^(-2*(c + d*x))]) - 8*(a^2 + b^2)*(-1
```

```
/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^
2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d*e*Log
[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c + d*x]] + f*PolyLog[2, (b*E^(c
 + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2]))]]) + a^2*d*(e + f*x)*Sech[(c + d*x)/2]^2 - 2*a*(a*f + 2*b*d*(e
 + f*x))*Tanh[(c + d*x)/2])/(8*a^3*d^2)
```

fricas [B] time = 0.54, size = 3547, normalized size = 8.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*(a*b*d*f*x + a*b*d*e)*cosh(d*x + c)^3 + 2*(a*b*d*f*x + a*b*d*e)*sinh(d*x
 + c)^3 + a^2*f - (2*a^2*d*f*x + 2*a^2*d*e + a^2*f)*cosh(d*x + c)^2 - (2*a^
2*d*f*x + 2*a^2*d*e + a^2*f - 6*(a*b*d*f*x + a*b*d*e)*cosh(d*x + c))*sinh(d
*x + c)^2 - 2*(a*b*d*f*x + a*b*d*e)*cosh(d*x + c) - ((a^2 + b^2)*f*cosh(d*x
 + c)^4 + 4*(a^2 + b^2)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2 + b^2)*f*sin
h(d*x + c)^4 - 2*(a^2 + b^2)*f*cosh(d*x + c)^2 + 2*(3*(a^2 + b^2)*f*cosh(d*
x + c)^2 - (a^2 + b^2)*f)*sinh(d*x + c)^2 + (a^2 + b^2)*f + 4*((a^2 + b^2)*
f*cosh(d*x + c)^3 - (a^2 + b^2)*f*cosh(d*x + c))*sinh(d*x + c))*dilog((a*co
sh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a
^2 + b^2)/b^2) - b)/b + 1) - ((a^2 + b^2)*f*cosh(d*x + c)^4 + 4*(a^2 + b^2)
*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2 + b^2)*f*sinh(d*x + c)^4 - 2*(a^2 +
 b^2)*f*cosh(d*x + c)^2 + 2*(3*(a^2 + b^2)*f*cosh(d*x + c)^2 - (a^2 + b^2)*
f)*sinh(d*x + c)^2 + (a^2 + b^2)*f + 4*((a^2 + b^2)*f*cosh(d*x + c)^3 - (a^
2 + b^2)*f*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*
x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b +
 1) + ((a^2 + b^2)*f*cosh(d*x + c)^4 + 4*(a^2 + b^2)*f*cosh(d*x + c)*sinh(d
*x + c)^3 + (a^2 + b^2)*f*sinh(d*x + c)^4 - 2*(a^2 + b^2)*f*cosh(d*x + c)^2
 + 2*(3*(a^2 + b^2)*f*cosh(d*x + c)^2 - (a^2 + b^2)*f)*sinh(d*x + c)^2 + (a
^2 + b^2)*f + 4*((a^2 + b^2)*f*cosh(d*x + c)^3 - (a^2 + b^2)*f*cosh(d*x + c
))*sinh(d*x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) + ((a^2 + b^2)*f*cos
h(d*x + c)^4 + 4*(a^2 + b^2)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2 + b^2)*
f*sinh(d*x + c)^4 - 2*(a^2 + b^2)*f*cosh(d*x + c)^2 + 2*(3*(a^2 + b^2)*f*co
sh(d*x + c)^2 - (a^2 + b^2)*f)*sinh(d*x + c)^2 + (a^2 + b^2)*f + 4*((a^2 +
b^2)*f*cosh(d*x + c)^3 - (a^2 + b^2)*f*cosh(d*x + c))*sinh(d*x + c))*dilog(
-cosh(d*x + c) - sinh(d*x + c)) - (((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh
(d*x + c)^4 + 4*((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c)*sinh(d*x
+ c)^3 + ((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*sinh(d*x + c)^4 + (a^2 + b^2)*
d*e - (a^2 + b^2)*c*f - 2*((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c)
^2 - 2*((a^2 + b^2)*d*e - (a^2 + b^2)*c*f - 3*((a^2 + b^2)*d*e - (a^2 + b^2
)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + b^2)*d*e - (a^2 + b^2)
*c*f)*cosh(d*x + c)^3 - ((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c))*
```

```
sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 +
b^2)/b^2) + 2*a) - (((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c)^4 + 4
*((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2
+ b^2)*d*e - (a^2 + b^2)*c*f)*sinh(d*x + c)^4 + (a^2 + b^2)*d*e - (a^2 + b^
2)*c*f - 2*((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c)^2 - 2*((a^2 +
b^2)*d*e - (a^2 + b^2)*c*f - 3*((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x
 + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x
+ c)^3 - ((a^2 + b^2)*d*e - (a^2 + b^2)*c*f)*cosh(d*x + c))*sinh(d*x + c))*
log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a
) - (((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)^4 + 4*((a^2 + b^2)
*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + b^2)*d*f*
x + (a^2 + b^2)*c*f)*sinh(d*x + c)^4 + (a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f
- 2*((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*
d*f*x + (a^2 + b^2)*c*f - 3*((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x
+ c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x
 + c)^3 - ((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c))*sinh(d*x + c
))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f
)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)*s
inh(d*x + c)^3 + ((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*sinh(d*x + c)^4 + (a
^2 + b^2)*d*f*x + (a^2 + b^2)*c*f - 2*((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)
*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f - 3*((a^2 + b^2)*
d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^2 + b^2)
*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)^3 - ((a^2 + b^2)*d*f*x + (a^2 + b^2
)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c
) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (((
a^2 + b^2)*d*f*x + (a^2 + b^2)*d*e + a*b*f)*cosh(d*x + c)^4 + 4*((a^2 + b^2
)*d*f*x + (a^2 + b^2)*d*e + a*b*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 +
b^2)*d*f*x + (a^2 + b^2)*d*e + a*b*f)*sinh(d*x + c)^4 + (a^2 + b^2)*d*f*x +
 (a^2 + b^2)*d*e + a*b*f - 2*((a^2 + b^2)*d*f*x + (a^2 + b^2)*d*e + a*b*f)*
cosh(d*x + c)^2 - 2*((a^2 + b^2)*d*f*x + (a^2 + b^2)*d*e + a*b*f - 3*((a^2
+ b^2)*d*f*x + (a^2 + b^2)*d*e + a*b*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 +
4*(((a^2 + b^2)*d*f*x + (a^2 + b^2)*d*e + a*b*f)*cosh(d*x + c)^3 - ((a^2 +
b^2)*d*f*x + (a^2 + b^2)*d*e + a*b*f)*cosh(d*x + c))*sinh(d*x + c))*log(cos
h(d*x + c) + sinh(d*x + c) + 1) + (((a^2 + b^2)*d*e - (a*b + (a^2 + b^2)*c)
*f)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d*e - (a*b + (a^2 + b^2)*c)*f)*cosh(d*
x + c)*sinh(d*x + c)^3 + ((a^2 + b^2)*d*e - (a*b + (a^2 + b^2)*c)*f)*sinh(d
*x + c)^4 + (a^2 + b^2)*d*e - 2*((a^2 + b^2)*d*e - (a*b + (a^2 + b^2)*c)*f)
*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d*e - 3*((a^2 + b^2)*d*e - (a*b + (a^2 +
b^2)*c)*f)*cosh(d*x + c)^2 - (a*b + (a^2 + b^2)*c)*f)*sinh(d*x + c)^2 - (a*
b + (a^2 + b^2)*c)*f + 4*(((a^2 + b^2)*d*e - (a*b + (a^2 + b^2)*c)*f)*cosh(
d*x + c)^3 - ((a^2 + b^2)*d*e - (a*b + (a^2 + b^2)*c)*f)*cosh(d*x + c))*sin
h(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - 1) + (((a^2 + b^2)*d*f*x +
(a^2 + b^2)*c*f)*cosh(d*x + c)^4 + 4*((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*
cosh(d*x + c)*sinh(d*x + c)^3 + ((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*sinh(
```

```
d*x + c)^4 + (a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f - 2*((a^2 + b^2)*d*f*x + (
a^2 + b^2)*c*f)*cosh(d*x + c)^2 - 2*((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f -
3*((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 +
4*(((a^2 + b^2)*d*f*x + (a^2 + b^2)*c*f)*cosh(d*x + c)^3 - ((a^2 + b^2)*d*f
*x + (a^2 + b^2)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-cosh(d*x + c) - si
nh(d*x + c) + 1) - 2*(a*b*d*f*x + a*b*d*e - 3*(a*b*d*f*x + a*b*d*e)*cosh(d*
x + c)^2 + (2*a^2*d*f*x + 2*a^2*d*e + a^2*f)*cosh(d*x + c))*sinh(d*x + c))/
(a^3*d^2*cosh(d*x + c)^4 + 4*a^3*d^2*cosh(d*x + c)*sinh(d*x + c)^3 + a^3*d^
2*sinh(d*x + c)^4 - 2*a^3*d^2*cosh(d*x + c)^2 + a^3*d^2 + 2*(3*a^3*d^2*cosh
(d*x + c)^2 - a^3*d^2)*sinh(d*x + c)^2 + 4*(a^3*d^2*cosh(d*x + c)^3 - a^3*d
^2*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.26, size = 1098, normalized size = 2.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/a/d*e*ln(exp(d*x+c)+1)+1/a/d*e*ln(exp(d*x+c)-1)+1/d/a^3*b^2*f*ln(exp(d*x+
c)+1)*x-1/d^2/a^3*b^2*f*c*ln(exp(d*x+c)-1)+1/d^2*f/a*dilog(exp(d*x+c)+1)-1/
d^2*f*dilog(exp(d*x+c))/a-1/d^2*f/a*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)
/(-a+(a^2+b^2)^(1/2)))-1/d^2*f/a*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+
(a^2+b^2)^(1/2)))-1/d*e/a*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)-1/d/a^3*b^2
*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2/a^3*b^2
*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-(-2*b*d*f*x*e
xp(3*d*x+3*c)+2*a*d*f*x*exp(2*d*x+2*c)-2*b*d*e*exp(3*d*x+3*c)+2*a*d*e*exp(2
*d*x+2*c)+2*b*d*f*x*exp(d*x+c)+a*f*exp(2*d*x+2*c)+2*b*d*e*exp(d*x+c)-a*f)/d
^2/a^2/(exp(2*d*x+2*c)-1)^2-1/d/a^3*b^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)
-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2/a^3*b^2*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/
2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d^2/a^3*b^2*f*c*ln(b*exp(2*d*x+2*c)+2*a*exp
(d*x+c)-b)+1/a/d*ln(exp(d*x+c)+1)*f*x-1/a/d^2*f*c*ln(exp(d*x+c)-1)-1/d*f/a*
ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x-1/d^2*f/a*ln((
-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c-1/d*f/a*ln((b*exp(
d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2*f/a*ln((b*exp(d*x+c)
```

```
+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c+1/d^2*f*c/a*ln(b*exp(2*d*x+2*c)+
2*a*exp(d*x+c)-b)+1/d/a^3*b^2*e*ln(exp(d*x+c)+1)+1/d/a^3*b^2*e*ln(exp(d*x+c
)-1)+1/d^2/a^3*b^2*f*dilog(exp(d*x+c)+1)-1/d^2/a^3*b^2*f*dilog(exp(d*x+c))+
1/d^2/a^2*b*f*ln(exp(d*x+c)+1)-1/d^2/a^2*b*f*ln(exp(d*x+c)-1)-1/d^2/a^3*b^2
*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d^2/a^3*
b^2*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))-1/d/a^3*b
^2*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(a^2d\int\frac{x}{a^3de^{(dx+c)}+a^3d}\,dx+b^2d\int\frac{x}{a^3de^{(dx+c)}+a^3d}\,dx-a^2d\int\frac{x}{a^3de^{(dx+c)}-a^3d}\,dx-b^2d\int\frac{x}{a^3de^{(dx+c)}-a^3d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(a^2*d*integrate(x/(a^3*d*e^(d*x + c) + a^3*d), x) + b^2*d*integrate(x/(a^
3*d*e^(d*x + c) + a^3*d), x) - a^2*d*integrate(x/(a^3*d*e^(d*x + c) - a^3*d
), x) - b^2*d*integrate(x/(a^3*d*e^(d*x + c) - a^3*d), x) + a*b*((d*x + c)/
(a^3*d^2) - log(e^(d*x + c) + 1)/(a^3*d^2)) - a*b*((d*x + c)/(a^3*d^2) - lo
g(e^(d*x + c) - 1)/(a^3*d^2)) - (2*b*d*x*e^(3*d*x + 3*c) - 2*b*d*x*e^(d*x +
 c) - (2*a*d*x*e^(2*c) + a*e^(2*c))*e^(2*d*x) + a)/(a^2*d^2*e^(4*d*x + 4*c)
 - 2*a^2*d^2*e^(2*d*x + 2*c) + a^2*d^2) - integrate(2*((a^3*e^c + a*b^2*e^c
)*x*e^(d*x) - (a^2*b + b^3)*x)/(a^3*b*e^(2*d*x + 2*c) + 2*a^4*e^(d*x + c) -
 a^3*b), x))*f - e*(2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x -
3*c))/((2*a^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) + (a^2 + b^
2)*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/(a^3*d) - (a^2 + b^2)*lo
g(e^(-d*x - c) + 1)/(a^3*d) - (a^2 + b^2)*log(e^(-d*x - c) - 1)/(a^3*d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\coth\left(c+d\,x\right)^3\,\left(e+f\,x\right)}{a+b\,\sinh\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((coth(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)),x)
```

```
[Out] int((coth(c + d*x)^3*(e + f*x))/(a + b*sinh(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(e+fx\right)\coth^3\left(c+dx\right)}{a+b\sinh\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*coth(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*coth(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.489 $\int \frac{\coth^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=80

$$\frac{b\text{csch}(c+dx)}{a^2d}+\frac{\left(a^2+b^2\right)\log(\sinh(c+dx))}{a^3d}-\frac{\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{a^3d}-\frac{\text{csch}^2(c+dx)}{2ad}$$

```
[Out] b*csch(d*x+c)/a^2/d-1/2*csch(d*x+c)^2/a/d+(a^2+b^2)*ln(sinh(d*x+c))/a^3/d-(
a^2+b^2)*ln(a+b*sinh(d*x+c))/a^3/d
```

Rubi [A] time = 0.11, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2721, 894}

$$\frac{\left(a^2+b^2\right)\log(\sinh(c+dx))}{a^3d}-\frac{\left(a^2+b^2\right)\log(a+b\sinh(c+dx))}{a^3d}+\frac{b\text{csch}(c+dx)}{a^2d}-\frac{\text{csch}^2(c+dx)}{2ad}$$

Antiderivative was successfully verified.

```
[In] Int[Coth[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*Csch[c + d*x])/(a^2*d) - Csch[c + d*x]^2/(2*a*d) + ((a^2 + b^2)*Log[Sinh
[c + d*x]])/(a^3*d) - ((a^2 + b^2)*Log[a + b*Sinh[c + d*x]])/(a^3*d)
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2721

```
Int[((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*tan[(e_.) + (f_.)*(x_)]^(p
_.), x_Symbol] :> Dist[1/f, Subst[Int[(x^p*(a + x)^m)/(b^2 - x^2)^((p + 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && NeQ[a^2 - b^
2, 0] && IntegerQ[(p + 1)/2]
```

Rubi steps

$$\int \frac{\coth^3(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{\text{Subst}\left(\int \frac{-b^2-x^2}{x^3(a+x)}\,dx, x, b\sinh(c+dx)\right)}{d}$$
$$= -\frac{\text{Subst}\left(\int \left(-\frac{b^2}{ax^3}+\frac{b^2}{a^2x^2}+\frac{-a^2-b^2}{a^3x}+\frac{a^2+b^2}{a^3(a+x)}\right)dx, x, b\sinh(c+dx)\right)}{d}$$
$$= \frac{b\text{csch}(c+dx)}{a^2d} - \frac{\text{csch}^2(c+dx)}{2ad} + \frac{(a^2+b^2)\log(\sinh(c+dx))}{a^3d} - \frac{(a^2+b^2)\log(a+b\,\text{s}}{a^3d}$$

Mathematica [A] time = 0.11, size = 64, normalized size = 0.80

$$\frac{2(a^2+b^2)(\log(\sinh(c+dx))-\log(a+b\sinh(c+dx)))-a^2\text{csch}^2(c+dx)+2ab\text{csch}(c+dx)}{2a^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Coth[c + d*x]^3/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*a*b*Csch[c + d*x] - a^2*Csch[c + d*x]^2 + 2*(a^2 + b^2)*(Log[Sinh[c + d*
x]] - Log[a + b*Sinh[c + d*x]]))/(2*a^3*d)
```

fricas [B] time = 0.56, size = 617, normalized size = 7.71

$$\frac{2\,ab\cosh(dx+c)^3 + 2\,ab\sinh(dx+c)^3 - 2\,a^2\cosh(dx+c)^2 - 2\,ab\cosh(dx+c) + 2\left(3\,ab\cosh(dx+c) - a^2\right)\text{si}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*a*b*cosh(d*x + c)^3 + 2*a*b*sinh(d*x + c)^3 - 2*a^2*cosh(d*x + c)^2 - 2*
a*b*cosh(d*x + c) + 2*(3*a*b*cosh(d*x + c) - a^2)*sinh(d*x + c)^2 - ((a^2 +
 b^2)*cosh(d*x + c)^4 + 4*(a^2 + b^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2
+ b^2)*sinh(d*x + c)^4 - 2*(a^2 + b^2)*cosh(d*x + c)^2 + 2*(3*(a^2 + b^2)*c
osh(d*x + c)^2 - a^2 - b^2)*sinh(d*x + c)^2 + a^2 + b^2 + 4*((a^2 + b^2)*co
sh(d*x + c)^3 - (a^2 + b^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*(b*sinh(d*x
 + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) + ((a^2 + b^2)*cosh(d*x + c)^4
+ 4*(a^2 + b^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^2 + b^2)*sinh(d*x + c)^4
 - 2*(a^2 + b^2)*cosh(d*x + c)^2 + 2*(3*(a^2 + b^2)*cosh(d*x + c)^2 - a^2 -
 b^2)*sinh(d*x + c)^2 + a^2 + b^2 + 4*((a^2 + b^2)*cosh(d*x + c)^3 - (a^2 +
 b^2)*cosh(d*x + c))*sinh(d*x + c))*log(2*sinh(d*x + c)/(cosh(d*x + c) - si
nh(d*x + c))) + 2*(3*a*b*cosh(d*x + c)^2 - 2*a^2*cosh(d*x + c) - a*b)*sinh(
```

```
d*x + c))/(a^3*d*cosh(d*x + c)^4 + 4*a^3*d*cosh(d*x + c)*sinh(d*x + c)^3 +
a^3*d*sinh(d*x + c)^4 - 2*a^3*d*cosh(d*x + c)^2 + a^3*d + 2*(3*a^3*d*cosh(d
*x + c)^2 - a^3*d)*sinh(d*x + c)^2 + 4*(a^3*d*cosh(d*x + c)^3 - a^3*d*cosh(
d*x + c))*sinh(d*x + c))
```

giac [B] time = 1.72, size = 166, normalized size = 2.08

$$\frac{\frac{(a^2e^c+b^2e^c)e^{(-c)}\log\left(e^{(dx+c)}+1\right)}{a^3}+\frac{(a^2e^c+b^2e^c)e^{(-c)}\log\left(\left|e^{(dx+c)}-1\right|\right)}{a^3}-\frac{(a^2+b^2)\log\left(\left|be^{(2\,dx+2\,c)}+2\,ae^{(dx+c)}-b\right|\right)}{a^3}+\frac{2\left(abe^{(3\,dx+3\,c)}-a^2e^{(2\,dx+2\,c)}-abe^{(}\right.}{a^3\left(e^{(dx+c)}+1\right)^2\left(e^{(dx+c)}-1\right)^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] ((a^2*e^c + b^2*e^c)*e^(-c)*log(e^(d*x + c) + 1)/a^3 + (a^2*e^c + b^2*e^c)*
e^(-c)*log(abs(e^(d*x + c) - 1))/a^3 - (a^2 + b^2)*log(abs(b*e^(2*d*x + 2*c
) + 2*a*e^(d*x + c) - b))/a^3 + 2*(a*b*e^(3*d*x + 3*c) - a^2*e^(2*d*x + 2*c
) - a*b*e^(d*x + c))/(a^3*(e^(d*x + c) + 1)^2*(e^(d*x + c) - 1)^2))/d
```

maple [B] time = 0.00, size = 194, normalized size = 2.42

$$-\frac{\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)}{8da}-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b}{2d\,a^2}-\frac{\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{da}-\frac{\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\right.}{d\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/8/d/a*tanh(1/2*d*x+1/2*c)^2-1/2/d/a^2*tanh(1/2*d*x+1/2*c)*b-1/d/a*ln(tan
h(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)-1/d/a^3*ln(tanh(1/2*d*x+1/2
*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)*b^2-1/8/d/a/tanh(1/2*d*x+1/2*c)^2+1/d/a*
ln(tanh(1/2*d*x+1/2*c))+1/d/a^3*ln(tanh(1/2*d*x+1/2*c))*b^2+1/2/d*b/a^2/tan
h(1/2*d*x+1/2*c)
```

maxima [B] time = 0.34, size = 173, normalized size = 2.16

$$-\frac{2\left(be^{(-dx-c)}-ae^{(-2\,dx-2\,c)}-be^{(-3\,dx-3\,c)}\right)}{\left(2\,a^2e^{(-2\,dx-2\,c)}-a^2e^{(-4\,dx-4\,c)}-a^2\right)d}-\frac{\left(a^2+b^2\right)\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{a^3d}+\frac{\left(a^2+b^2\right)\log\left(e^{(-dx-c)}+\right.}{a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/((2*a^2*e^(-2
*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) - (a^2 + b^2)*log(-2*a*e^(-d*x
 - c) + b*e^(-2*d*x - 2*c) - b)/(a^3*d) + (a^2 + b^2)*log(e^(-d*x - c) + 1)
/(a^3*d) + (a^2 + b^2)*log(e^(-d*x - c) - 1)/(a^3*d)
```

mupad [B] time = 1.01, size = 1329, normalized size = 16.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)^3/(a + b*sinh(c + d*x)),x)
```

```
[Out] ((2*atan((a^2*(-a^6*d^2)^(1/2)*(a^4 + b^4 + 2*a^2*b^2)^(1/2) + 2*b^2*(-a^6*
d^2)^(1/2)*(a^4 + b^4 + 2*a^2*b^2)^(1/2))/(2*a^3*d*(a^2 + b^2)^2) + ((a^7*d
 + a^5*b^2*d)*(-a^6*d^2)^(1/2))/(2*a^6*d^2*((a^2 + b^2)^2)^(1/2)*(a^2 + b^2
)) - (a^6*b^2*exp(2*c)*exp(2*d*x)*(-a^6*d^2)^(1/2)*((4*(a^2 + 2*b^2)*(a^4 +
 b^4 + 2*a^2*b^2))/(a^9*b^2*d*(a^2 + b^2)^2) + (2*(2*a^4*b^3*d + 2*a^6*b*d)
*(a^4 + b^4 + 2*a^2*b^2)^(1/2))/(a^11*b^3*d^2*((a^2 + b^2)^2)^(1/2)*(a^2 +
b^2)) + (4*(a^2*(-a^6*d^2)^(1/2)*(a^4 + b^4 + 2*a^2*b^2)^(1/2) + 2*b^2*(-a^
6*d^2)^(1/2)*(a^4 + b^4 + 2*a^2*b^2)^(1/2))*(a^4 + b^4 + 2*a^2*b^2)^(1/2))/
(a^9*b^2*d*(a^2 + b^2)^2*(-a^6*d^2)^(1/2)) + (4*(a^7*d + a^5*b^2*d)*(a^4 +
b^4 + 2*a^2*b^2)^(1/2))/(a^12*b^2*d^2*((a^2 + b^2)^2)^(1/2)*(a^2 + b^2))))/
(8*(a^4 + b^4 + 2*a^2*b^2)^(1/2)) + (a^6*b^2*exp(3*c)*exp(3*d*x)*((2*(a^7*d
 + a^5*b^2*d)*(a^4 + b^4 + 2*a^2*b^2)^(1/2))/(a^11*b^3*d^2*((a^2 + b^2)^2)^
(1/2)*(a^2 + b^2)) - (2*(a^2 + 2*b^2)*(a^2*(-a^6*d^2)^(1/2)*(a^4 + b^4 + 2*
a^2*b^2)^(1/2) + 2*b^2*(-a^6*d^2)^(1/2)*(a^4 + b^4 + 2*a^2*b^2)^(1/2))*(a^4
 + b^4 + 2*a^2*b^2)^(1/2))/(a^10*b^3*d*(a^2 + b^2)^2*(-a^6*d^2)^(1/2)))*(-a
^6*d^2)^(1/2))/(8*(a^4 + b^4 + 2*a^2*b^2)^(1/2)) - (a^6*b^2*exp(d*x)*exp(c)
*(-a^6*d^2)^(1/2)*((8*(a^4 + b^4 + 2*a^2*b^2))/(a^8*b*d*(a^2 + b^2)^2) - (4
*(2*a^4*b^3*d + 2*a^6*b*d)*(a^4 + b^4 + 2*a^2*b^2)^(1/2))/(a^12*b^2*d^2*((a
^2 + b^2)^2)^(1/2)*(a^2 + b^2)) + (2*(a^7*d + a^5*b^2*d)*(a^4 + b^4 + 2*a^2
*b^2)^(1/2))/(a^11*b^3*d^2*((a^2 + b^2)^2)^(1/2)*(a^2 + b^2)) - (2*(a^2 + 2
*b^2)*(a^2*(-a^6*d^2)^(1/2)*(a^4 + b^4 + 2*a^2*b^2)^(1/2) + 2*b^2*(-a^6*d^2
)^(1/2)*(a^4 + b^4 + 2*a^2*b^2)^(1/2))*(a^4 + b^4 + 2*a^2*b^2)^(1/2))/(a^10
*b^3*d*(a^2 + b^2)^2*(-a^6*d^2)^(1/2))))/(8*(a^4 + b^4 + 2*a^2*b^2)^(1/2)))
 - 2*atan((4*a^6*b*d*(a^2 + b^2)^2*(-a^6*d^2)^(1/2) + 4*a^4*b^3*d*(a^2 + b^
2)^2*(-a^6*d^2)^(1/2))*(1/(8*a^5*b*d^2*((a^2 + b^2)^2)^(1/2)*(a^2 + b^2)^3)
 - exp(d*x)*exp(c)*(1/(16*a^4*b^2*d^2*((a^2 + b^2)^2)^(1/2)*(a^2 + b^2)^3)
- (a^2 + 2*b^2)^2/(16*a^8*b^2*d^2*((a^2 + b^2)^2)^(1/2)*(a^2 + b^2)^3)) + (
a^2 + 2*b^2)/(8*a^7*b*d^2*((a^2 + b^2)^2)^(1/2)*(a^2 + b^2)^3))))*(a^4 + b^
4 + 2*a^2*b^2)^(1/2))/(-a^6*d^2)^(1/2) - (2/(a*d) - (2*b*exp(c + d*x))/(a^2
*d))/(exp(2*c + 2*d*x) - 1) - 2/(a*d*(exp(4*c + 4*d*x) - 2*exp(2*c + 2*d*x)
 + 1))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth^3(c+dx)}{a+b\sinh(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Integral(coth(c + d*x)**3/(a + b*sinh(c + d*x)), x)
```

3.490 $\int \frac{\coth^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\coth^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(coth(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\coth^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Coth[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][Coth[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])), x]
```

Rubi steps

$$\int \frac{\coth^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\coth^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[Coth[c + d*x]^3/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] $Aborted
```

fricas [A] time = 2.74, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\coth\left(dx+c\right)^{3}}{afx+ae+\left(bfx+be\right)\sinh\left(dx+c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="fricas")
[Out] integral(coth(d*x + c)^3/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="giac")
[Out] sage0*x
```

maple [A] time = 1.18, size = 0, normalized size = 0.00

$$\int \frac{\coth^3(dx+c)}{\left(fx+e\right)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] int(coth(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{af-2\left(bdfxe^{(3c)}+bdee^{(3c)}\right)e^{(3dx)}+\left(2adfxe^{(2c)}+\left(2de-f\right)ae^{(2c)}\right)e^{(2dx)}+2\left(bdfxe^{c}+b\right.}{a^2d^2f^2x^2+2a^2d^2efx+a^2d^2e^2+\left(a^2d^2f^2x^2e^{(4c)}+2a^2d^2efxe^{(4c)}+a^2d^2e^2e^{(4c)}\right)e^{(4dx)}-2\left(a^2d^2f^2x^2e^{(2c)}+2a^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm="maxima")
[Out] -(a*f - 2*(b*d*f*x*e^(3*c) + b*d*e*e^(3*c))*e^(3*d*x) + (2*a*d*f*x*e^(2*c)
+ (2*d*e - f)*a*e^(2*c))*e^(2*d*x) + 2*(b*d*f*x*e^c + b*d*e*e^c)*e^(d*x))/(
a^2*d^2*f^2*x^2 + 2*a^2*d^2*e*f*x + a^2*d^2*e^2 + (a^2*d^2*f^2*x^2*e^(4*c)
+ 2*a^2*d^2*e*f*x*e^(4*c) + a^2*d^2*e^2*e^(4*c))*e^(4*d*x) - 2*(a^2*d^2*f^2
*x^2*e^(2*c) + 2*a^2*d^2*e*f*x*e^(2*c) + a^2*d^2*e^2*e^(2*c))*e^(2*d*x)) +
integrate(-(b^2*d^2*e^2 + a*b*d*e*f + (d^2*e^2 + f^2)*a^2 + (a^2*d^2*f^2 +
b^2*d^2*f^2)*x^2 + (2*a^2*d^2*e*f + 2*b^2*d^2*e*f + a*b*d*f^2)*x)/(a^3*d^2*
f^3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3*d^2*e^2*f*x + a^3*d^2*e^3 - (a^3*d^2*
f^3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c + 3*a^3*d^2*e^2*f*x*e^c + a^3*d^2*e^3
*e^c)*e^(d*x)), x) - integrate((b^2*d^2*e^2 - a*b*d*e*f + (d^2*e^2 + f^2)*a
^2 + (a^2*d^2*f^2 + b^2*d^2*f^2)*x^2 + (2*a^2*d^2*e*f + 2*b^2*d^2*e*f - a*b
*d*f^2)*x)/(a^3*d^2*f^3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3*d^2*e^2*f*x + a^3
*d^2*e^3 + (a^3*d^2*f^3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c + 3*a^3*d^2*e^2*f
```

```
*x*e^c + a^3*d^2*e^3*e^c)*e^(d*x)), x) + integrate(2*(a^2*b + b^3 - (a^3*e^
c + a*b^2*e^c)*e^(d*x))/(a^3*b*f*x + a^3*b*e - (a^3*b*f*x*e^(2*c) + a^3*b*e
*e^(2*c))*e^(2*d*x) - 2*(a^4*f*x*e^c + a^4*e*e^c)*e^(d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\coth(c+d\,x)^3}{\left(e+f\,x\right)\,\left(a+b\sinh(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(coth(c + d*x)^3/((e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(coth(c + d*x)^3/((e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\coth^3(c+dx)}{(a+b\sinh(c+dx))\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(coth(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Integral(coth(c + d*x)**3/((a + b*sinh(c + d*x))*(e + f*x)), x)
```

3.491 $\int \frac{(e+fx)^3\mathrm{csch}^3(c+dx)\mathrm{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1795

$$-\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^4}{a^3\left(a^2+b^2\right)d}-\frac{(e+fx)^3\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^4}{a^3\left(a^2+b^2\right)d}+\frac{(e+fx)^3\log\left(1+e^{2(c+dx)}\right)b^4}{a^3\left(a^2+b^2\right)d}-\frac{3f(e+fx)^2\mathrm{L}}{a^3\left(a\right.}$$

```
[Out] 2*b*(f*x+e)^3*arctan(exp(d*x+c))/a^2/d-2*b^2*(f*x+e)^3*arctanh(exp(2*d*x+2*
c))/a^3/d+b*(f*x+e)^3*csch(d*x+c)/a^2/d-3/4*b^2*f^3*polylog(4,-exp(2*d*x+2*
c))/a^3/d^4-2*b^3*(f*x+e)^3*arctan(exp(d*x+c))/a^2/(a^2+b^2)/d-3/2*b^2*f*(f
*x+e)^2*polylog(2,-exp(2*d*x+2*c))/a^3/d^2+3/2*b^2*f^2*(f*x+e)*polylog(3,-e
xp(2*d*x+2*c))/a^3/d^3+3/4*b^4*f^3*polylog(4,-exp(2*d*x+2*c))/a^3/(a^2+b^2)
/d^4-6*I*b*f^3*polylog(4,-I*exp(d*x+c))/a^2/d^4+6*b*f*(f*x+e)^2*arctanh(exp
(d*x+c))/a^2/d^2+6*b*f^2*(f*x+e)*polylog(2,-exp(d*x+c))/a^2/d^3-6*b*f^2*(f*
x+e)*polylog(2,exp(d*x+c))/a^2/d^3+3/2*b^2*f*(f*x+e)^2*polylog(2,exp(2*d*x+
2*c))/a^3/d^2-3/2*b^2*f^2*(f*x+e)*polylog(3,exp(2*d*x+2*c))/a^3/d^3+6*I*b*f
^3*polylog(4,I*exp(d*x+c))/a^2/d^4-3*I*b*f*(f*x+e)^2*polylog(2,-I*exp(d*x+c
))/a^2/d^2-6*I*b*f^2*(f*x+e)*polylog(3,I*exp(d*x+c))/a^2/d^3-6*I*b^3*f^3*po
lylog(4,I*exp(d*x+c))/a^2/(a^2+b^2)/d^4+3/2*b^4*f*(f*x+e)^2*polylog(2,-exp(
2*d*x+2*c))/a^3/(a^2+b^2)/d^2-3/2*b^4*f^2*(f*x+e)*polylog(3,-exp(2*d*x+2*c)
)/a^3/(a^2+b^2)/d^3-3/2*f*(f*x+e)^2*coth(d*x+c)/a/d^2-6*b*f^3*polylog(3,-ex
p(d*x+c))/a^2/d^4+6*b*f^3*polylog(3,exp(d*x+c))/a^2/d^4+3/4*b^2*f^3*polylog
(4,exp(2*d*x+2*c))/a^3/d^4-3/2*f^2*(f*x+e)*polylog(3,-exp(2*d*x+2*c))/a/d^3
+3/2*f^2*(f*x+e)*polylog(3,exp(2*d*x+2*c))/a/d^3+3/2*f*(f*x+e)^2*polylog(2,
-exp(2*d*x+2*c))/a/d^2-3/2*f*(f*x+e)^2*polylog(2,exp(2*d*x+2*c))/a/d^2+3*I*
b*f*(f*x+e)^2*polylog(2,I*exp(d*x+c))/a^2/d^2+6*I*b*f^2*(f*x+e)*polylog(3,-
I*exp(d*x+c))/a^2/d^3+6*I*b^3*f^3*polylog(4,-I*exp(d*x+c))/a^2/(a^2+b^2)/d^
4-3*I*b^3*f*(f*x+e)^2*polylog(2,I*exp(d*x+c))/a^2/(a^2+b^2)/d^2-6*I*b^3*f^2
*(f*x+e)*polylog(3,-I*exp(d*x+c))/a^2/(a^2+b^2)/d^3-1/2*(f*x+e)^3*coth(d*x+
c)^2/a/d+3/2*f^3*polylog(2,exp(2*d*x+2*c))/a/d^4-3/4*f^3*polylog(4,exp(2*d*
x+2*c))/a/d^4+2*(f*x+e)^3*arctanh(exp(2*d*x+2*c))/a/d+3/4*f^3*polylog(4,-ex
p(2*d*x+2*c))/a/d^4+1/2*(f*x+e)^3/a/d-3/2*f*(f*x+e)^2/a/d^2+3*I*b^3*f*(f*x+
e)^2*polylog(2,-I*exp(d*x+c))/a^2/(a^2+b^2)/d^2+6*I*b^3*f^2*(f*x+e)*polylog
(3,I*exp(d*x+c))/a^2/(a^2+b^2)/d^3+b^4*(f*x+e)^3*ln(1+exp(2*d*x+2*c))/a^3/(
a^2+b^2)/d-b^4*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^
2)/d-b^4*(f*x+e)^3*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d-6
*b^4*f^3*polylog(4,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d^4-6*b
^4*f^3*polylog(4,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d^4-3*b^4
*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d^2
-3*b^4*f*(f*x+e)^2*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^
2)/d^2+6*b^4*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(
a^2+b^2)/d^3+6*b^4*f^2*(f*x+e)*polylog(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))
```

```
/a^3/(a^2+b^2)/d^3+3*f^2*(f*x+e)*ln(1-exp(2*d*x+2*c))/a/d^3
```

Rubi [A] time = 3.27, antiderivative size = 1795, normalized size of antiderivative = 1.00, number of steps used = 87, number of rules used = 28, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.824, Rules used = {5589, 2620, 14, 5462, 6741, 12, 6742, 3720, 3716, 2190, 2279, 2391, 32, 2551, 4182, 2531, 6609, 2282, 6589, 2621, 321, 207, 5205, 4180, 5461, 5573, 5561, 3718}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csch[c + d*x]^3*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (-3*f*(e + f*x)^2)/(2*a*d^2) + (e + f*x)^3/(2*a*d) + (2*b*(e + f*x)^3*ArcTa
n[E^(c + d*x)])/(a^2*d) - (2*b^3*(e + f*x)^3*ArcTan[E^(c + d*x)])/(a^2*(a^2
 + b^2)*d) + (6*b*f*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a^2*d^2) + (2*(e + f
*x)^3*ArcTanh[E^(2*c + 2*d*x)])/(a*d) - (2*b^2*(e + f*x)^3*ArcTanh[E^(2*c +
 2*d*x)])/(a^3*d) - (3*f*(e + f*x)^2*Coth[c + d*x])/(2*a*d^2) - ((e + f*x)^
3*Coth[c + d*x]^2)/(2*a*d) + (b*(e + f*x)^3*Csch[c + d*x])/(a^2*d) - (b^4*(
e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*(a^2 + b^2)
*d) - (b^4*(e + f*x)^3*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^3
*(a^2 + b^2)*d) + (3*f^2*(e + f*x)*Log[1 - E^(2*(c + d*x))])/(a*d^3) + (b^4
*(e + f*x)^3*Log[1 + E^(2*(c + d*x))])/(a^3*(a^2 + b^2)*d) + (6*b*f^2*(e +
f*x)*PolyLog[2, -E^(c + d*x)])/(a^2*d^3) - ((3*I)*b*f*(e + f*x)^2*PolyLog[2
, (-I)*E^(c + d*x)])/(a^2*d^2) + ((3*I)*b^3*f*(e + f*x)^2*PolyLog[2, (-I)*E
^(c + d*x)])/(a^2*(a^2 + b^2)*d^2) + ((3*I)*b*f*(e + f*x)^2*PolyLog[2, I*E^
(c + d*x)])/(a^2*d^2) - ((3*I)*b^3*f*(e + f*x)^2*PolyLog[2, I*E^(c + d*x)])
/(a^2*(a^2 + b^2)*d^2) - (6*b*f^2*(e + f*x)*PolyLog[2, E^(c + d*x)])/(a^2*d
^3) - (3*b^4*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2
]))])/(a^3*(a^2 + b^2)*d^2) - (3*b^4*f*(e + f*x)^2*PolyLog[2, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*(a^2 + b^2)*d^2) + (3*b^4*f*(e + f*x)^2*
PolyLog[2, -E^(2*(c + d*x))])/(2*a^3*(a^2 + b^2)*d^2) + (3*f^3*PolyLog[2, E
^(2*(c + d*x))])/(2*a*d^4) + (3*f*(e + f*x)^2*PolyLog[2, -E^(2*c + 2*d*x)])
/(2*a*d^2) - (3*b^2*f*(e + f*x)^2*PolyLog[2, -E^(2*c + 2*d*x)])/(2*a^3*d^2)
 - (3*f*(e + f*x)^2*PolyLog[2, E^(2*c + 2*d*x)])/(2*a*d^2) + (3*b^2*f*(e +
f*x)^2*PolyLog[2, E^(2*c + 2*d*x)])/(2*a^3*d^2) - (6*b*f^3*PolyLog[3, -E^(c
 + d*x)])/(a^2*d^4) + ((6*I)*b*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/
(a^2*d^3) - ((6*I)*b^3*f^2*(e + f*x)*PolyLog[3, (-I)*E^(c + d*x)])/(a^2*(a^
2 + b^2)*d^3) - ((6*I)*b*f^2*(e + f*x)*PolyLog[3, I*E^(c + d*x)])/(a^2*d^3)
 + ((6*I)*b^3*f^2*(e + f*x)*PolyLog[3, I*E^(c + d*x)])/(a^2*(a^2 + b^2)*d^3
) + (6*b*f^3*PolyLog[3, E^(c + d*x)])/(a^2*d^4) + (6*b^4*f^2*(e + f*x)*Poly
Log[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*(a^2 + b^2)*d^3) + (
6*b^4*f^2*(e + f*x)*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(
a^3*(a^2 + b^2)*d^3) - (3*b^4*f^2*(e + f*x)*PolyLog[3, -E^(2*(c + d*x))])/(
2*a^3*(a^2 + b^2)*d^3) - (3*f^2*(e + f*x)*PolyLog[3, -E^(2*c + 2*d*x)])/(2*
a*d^3) + (3*b^2*f^2*(e + f*x)*PolyLog[3, -E^(2*c + 2*d*x)])/(2*a^3*d^3) + (
```

```
3*f^2*(e + f*x)*PolyLog[3, E^(2*c + 2*d*x)])/(2*a*d^3) - (3*b^2*f^2*(e + f*
x)*PolyLog[3, E^(2*c + 2*d*x)])/(2*a^3*d^3) - ((6*I)*b*f^3*PolyLog[4, (-I)*
E^(c + d*x)])/(a^2*d^4) + ((6*I)*b^3*f^3*PolyLog[4, (-I)*E^(c + d*x)])/(a^2
*(a^2 + b^2)*d^4) + ((6*I)*b*f^3*PolyLog[4, I*E^(c + d*x)])/(a^2*d^4) - ((6
*I)*b^3*f^3*PolyLog[4, I*E^(c + d*x)])/(a^2*(a^2 + b^2)*d^4) - (6*b^4*f^3*P
olyLog[4, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*(a^2 + b^2)*d^4)
- (6*b^4*f^3*PolyLog[4, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*(a^
2 + b^2)*d^4) + (3*b^4*f^3*PolyLog[4, -E^(2*(c + d*x))])/(4*a^3*(a^2 + b^2)
*d^4) + (3*f^3*PolyLog[4, -E^(2*c + 2*d*x)])/(4*a*d^4) - (3*b^2*f^3*PolyLog
[4, -E^(2*c + 2*d*x)])/(4*a^3*d^4) - (3*f^3*PolyLog[4, E^(2*c + 2*d*x)])/(4
*a*d^4) + (3*b^2*f^3*PolyLog[4, E^(2*c + 2*d*x)])/(4*a^3*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2551

```
Int[Log[u_]*((a_.) + (b_.)*(x_))^(m_.), x_Symbol] :> Simp[((a + b*x)^(m + 1
)*Log[u])/(b*(m + 1)), x] - Dist[1/(b*(m + 1)), Int[SimplifyIntegrand[((a +
 b*x)^(m + 1)*D[u, x])/u, x], x], x] /; FreeQ[{a, b, m}, x] && InverseFunct
ionFreeQ[u, x] && NeQ[m, -1]
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
```

```
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5205

```
Int[((a_.) + ArcTan[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcTan[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/(1 + u^2), x], x], x]
/; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x] &&
  !FunctionOfQ[(c + d*x)^(m + 1), u, x] && FalseQ[PowerVariableExpn[u, m +
1, x]]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
```

```
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\text{csch}^3(c+dx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^3\text{csch}^3(c+dx)\text{sech}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\text{csch}^2(c+dx)\text{sech}(c\cdots}{a+b\sinh(c+dx)}}{a}$$

$$= -\frac{(e+fx)^3\coth^2(c+dx)}{2ad} - \frac{(e+fx)^3\log(\tanh(c+dx))}{ad} - \frac{b\int (e+f\cdots}{}$$

$$= \frac{b(e+fx)^3\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{(e+fx)^3\coth^2(c+dx)}{2ad} + \frac{b(e+f\cdots}{}$$

$$= \frac{b(e+fx)^3\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{(e+fx)^3\coth^2(c+dx)}{2ad} + \frac{b(e+f\cdots}{}$$

$$= \frac{b^4(e+fx)^4}{4a^3\left(a^2+b^2\right)f} + \frac{b(e+fx)^3\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{2b^2(e+fx)^3\tan\cdots}{a^3d\cdots}$$

$$= \frac{b^4(e+fx)^4}{4a^3\left(a^2+b^2\right)f} + \frac{b(e+fx)^3\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{2b^2(e+fx)^3\tan\cdots}{a^3d\cdots}$$

$$= -\frac{2b^3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)d} + \frac{b(e+fx)^3\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{2b^2\cdots}{}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} - \frac{2b^3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)d} + \frac{6bf(e+f\cdots}{}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} - \frac{2b^3(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)d} + \frac{6bf(e+f\cdots}{}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} + \frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^3(e+fx\cdots}{a^2\left(a\cdots\right.}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} + \frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^3(e+fx\cdots}{a^2\left(a\cdots\right.}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} + \frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^3(e+fx\cdots}{a^2\left(a\cdots\right.}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} + \frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^3(e+fx\cdots}{a^2\left(a\cdots\right.}$$

$$= -\frac{3f(e+fx)^2}{2ad^2} + \frac{(e+fx)^3}{2ad} + \frac{2b(e+fx)^3\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^3(e+fx\cdots}{a^2\left(a\cdots\right.}$$

Mathematica [B] time = 90.00, size = 5823, normalized size = 3.24

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csch[c + d*x]^3*Sech[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] Result too large to show
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 5.41, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \operatorname{csch}\left(dx+c\right)^{3} \operatorname{sech}\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -(b^4*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^5 + a^3*b^2)*d) +
 2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) - a*log(e^(-2*d*x - 2*c) + 1)/((a
^2 + b^2)*d) + 2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))
/((2*a^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) + (a^2 - b^2)*lo
g(e^(-d*x - c) + 1)/(a^3*d) + (a^2 - b^2)*log(e^(-d*x - c) - 1)/(a^3*d))*e^
3 + (3*a*f^3*x^2 + 6*a*e*f^2*x + 3*a*e^2*f + 2*(b*d*f^3*x^3*e^(3*c) + 3*b*d
*e*f^2*x^2*e^(3*c) + 3*b*d*e^2*f*x*e^(3*c))*e^(3*d*x) - (2*a*d*f^3*x^3*e^(2
*c) + 3*a*e^2*f*e^(2*c) + 3*(2*d*e*f^2 + f^3)*a*x^2*e^(2*c) + 6*(d*e^2*f +
e*f^2)*a*x*e^(2*c))*e^(2*d*x) - 2*(b*d*f^3*x^3*e^c + 3*b*d*e*f^2*x^2*e^c +
3*b*d*e^2*f*x*e^c)*e^(d*x))/(a^2*d^2*e^(4*d*x + 4*c) - 2*a^2*d^2*e^(2*d*x +
 2*c) + a^2*d^2) - 3*(b*d*e^2*f + a*e*f^2)*x/(a^2*d^2) + 3*(b*d*e^2*f - a*e
*f^2)*x/(a^2*d^2) + 3*(b*d*e^2*f + a*e*f^2)*log(e^(d*x + c) + 1)/(a^2*d^3)
- 3*(b*d*e^2*f - a*e*f^2)*log(e^(d*x + c) - 1)/(a^2*d^3) - (d^3*x^3*log(e^(
d*x + c) + 1) + 3*d^2*x^2*dilog(-e^(d*x + c)) - 6*d*x*polylog(3, -e^(d*x +
c)) + 6*polylog(4, -e^(d*x + c)))*(a^2*f^3 - b^2*f^3)/(a^3*d^4) - (d^3*x^3*
log(-e^(d*x + c) + 1) + 3*d^2*x^2*dilog(e^(d*x + c)) - 6*d*x*polylog(3, e^(
d*x + c)) + 6*polylog(4, e^(d*x + c)))*(a^2*f^3 - b^2*f^3)/(a^3*d^4) - 3*(a
^2*d*e*f^2 - b^2*d*e*f^2 - a*b*f^3)*(d^2*x^2*log(e^(d*x + c) + 1) + 2*d*x*d
ilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))/(a^3*d^4) - 3*(a^2*d*e*f^2
 - b^2*d*e*f^2 + a*b*f^3)*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d
*x + c)) - 2*polylog(3, e^(d*x + c)))/(a^3*d^4) + 3*(b^2*d^2*e^2*f + 2*a*b*
d*e*f^2 - (d^2*e^2*f - f^3)*a^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x
+ c)))/(a^3*d^4) + 3*(b^2*d^2*e^2*f - 2*a*b*d*e*f^2 - (d^2*e^2*f - f^3)*a^2
)*(d*x*log(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^3*d^4) + 1/4*((a^2*f^
3 - b^2*f^3)*d^4*x^4 + 4*(a^2*d*e*f^2 - b^2*d*e*f^2 + a*b*f^3)*d^3*x^3 - 6*
(b^2*d^2*e^2*f - 2*a*b*d*e*f^2 - (d^2*e^2*f - f^3)*a^2)*d^2*x^2)/(a^3*d^4)
+ 1/4*((a^2*f^3 - b^2*f^3)*d^4*x^4 + 4*(a^2*d*e*f^2 - b^2*d*e*f^2 - a*b*f^3
)*d^3*x^3 - 6*(b^2*d^2*e^2*f + 2*a*b*d*e*f^2 - (d^2*e^2*f - f^3)*a^2)*d^2*x
^2)/(a^3*d^4) + integrate(2*(b^5*f^3*x^3 + 3*b^5*e*f^2*x^2 + 3*b^5*e^2*f*x
- (a*b^4*f^3*x^3*e^c + 3*a*b^4*e*f^2*x^2*e^c + 3*a*b^4*e^2*f*x*e^c)*e^(d*x)
)/(a^5*b + a^3*b^3 - (a^5*b*e^(2*c) + a^3*b^3*e^(2*c))*e^(2*d*x) - 2*(a^6*e
^c + a^4*b^2*e^c)*e^(d*x)), x) + integrate(-2*(a*f^3*x^3 + 3*a*e*f^2*x^2 +
3*a*e^2*f*x - (b*f^3*x^3*e^c + 3*b*e*f^2*x^2*e^c + 3*b*e^2*f*x*e^c)*e^(d*x)
)/(a^2 + b^2 + (a^2*e^(2*c) + b^2*e^(2*c))*e^(2*d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^3}{\cosh\left(c+d\,x\right)\,{\sinh\left(c+d\,x\right)}^3\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cosh(c + d*x)*sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)^3/(cosh(c + d*x)*sinh(c + d*x)^3*(a + b*sinh(c + d*x))), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csch(d*x+c)**3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.492 $\int \frac{(e+fx)^2\mathbf{csch}^3(c+dx)\mathbf{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1219

$$-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^4}{a^3\left(a^2+b^2\right)d}-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^4}{a^3\left(a^2+b^2\right)d}+\frac{(e+fx)^2\log\left(1+e^{2(c+dx)}\right)b^4}{a^3\left(a^2+b^2\right)d}-\frac{2f(e+fx)\mathrm{Li}_2}{a^3\left(a^2\right.}$$

```
[Out] 2*b*(f*x+e)^2*arctan(exp(d*x+c))/a^2/d-2*b^2*(f*x+e)^2*arctanh(exp(2*d*x+2*
c))/a^3/d-f*(f*x+e)*coth(d*x+c)/a/d^2+b*(f*x+e)^2*csch(d*x+c)/a^2/d+1/2*b^2
*f^2*polylog(3,-exp(2*d*x+2*c))/a^3/d^3-2*b^3*(f*x+e)^2*arctan(exp(d*x+c))/
a^2/(a^2+b^2)/d-b^2*f*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/a^3/d^2+b^2*f*(f*x
+e)*polylog(2,exp(2*d*x+2*c))/a^3/d^2-1/2*b^4*f^2*polylog(3,-exp(2*d*x+2*c)
)/a^3/(a^2+b^2)/d^3-2*I*b*f^2*polylog(3,I*exp(d*x+c))/a^2/d^3+4*b*f*(f*x+e)
*arctanh(exp(d*x+c))/a^2/d^2+b^4*f*(f*x+e)*polylog(2,-exp(2*d*x+2*c))/a^3/(
a^2+b^2)/d^2+2*I*b*f^2*polylog(3,-I*exp(d*x+c))/a^2/d^3-2*I*b*f*(f*x+e)*pol
ylog(2,-I*exp(d*x+c))/a^2/d^2-2*I*b^3*f^2*polylog(3,-I*exp(d*x+c))/a^2/(a^2
+b^2)/d^3+2*b*f^2*polylog(2,-exp(d*x+c))/a^2/d^3-2*b*f^2*polylog(2,exp(d*x+
c))/a^2/d^3-1/2*b^2*f^2*polylog(3,exp(2*d*x+2*c))/a^3/d^3+f*(f*x+e)*polylog
(2,-exp(2*d*x+2*c))/a/d^2-f*(f*x+e)*polylog(2,exp(2*d*x+2*c))/a/d^2+2*I*b*f
*(f*x+e)*polylog(2,I*exp(d*x+c))/a^2/d^2+2*I*b^3*f^2*polylog(3,I*exp(d*x+c)
)/a^2/(a^2+b^2)/d^3-2*I*b^3*f*(f*x+e)*polylog(2,I*exp(d*x+c))/a^2/(a^2+b^2)
/d^2-1/2*(f*x+e)^2*coth(d*x+c)^2/a/d-1/2*f^2*polylog(3,-exp(2*d*x+2*c))/a/d
^3+1/2*f^2*polylog(3,exp(2*d*x+2*c))/a/d^3+2*(f*x+e)^2*arctanh(exp(2*d*x+2*
c))/a/d+e*f*x/a/d+1/2*f^2*x^2/a/d+2*I*b^3*f*(f*x+e)*polylog(2,-I*exp(d*x+c)
)/a^2/(a^2+b^2)/d^2+b^4*(f*x+e)^2*ln(1+exp(2*d*x+2*c))/a^3/(a^2+b^2)/d-b^4*
(f*x+e)^2*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d-b^4*(f*x+e
)^2*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d+2*b^4*f^2*polylo
g(3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d^3+2*b^4*f^2*polylog(
3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d^3-2*b^4*f*(f*x+e)*poly
log(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d^2-2*b^4*f*(f*x+e)*
polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d^2+f^2*ln(sinh(
d*x+c))/a/d^3
```

Rubi [A] time = 2.22, antiderivative size = 1219, normalized size of antiderivative = 1.00, number of steps used = 71, number of rules used = 26, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.765, Rules used = {5589, 2620, 14, 5462, 6741, 12, 6742, 3720, 3475, 2551, 4182, 2531, 2282, 6589, 2621, 321, 207, 5205, 4180, 2279, 2391, 5461, 5573, 5561, 2190, 3718}

$$-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^4}{a^3\left(a^2+b^2\right)d}-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^4}{a^3\left(a^2+b^2\right)d}+\frac{(e+fx)^2\log\left(1+e^{2(c+dx)}\right)b^4}{a^3\left(a^2+b^2\right)d}-\frac{2f(e+fx)\mathrm{Pol}}{a^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]^3*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (e*f*x)/(a*d) + (f^2*x^2)/(2*a*d) + (2*b*(e + f*x)^2*ArcTan[E^(c + d*x)])/(
a^2*d) - (2*b^3*(e + f*x)^2*ArcTan[E^(c + d*x)])/(a^2*(a^2 + b^2)*d) + (4*b
*f*(e + f*x)*ArcTanh[E^(c + d*x)])/(a^2*d^2) + (2*(e + f*x)^2*ArcTanh[E^(2*
c + 2*d*x)])/(a*d) - (2*b^2*(e + f*x)^2*ArcTanh[E^(2*c + 2*d*x)])/(a^3*d) -
 (f*(e + f*x)*Coth[c + d*x])/(a*d^2) - ((e + f*x)^2*Coth[c + d*x]^2)/(2*a*d
) + (b*(e + f*x)^2*Csch[c + d*x])/(a^2*d) - (b^4*(e + f*x)^2*Log[1 + (b*E^(
c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*(a^2 + b^2)*d) - (b^4*(e + f*x)^2*Lo
g[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^3*(a^2 + b^2)*d) + (b^4*(e
 + f*x)^2*Log[1 + E^(2*(c + d*x))])/(a^3*(a^2 + b^2)*d) + (f^2*Log[Sinh[c +
 d*x]])/(a*d^3) + (2*b*f^2*PolyLog[2, -E^(c + d*x)])/(a^2*d^3) - ((2*I)*b*f
*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)])/(a^2*d^2) + ((2*I)*b^3*f*(e + f*x)
*PolyLog[2, (-I)*E^(c + d*x)])/(a^2*(a^2 + b^2)*d^2) + ((2*I)*b*f*(e + f*x)
*PolyLog[2, I*E^(c + d*x)])/(a^2*d^2) - ((2*I)*b^3*f*(e + f*x)*PolyLog[2, I
*E^(c + d*x)])/(a^2*(a^2 + b^2)*d^2) - (2*b*f^2*PolyLog[2, E^(c + d*x)])/(a
^2*d^3) - (2*b^4*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b
^2]))])/(a^3*(a^2 + b^2)*d^2) - (2*b^4*f*(e + f*x)*PolyLog[2, -((b*E^(c + d
*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*(a^2 + b^2)*d^2) + (b^4*f*(e + f*x)*Poly
Log[2, -E^(2*(c + d*x))])/(a^3*(a^2 + b^2)*d^2) + (f*(e + f*x)*PolyLog[2, -
E^(2*c + 2*d*x)])/(a*d^2) - (b^2*f*(e + f*x)*PolyLog[2, -E^(2*c + 2*d*x)])/
(a^3*d^2) - (f*(e + f*x)*PolyLog[2, E^(2*c + 2*d*x)])/(a*d^2) + (b^2*f*(e +
 f*x)*PolyLog[2, E^(2*c + 2*d*x)])/(a^3*d^2) + ((2*I)*b*f^2*PolyLog[3, (-I)
*E^(c + d*x)])/(a^2*d^3) - ((2*I)*b^3*f^2*PolyLog[3, (-I)*E^(c + d*x)])/(a^
2*(a^2 + b^2)*d^3) - ((2*I)*b*f^2*PolyLog[3, I*E^(c + d*x)])/(a^2*d^3) + ((
2*I)*b^3*f^2*PolyLog[3, I*E^(c + d*x)])/(a^2*(a^2 + b^2)*d^3) + (2*b^4*f^2*
PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*(a^2 + b^2)*d^3)
 + (2*b^4*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*(a
^2 + b^2)*d^3) - (b^4*f^2*PolyLog[3, -E^(2*(c + d*x))])/(2*a^3*(a^2 + b^2)*
d^3) - (f^2*PolyLog[3, -E^(2*c + 2*d*x)])/(2*a*d^3) + (b^2*f^2*PolyLog[3, -
E^(2*c + 2*d*x)])/(2*a^3*d^3) + (f^2*PolyLog[3, E^(2*c + 2*d*x)])/(2*a*d^3)
 - (b^2*f^2*PolyLog[3, E^(2*c + 2*d*x)])/(2*a^3*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 2551

```
Int[Log[u_]*((a_.) + (b_.)*(x_))^(m_.), x_Symbol] :> Simp[((a + b*x)^(m + 1
)*Log[u])/(b*(m + 1)), x] - Dist[1/(b*(m + 1)), Int[SimplifyIntegrand[((a +
 b*x)^(m + 1)*D[u, x])/u, x], x], x] /; FreeQ[{a, b, m}, x] && InverseFunct
ionFreeQ[u, x] && NeQ[m, -1]
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5205

```
Int[((a_.) + ArcTan[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Sim
p[((c + d*x)^(m + 1)*(a + b*ArcTan[u]))/(d*(m + 1)), x] - Dist[b/(d*(m + 1)
), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/(1 + u^2), x], x], x]
/; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x] &&
  !FunctionOfQ[(c + d*x)^(m + 1), u, x] && FalseQ[PowerVariableExpn[u, m +
1, x]]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
```

```
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{csch}^3(c+dx)\text{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{csch}^3(c+dx)\text{sech}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\text{csch}^2(c+dx)\text{sech}(c}{a+b\sinh(c+dx)}}{a}$$

$$= -\frac{(e+fx)^2\coth^2(c+dx)}{2ad} - \frac{(e+fx)^2\log(\tanh(c+dx))}{ad} - \frac{b\int (e+f}{}$$

$$= \frac{b(e+fx)^2\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{(e+fx)^2\coth^2(c+dx)}{2ad} + \frac{b(e+f}{}$$

$$= \frac{b(e+fx)^2\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{(e+fx)^2\coth^2(c+dx)}{2ad} + \frac{b(e+f}{}$$

$$= \frac{b^4(e+fx)^3}{3a^3\left(a^2+b^2\right)f} + \frac{b(e+fx)^2\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{2b^2(e+fx)^2\tan}{a^3d}$$

$$= \frac{b^4(e+fx)^3}{3a^3\left(a^2+b^2\right)f} + \frac{b(e+fx)^2\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{2b^2(e+fx)^2\tan}{a^3d}$$

$$= -\frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)d} + \frac{b(e+fx)^2\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{2b^2}{}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)d} + \frac{4bf(e+fx)\tanh^{-1}\left(e^{c+}\right.}{a^2d^2}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)d} + \frac{4bf(e+fx)\tanh^{-1}\left(e^{c+}\right.}{a^2d^2}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} + \frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{a^2\left(a^2+b^2\right)d}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} + \frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{a^2\left(a^2+b^2\right)d}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} + \frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{a^2\left(a^2+b^2\right)d}$$

$$= \frac{efx}{ad} + \frac{f^2x^2}{2ad} + \frac{2b(e+fx)^2\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^3(e+fx)^2\tan^{-1}\left(e^{c+dx}\right.}{a^2\left(a^2+b^2\right)d}$$

Mathematica [B] time = 39.34, size = 3044, normalized size = 2.50

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]^3*Sech[c + d*x])/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] ((-e^2 - 2*e*f*x - f^2*x^2)*Csch[c/2 + (d*x)/2]^2)/(8*a*d) + (-12*a*d^3*e^2
*E^(2*c)*x - 12*a*d^3*e*E^(2*c)*f*x^2 - 4*a*d^3*E^(2*c)*f^2*x^3 + 12*b*d^2*
e^2*ArcTan[E^(c + d*x)] + 12*b*d^2*e^2*E^(2*c)*ArcTan[E^(c + d*x)] + (12*I)
*b*d^2*e*f*x*Log[1 - I*E^(c + d*x)] + (12*I)*b*d^2*e*E^(2*c)*f*x*Log[1 - I*
E^(c + d*x)] + (6*I)*b*d^2*f^2*x^2*Log[1 - I*E^(c + d*x)] + (6*I)*b*d^2*E^(
2*c)*f^2*x^2*Log[1 - I*E^(c + d*x)] - (12*I)*b*d^2*e*f*x*Log[1 + I*E^(c + d
*x)] - (12*I)*b*d^2*e*E^(2*c)*f*x*Log[1 + I*E^(c + d*x)] - (6*I)*b*d^2*f^2*
x^2*Log[1 + I*E^(c + d*x)] - (6*I)*b*d^2*E^(2*c)*f^2*x^2*Log[1 + I*E^(c + d
*x)] + 6*a*d^2*e^2*Log[1 + E^(2*(c + d*x))] + 6*a*d^2*e^2*E^(2*c)*Log[1 + E
^(2*(c + d*x))] + 12*a*d^2*e*f*x*Log[1 + E^(2*(c + d*x))] + 12*a*d^2*e*E^(2
*c)*f*x*Log[1 + E^(2*(c + d*x))] + 6*a*d^2*f^2*x^2*Log[1 + E^(2*(c + d*x))]
 + 6*a*d^2*E^(2*c)*f^2*x^2*Log[1 + E^(2*(c + d*x))] - (12*I)*b*d*(1 + E^(2*
c))*f*(e + f*x)*PolyLog[2, (-I)*E^(c + d*x)] + (12*I)*b*d*(1 + E^(2*c))*f*(
e + f*x)*PolyLog[2, I*E^(c + d*x)] + 6*a*d*e*f*PolyLog[2, -E^(2*(c + d*x))]
 + 6*a*d*e*E^(2*c)*f*PolyLog[2, -E^(2*(c + d*x))] + 6*a*d*f^2*x*PolyLog[2,
-E^(2*(c + d*x))] + 6*a*d*E^(2*c)*f^2*x*PolyLog[2, -E^(2*(c + d*x))] + (12*
I)*b*f^2*PolyLog[3, (-I)*E^(c + d*x)] + (12*I)*b*E^(2*c)*f^2*PolyLog[3, (-I
)*E^(c + d*x)] - (12*I)*b*f^2*PolyLog[3, I*E^(c + d*x)] - (12*I)*b*E^(2*c)*
f^2*PolyLog[3, I*E^(c + d*x)] - 3*a*f^2*PolyLog[3, -E^(2*(c + d*x))] - 3*a*
E^(2*c)*f^2*PolyLog[3, -E^(2*(c + d*x))])/(6*(a^2 + b^2)*d^3*(1 + E^(2*c)))
 - (-12*a^2*d^3*e^2*E^(2*c)*x + 12*b^2*d^3*e^2*E^(2*c)*x + 12*a^2*d*E^(2*c)
*f^2*x - 12*a^2*d^3*e*E^(2*c)*f*x^2 + 12*b^2*d^3*e*E^(2*c)*f*x^2 - 4*a^2*d^
3*E^(2*c)*f^2*x^3 + 4*b^2*d^3*E^(2*c)*f^2*x^3 + 24*a*b*d*e*f*ArcTanh[E^(c +
 d*x)] - 24*a*b*d*e*E^(2*c)*f*ArcTanh[E^(c + d*x)] - 12*a*b*d*f^2*x*Log[1 -
 E^(c + d*x)] + 12*a*b*d*E^(2*c)*f^2*x*Log[1 - E^(c + d*x)] + 12*a*b*d*f^2*
x*Log[1 + E^(c + d*x)] - 12*a*b*d*E^(2*c)*f^2*x*Log[1 + E^(c + d*x)] - 6*a^
2*d^2*e^2*Log[1 - E^(2*(c + d*x))] + 6*b^2*d^2*e^2*Log[1 - E^(2*(c + d*x))]
 + 6*a^2*d^2*e^2*E^(2*c)*Log[1 - E^(2*(c + d*x))] - 6*b^2*d^2*e^2*E^(2*c)*L
og[1 - E^(2*(c + d*x))] + 6*a^2*f^2*Log[1 - E^(2*(c + d*x))] - 6*a^2*E^(2*c
)*f^2*Log[1 - E^(2*(c + d*x))] - 12*a^2*d^2*e*f*x*Log[1 - E^(2*(c + d*x))]
+ 12*b^2*d^2*e*f*x*Log[1 - E^(2*(c + d*x))] + 12*a^2*d^2*e*E^(2*c)*f*x*Log[
1 - E^(2*(c + d*x))] - 12*b^2*d^2*e*E^(2*c)*f*x*Log[1 - E^(2*(c + d*x))] -
6*a^2*d^2*f^2*x^2*Log[1 - E^(2*(c + d*x))] + 6*b^2*d^2*f^2*x^2*Log[1 - E^(2
*(c + d*x))] + 6*a^2*d^2*E^(2*c)*f^2*x^2*Log[1 - E^(2*(c + d*x))] - 6*b^2*d
^2*E^(2*c)*f^2*x^2*Log[1 - E^(2*(c + d*x))] - 12*a*b*(-1 + E^(2*c))*f^2*Pol
yLog[2, -E^(c + d*x)] + 12*a*b*(-1 + E^(2*c))*f^2*PolyLog[2, E^(c + d*x)] -
```

```
6*a^2*d*e*f*PolyLog[2, E^(2*(c + d*x))] + 6*b^2*d*e*f*PolyLog[2, E^(2*(c +
 d*x))] + 6*a^2*d*e*E^(2*c)*f*PolyLog[2, E^(2*(c + d*x))] - 6*b^2*d*e*E^(2*
c)*f*PolyLog[2, E^(2*(c + d*x))] - 6*a^2*d*f^2*x*PolyLog[2, E^(2*(c + d*x))
] + 6*b^2*d*f^2*x*PolyLog[2, E^(2*(c + d*x))] + 6*a^2*d*E^(2*c)*f^2*x*PolyL
og[2, E^(2*(c + d*x))] - 6*b^2*d*E^(2*c)*f^2*x*PolyLog[2, E^(2*(c + d*x))]
+ 3*a^2*f^2*PolyLog[3, E^(2*(c + d*x))] - 3*b^2*f^2*PolyLog[3, E^(2*(c + d*
x))] - 3*a^2*E^(2*c)*f^2*PolyLog[3, E^(2*(c + d*x))] + 3*b^2*E^(2*c)*f^2*Po
lyLog[3, E^(2*(c + d*x))])/(6*a^3*d^3*(-1 + E^(2*c))) + (b^4*(6*d^3*e^2*E^(
2*c)*x + 6*d^3*e*E^(2*c)*f*x^2 + 2*d^3*E^(2*c)*f^2*x^3 + 3*d^2*e^2*Log[b -
2*a*E^(c + d*x) - b*E^(2*(c + d*x))] - 3*d^2*e^2*E^(2*c)*Log[b - 2*a*E^(c +
 d*x) - b*E^(2*(c + d*x))] + 6*d^2*e*f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c -
 Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*f*x*Log[1 + (b*E^(2*c + d*x)
)/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*f^2*x^2*Log[1 + (b*E^(2*c +
d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*d^2*E^(2*c)*f^2*x^2*Log[1 +
(b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)])] + 6*d^2*e*f*x*Log[1
+ (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 6*d^2*e*E^(2*c)*
f*x*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] + 3*d^2*
f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)])] - 3*
d^2*E^(2*c)*f^2*x^2*Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(
2*c)])] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog[2, -((b*E^(2*c + d*x))/(a*
E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*d*(-1 + E^(2*c))*f*(e + f*x)*PolyLog
[2, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))] - 6*f^2*PolyL
og[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] + 6*E^(2*c)
*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^2)*E^(2*c)]))] -
 6*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E^(2*c)]))]
 + 6*E^(2*c)*f^2*PolyLog[3, -((b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^2)*E
^(2*c)]))]))/(3*a^3*(a^2 + b^2)*d^3*(-1 + E^(2*c))) + ((-3*a^3*d*e^2*x - 3*
a^3*d*e*f*x^2 - a^3*d*f^2*x^3 + 3*a^2*b*e^2*Cosh[c] + 3*b^3*e^2*Cosh[c] + 6
*a^2*b*e*f*x*Cosh[c] + 6*b^3*e*f*x*Cosh[c] + 3*a^2*b*f^2*x^2*Cosh[c] + 3*b^
3*f^2*x^2*Cosh[c])*Csch[c/2]*Sech[c/2]*Sech[c])/(6*a^2*(a^2 + b^2)*d) + ((e
^2 + 2*e*f*x + f^2*x^2)*Sech[c/2 + (d*x)/2]^2)/(8*a*d) + (Sech[c/2]*Sech[c/
2 + (d*x)/2]*(-(b*d*e^2*Sinh[(d*x)/2]) - a*e*f*Sinh[(d*x)/2] - 2*b*d*e*f*x*
Sinh[(d*x)/2] - a*f^2*x*Sinh[(d*x)/2] - b*d*f^2*x^2*Sinh[(d*x)/2]))/(2*a^2*
d^2) + (Csch[c/2]*Csch[c/2 + (d*x)/2]*(-(b*d*e^2*Sinh[(d*x)/2]) + a*e*f*Sin
h[(d*x)/2] - 2*b*d*e*f*x*Sinh[(d*x)/2] + a*f^2*x*Sinh[(d*x)/2] - b*d*f^2*x^
2*Sinh[(d*x)/2]))/(2*a^2*d^2)
```

fricas [C] time = 0.93, size = 13381, normalized size = 10.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

[Out] -(2*((a^4 + a^2*b^2)*d*f^2*x + (a^4 + a^2*b^2)*c*f^2)*cosh(d*x + c)^4 + 2*((a^4 + a^2*b^2)*d*f^2*x + (a^4 + a^2*b^2)*c*f^2)*sinh(d*x + c)^4 - 2*(a^4 + a^2*b^2)*d*e*f + 2*(a^4 + a^2*b^2)*c*f^2 - 2*((a^3*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + (a^3*b + a*b^3)*d^2*e^2)*cosh(d*x + c)^3 - 2*((a^3*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + (a^3*b + a*b^3)*d^2*e^2 - 4*((a^4 + a^2*b^2)*d*f^2*x + (a^4 + a^2*b^2)*c*f^2)*cosh(d*x + c))*sinh(d*x + c)^3 + 2*((a^4 + a^2*b^2)*d^2*f^2*x^2 + (a^4 + a^2*b^2)*d^2*e^2 + (a^4 + a^2*b^2)*d*e*f - 2*(a^4 + a^2*b^2)*c*f^2 + (2*(a^4 + a^2*b^2)*d^2*e*f - (a^4 + a^2*b^2)*d*f^2)*x)*cosh(d*x + c)^2 + 2*((a^4 + a^2*b^2)*d^2*f^2*x^2 + (a^4 + a^2*b^2)*d^2*e^2 + (a^4 + a^2*b^2)*d*e*f - 2*(a^4 + a^2*b^2)*c*f^2 + 6*((a^4 + a^2*b^2)*d*f^2*x + (a^4 + a^2*b^2)*c*f^2)*cosh(d*x + c)^2 + (2*(a^4 + a^2*b^2)*d^2*e*f - (a^4 + a^2*b^2)*d*f^2)*x - 3*((a^3*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + (a^3*b + a*b^3)*d^2*e^2)*cosh(d*x + c))*sinh(d*x + c)^2 + 2*((a^3*b + a*b^3)*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + (a^3*b + a*b^3)*d^2*e^2)*cosh(d*x + c) + 2*(b^4*d*f^2*x + b^4*d*e*f + (b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^4 + 4*(b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d*f^2*x + b^4*d*e*f)*sinh(d*x + c)^4 - 2*(b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^2 - 2*(b^4*d*f^2*x + b^4*d*e*f - 3*(b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^3 - (b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(b^4*d*f^2*x + b^4*d*e*f + (b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^4 + 4*(b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d*f^2*x + b^4*d*e*f)*sinh(d*x + c)^4 - 2*(b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^2 - 2*(b^4*d*f^2*x + b^4*d*e*f - 3*(b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c)^3 - (b^4*d*f^2*x + b^4*d*e*f)*cosh(d*x + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*((a^4 - b^4)*d*f^2*x + ((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f + (a^3*b + a*b^3)*f^2)*cosh(d*x + c)^4 + 4*((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f + (a^3*b + a*b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f + (a^3*b + a*b^3)*f^2)*sinh(d*x + c)^4 + (a^4 - b^4)*d*e*f + (a^3*b + a*b^3)*f^2 - 2*((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f + (a^3*b + a*b^3)*f^2)*cosh(d*x + c)^2 - 2*((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f + (a^3*b + a*b^3)*f^2 - 3*((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f + (a^3*b + a*b^3)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f + (a^3*b + a*b^3)*f^2)*cosh(d*x + c)^3 - ((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f + (a^3*b + a*b^3)*f^2)*cosh(d*x + c))*sinh(d*x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) - (2*a^4*d*f^2*x + 2*I*a^3*b*d*f^2*x + 2*a^4*d*e*f + 2*I*a^3*b*d*e*f + (2*a^4*d*f^2*x + 2*I*a^3*b*d*f^2*x + 2*a^4*d*e*f + 2*I*a^3*b*d*e*f)*cosh(d*x + c)^4 + (8*a^4*d*f^2*x + 8*I*a^3*b*d*f^2*x + 8*a^4*d*e*f + 8*I*a^3*b*d*e*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^4*d*f^2*x + 2*I*a^3*b*d*f^2*x + 2*a^4*d*e*f + 2*I*a^3*b*d*e*f)*sinh(d*x + c)^4 - (4*a^4*d*f^2*x + 4*I*a^3*b*d*f^2*x + 4*a^4*d*e*f + 4*

I*a^3*b*d*e*f)*cosh(d*x + c)^2 - (4*a^4*d*f^2*x + 4*I*a^3*b*d*f^2*x + 4*a^4
*d*e*f + 4*I*a^3*b*d*e*f - (12*a^4*d*f^2*x + 12*I*a^3*b*d*f^2*x + 12*a^4*d*
e*f + 12*I*a^3*b*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^4*d*f^2*x
+ 8*I*a^3*b*d*f^2*x + 8*a^4*d*e*f + 8*I*a^3*b*d*e*f)*cosh(d*x + c)^3 - (8*a
^4*d*f^2*x + 8*I*a^3*b*d*f^2*x + 8*a^4*d*e*f + 8*I*a^3*b*d*e*f)*cosh(d*x +
c))*sinh(d*x + c))*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) - (2*a^4*d*f^2*
x - 2*I*a^3*b*d*f^2*x + 2*a^4*d*e*f - 2*I*a^3*b*d*e*f + (2*a^4*d*f^2*x - 2*
I*a^3*b*d*f^2*x + 2*a^4*d*e*f - 2*I*a^3*b*d*e*f)*cosh(d*x + c)^4 + (8*a^4*d
*f^2*x - 8*I*a^3*b*d*f^2*x + 8*a^4*d*e*f - 8*I*a^3*b*d*e*f)*cosh(d*x + c)*s
inh(d*x + c)^3 + (2*a^4*d*f^2*x - 2*I*a^3*b*d*f^2*x + 2*a^4*d*e*f - 2*I*a^3
*b*d*e*f)*sinh(d*x + c)^4 - (4*a^4*d*f^2*x - 4*I*a^3*b*d*f^2*x + 4*a^4*d*e*
f - 4*I*a^3*b*d*e*f)*cosh(d*x + c)^2 - (4*a^4*d*f^2*x - 4*I*a^3*b*d*f^2*x +
4*a^4*d*e*f - 4*I*a^3*b*d*e*f - (12*a^4*d*f^2*x - 12*I*a^3*b*d*f^2*x + 12*
a^4*d*e*f - 12*I*a^3*b*d*e*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^4*d*
f^2*x - 8*I*a^3*b*d*f^2*x + 8*a^4*d*e*f - 8*I*a^3*b*d*e*f)*cosh(d*x + c)^3
- (8*a^4*d*f^2*x - 8*I*a^3*b*d*f^2*x + 8*a^4*d*e*f - 8*I*a^3*b*d*e*f)*cosh(
d*x + c))*sinh(d*x + c))*dilog(-I*cosh(d*x + c) - I*sinh(d*x + c)) + 2*((a^
4 - b^4)*d*f^2*x + ((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f - (a^3*b + a*b^
3)*f^2)*cosh(d*x + c)^4 + 4*((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f - (a^3
*b + a*b^3)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 - b^4)*d*f^2*x + (a^
4 - b^4)*d*e*f - (a^3*b + a*b^3)*f^2)*sinh(d*x + c)^4 + (a^4 - b^4)*d*e*f -
(a^3*b + a*b^3)*f^2 - 2*((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f - (a^3*b
+ a*b^3)*f^2)*cosh(d*x + c)^2 - 2*((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f
- (a^3*b + a*b^3)*f^2 - 3*((a^4 - b^4)*d*f^2*x + (a^4 - b^4)*d*e*f - (a^3*b
+ a*b^3)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^4 - b^4)*d*f^2*x +
(a^4 - b^4)*d*e*f - (a^3*b + a*b^3)*f^2)*cosh(d*x + c)^3 - ((a^4 - b^4)*d*
f^2*x + (a^4 - b^4)*d*e*f - (a^3*b + a*b^3)*f^2)*cosh(d*x + c))*sinh(d*x +
c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) + (b^4*d^2*e^2 - 2*b^4*c*d*e*f +
b^4*c^2*f^2 + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)^4 +
4*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^
3 + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*sinh(d*x + c)^4 - 2*(b^4*d^
2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^4*d^2*e^2 - 2*b
^4*c*d*e*f + b^4*c^2*f^2 - 3*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*co
sh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*
f^2)*cosh(d*x + c)^3 - (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x
+ c))*sinh(d*x + c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt(
(a^2 + b^2)/b^2) + 2*a) + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2 + (b^4
*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)^4 + 4*(b^4*d^2*e^2 -
2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d^2*e^2 -
2*b^4*c*d*e*f + b^4*c^2*f^2)*sinh(d*x + c)^4 - 2*(b^4*d^2*e^2 - 2*b^4*c*d*
e*f + b^4*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c
^2*f^2 - 3*(b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)^2)*sin
h(d*x + c)^2 + 4*((b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c)
^3 - (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*cosh(d*x + c))*sinh(d*x +
c))*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) +

```
2*a) + (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2 +
(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x
+ c)^4 + 4*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2
)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^
4*c*d*e*f - b^4*c^2*f^2)*sinh(d*x + c)^4 - 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e
*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^4*d^2*f^2*x^2 +
2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2 - 3*(b^4*d^2*f^2*x^2 + 2*b^4*
d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 +
 4*((b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(
d*x + c)^3 - (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f
^2)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) +
 (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + (b^4*d
^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2 + (b^4*d^2*f^2*x
^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^4 + 4*(b^
4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c
)*sinh(d*x + c)^3 + (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^
4*c^2*f^2)*sinh(d*x + c)^4 - 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c
*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^2 - 2*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*
x + 2*b^4*c*d*e*f - b^4*c^2*f^2 - 3*(b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*
b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d^2*f
^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x + c)^3 - (
b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*cosh(d*x +
 c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x +
 c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) + ((a^4 - b^4)*d^2*f^2
*x^2 + (a^4 - b^4)*d^2*e^2 + ((a^4 - b^4)*d^2*f^2*x^2 + (a^4 - b^4)*d^2*e^2
 - 2*(a^3*b + a*b^3)*d*e*f - (a^4 + a^2*b^2)*f^2 + 2*((a^4 - b^4)*d^2*e*f -
 (a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^4 + 4*((a^4 - b^4)*d^2*f^2*x^2 + (
a^4 - b^4)*d^2*e^2 - 2*(a^3*b + a*b^3)*d*e*f - (a^4 + a^2*b^2)*f^2 + 2*((a^
4 - b^4)*d^2*e*f - (a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c)^3
+ ((a^4 - b^4)*d^2*f^2*x^2 + (a^4 - b^4)*d^2*e^2 - 2*(a^3*b + a*b^3)*d*e*f
- (a^4 + a^2*b^2)*f^2 + 2*((a^4 - b^4)*d^2*e*f - (a^3*b + a*b^3)*d*f^2)*x)*
sinh(d*x + c)^4 - 2*(a^3*b + a*b^3)*d*e*f - (a^4 + a^2*b^2)*f^2 - 2*((a^4 -
 b^4)*d^2*f^2*x^2 + (a^4 - b^4)*d^2*e^2 - 2*(a^3*b + a*b^3)*d*e*f - (a^4 +
a^2*b^2)*f^2 + 2*((a^4 - b^4)*d^2*e*f - (a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x
+ c)^2 - 2*((a^4 - b^4)*d^2*f^2*x^2 + (a^4 - b^4)*d^2*e^2 - 2*(a^3*b + a*b^
3)*d*e*f - (a^4 + a^2*b^2)*f^2 - 3*((a^4 - b^4)*d^2*f^2*x^2 + (a^4 - b^4)*d
^2*e^2 - 2*(a^3*b + a*b^3)*d*e*f - (a^4 + a^2*b^2)*f^2 + 2*((a^4 - b^4)*d^2
*e*f - (a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^2 + 2*((a^4 - b^4)*d^2*e*f -
 (a^3*b + a*b^3)*d*f^2)*x)*sinh(d*x + c)^2 + 2*((a^4 - b^4)*d^2*e*f - (a^3*
b + a*b^3)*d*f^2)*x + 4*(((a^4 - b^4)*d^2*f^2*x^2 + (a^4 - b^4)*d^2*e^2 - 2
*(a^3*b + a*b^3)*d*e*f - (a^4 + a^2*b^2)*f^2 + 2*((a^4 - b^4)*d^2*e*f - (a^
3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^3 - ((a^4 - b^4)*d^2*f^2*x^2 + (a^4 -
b^4)*d^2*e^2 - 2*(a^3*b + a*b^3)*d*e*f - (a^4 + a^2*b^2)*f^2 + 2*((a^4 - b^
4)*d^2*e*f - (a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))*log(co
sh(d*x + c) + sinh(d*x + c) + 1) - (a^4*d^2*e^2 + I*a^3*b*d^2*e^2 - 2*a^4*c
```

```
*d*e*f - 2*I*a^3*b*c*d*e*f + a^4*c^2*f^2 + I*a^3*b*c^2*f^2 + (a^4*d^2*e^2 +
 I*a^3*b*d^2*e^2 - 2*a^4*c*d*e*f - 2*I*a^3*b*c*d*e*f + a^4*c^2*f^2 + I*a^3*
b*c^2*f^2)*cosh(d*x + c)^4 + (4*a^4*d^2*e^2 + 4*I*a^3*b*d^2*e^2 - 8*a^4*c*d
*e*f - 8*I*a^3*b*c*d*e*f + 4*a^4*c^2*f^2 + 4*I*a^3*b*c^2*f^2)*cosh(d*x + c)
*sinh(d*x + c)^3 + (a^4*d^2*e^2 + I*a^3*b*d^2*e^2 - 2*a^4*c*d*e*f - 2*I*a^3
*b*c*d*e*f + a^4*c^2*f^2 + I*a^3*b*c^2*f^2)*sinh(d*x + c)^4 - (2*a^4*d^2*e^
2 + 2*I*a^3*b*d^2*e^2 - 4*a^4*c*d*e*f - 4*I*a^3*b*c*d*e*f + 2*a^4*c^2*f^2 +
 2*I*a^3*b*c^2*f^2)*cosh(d*x + c)^2 - (2*a^4*d^2*e^2 + 2*I*a^3*b*d^2*e^2 -
4*a^4*c*d*e*f - 4*I*a^3*b*c*d*e*f + 2*a^4*c^2*f^2 + 2*I*a^3*b*c^2*f^2 - (6*
a^4*d^2*e^2 + 6*I*a^3*b*d^2*e^2 - 12*a^4*c*d*e*f - 12*I*a^3*b*c*d*e*f + 6*a
^4*c^2*f^2 + 6*I*a^3*b*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((4*a^4*
d^2*e^2 + 4*I*a^3*b*d^2*e^2 - 8*a^4*c*d*e*f - 8*I*a^3*b*c*d*e*f + 4*a^4*c^2
*f^2 + 4*I*a^3*b*c^2*f^2)*cosh(d*x + c)^3 - (4*a^4*d^2*e^2 + 4*I*a^3*b*d^2*
e^2 - 8*a^4*c*d*e*f - 8*I*a^3*b*c*d*e*f + 4*a^4*c^2*f^2 + 4*I*a^3*b*c^2*f^2
)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + I) - (a
^4*d^2*e^2 - I*a^3*b*d^2*e^2 - 2*a^4*c*d*e*f + 2*I*a^3*b*c*d*e*f + a^4*c^2*
f^2 - I*a^3*b*c^2*f^2 + (a^4*d^2*e^2 - I*a^3*b*d^2*e^2 - 2*a^4*c*d*e*f + 2*
I*a^3*b*c*d*e*f + a^4*c^2*f^2 - I*a^3*b*c^2*f^2)*cosh(d*x + c)^4 + (4*a^4*d
^2*e^2 - 4*I*a^3*b*d^2*e^2 - 8*a^4*c*d*e*f + 8*I*a^3*b*c*d*e*f + 4*a^4*c^2*
f^2 - 4*I*a^3*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4*d^2*e^2 - I*a
^3*b*d^2*e^2 - 2*a^4*c*d*e*f + 2*I*a^3*b*c*d*e*f + a^4*c^2*f^2 - I*a^3*b*c^
2*f^2)*sinh(d*x + c)^4 - (2*a^4*d^2*e^2 - 2*I*a^3*b*d^2*e^2 - 4*a^4*c*d*e*f
 + 4*I*a^3*b*c*d*e*f + 2*a^4*c^2*f^2 - 2*I*a^3*b*c^2*f^2)*cosh(d*x + c)^2 -
 (2*a^4*d^2*e^2 - 2*I*a^3*b*d^2*e^2 - 4*a^4*c*d*e*f + 4*I*a^3*b*c*d*e*f + 2
*a^4*c^2*f^2 - 2*I*a^3*b*c^2*f^2 - (6*a^4*d^2*e^2 - 6*I*a^3*b*d^2*e^2 - 12*
a^4*c*d*e*f + 12*I*a^3*b*c*d*e*f + 6*a^4*c^2*f^2 - 6*I*a^3*b*c^2*f^2)*cosh(
d*x + c)^2)*sinh(d*x + c)^2 + ((4*a^4*d^2*e^2 - 4*I*a^3*b*d^2*e^2 - 8*a^4*c
*d*e*f + 8*I*a^3*b*c*d*e*f + 4*a^4*c^2*f^2 - 4*I*a^3*b*c^2*f^2)*cosh(d*x +
c)^3 - (4*a^4*d^2*e^2 - 4*I*a^3*b*d^2*e^2 - 8*a^4*c*d*e*f + 8*I*a^3*b*c*d*e
*f + 4*a^4*c^2*f^2 - 4*I*a^3*b*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(c
osh(d*x + c) + sinh(d*x + c) - I) + ((a^4 - b^4)*d^2*e^2 + ((a^4 - b^4)*d^2
*e^2 + 2*(a^3*b + a*b^3 - (a^4 - b^4)*c)*d*e*f - (a^4 + a^2*b^2 - (a^4 - b^
4)*c^2 + 2*(a^3*b + a*b^3)*c)*f^2)*cosh(d*x + c)^4 + 4*((a^4 - b^4)*d^2*e^2
 + 2*(a^3*b + a*b^3 - (a^4 - b^4)*c)*d*e*f - (a^4 + a^2*b^2 - (a^4 - b^4)*c
^2 + 2*(a^3*b + a*b^3)*c)*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 - b^4)
*d^2*e^2 + 2*(a^3*b + a*b^3 - (a^4 - b^4)*c)*d*e*f - (a^4 + a^2*b^2 - (a^4
- b^4)*c^2 + 2*(a^3*b + a*b^3)*c)*f^2)*sinh(d*x + c)^4 + 2*(a^3*b + a*b^3 -
 (a^4 - b^4)*c)*d*e*f - (a^4 + a^2*b^2 - (a^4 - b^4)*c^2 + 2*(a^3*b + a*b^3
)*c)*f^2 - 2*((a^4 - b^4)*d^2*e^2 + 2*(a^3*b + a*b^3 - (a^4 - b^4)*c)*d*e*f
 - (a^4 + a^2*b^2 - (a^4 - b^4)*c^2 + 2*(a^3*b + a*b^3)*c)*f^2)*cosh(d*x +
c)^2 - 2*((a^4 - b^4)*d^2*e^2 + 2*(a^3*b + a*b^3 - (a^4 - b^4)*c)*d*e*f - (
a^4 + a^2*b^2 - (a^4 - b^4)*c^2 + 2*(a^3*b + a*b^3)*c)*f^2 - 3*((a^4 - b^4)
*d^2*e^2 + 2*(a^3*b + a*b^3 - (a^4 - b^4)*c)*d*e*f - (a^4 + a^2*b^2 - (a^4
- b^4)*c^2 + 2*(a^3*b + a*b^3)*c)*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4
*(((a^4 - b^4)*d^2*e^2 + 2*(a^3*b + a*b^3 - (a^4 - b^4)*c)*d*e*f - (a^4 + a
```

^2*b^2 - (a^4 - b^4)*c^2 + 2*(a^3*b + a*b^3)*c)*f^2)*cosh(d*x + c)^3 - ((a^
4 - b^4)*d^2*e^2 + 2*(a^3*b + a*b^3 - (a^4 - b^4)*c)*d*e*f - (a^4 + a^2*b^2
 - (a^4 - b^4)*c^2 + 2*(a^3*b + a*b^3)*c)*f^2)*cosh(d*x + c))*sinh(d*x + c)
)*log(cosh(d*x + c) + sinh(d*x + c) - 1) - (a^4*d^2*f^2*x^2 - I*a^3*b*d^2*f
^2*x^2 + 2*a^4*d^2*e*f*x - 2*I*a^3*b*d^2*e*f*x + 2*a^4*c*d*e*f - 2*I*a^3*b*
c*d*e*f - a^4*c^2*f^2 + I*a^3*b*c^2*f^2 + (a^4*d^2*f^2*x^2 - I*a^3*b*d^2*f^
2*x^2 + 2*a^4*d^2*e*f*x - 2*I*a^3*b*d^2*e*f*x + 2*a^4*c*d*e*f - 2*I*a^3*b*c
*d*e*f - a^4*c^2*f^2 + I*a^3*b*c^2*f^2)*cosh(d*x + c)^4 + (4*a^4*d^2*f^2*x^
2 - 4*I*a^3*b*d^2*f^2*x^2 + 8*a^4*d^2*e*f*x - 8*I*a^3*b*d^2*e*f*x + 8*a^4*c
*d*e*f - 8*I*a^3*b*c*d*e*f - 4*a^4*c^2*f^2 + 4*I*a^3*b*c^2*f^2)*cosh(d*x +
c)*sinh(d*x + c)^3 + (a^4*d^2*f^2*x^2 - I*a^3*b*d^2*f^2*x^2 + 2*a^4*d^2*e*f
*x - 2*I*a^3*b*d^2*e*f*x + 2*a^4*c*d*e*f - 2*I*a^3*b*c*d*e*f - a^4*c^2*f^2
+ I*a^3*b*c^2*f^2)*sinh(d*x + c)^4 - (2*a^4*d^2*f^2*x^2 - 2*I*a^3*b*d^2*f^2
*x^2 + 4*a^4*d^2*e*f*x - 4*I*a^3*b*d^2*e*f*x + 4*a^4*c*d*e*f - 4*I*a^3*b*c*
d*e*f - 2*a^4*c^2*f^2 + 2*I*a^3*b*c^2*f^2)*cosh(d*x + c)^2 - (2*a^4*d^2*f^2
*x^2 - 2*I*a^3*b*d^2*f^2*x^2 + 4*a^4*d^2*e*f*x - 4*I*a^3*b*d^2*e*f*x + 4*a^
4*c*d*e*f - 4*I*a^3*b*c*d*e*f - 2*a^4*c^2*f^2 + 2*I*a^3*b*c^2*f^2 - (6*a^4*
d^2*f^2*x^2 - 6*I*a^3*b*d^2*f^2*x^2 + 12*a^4*d^2*e*f*x - 12*I*a^3*b*d^2*e*f
*x + 12*a^4*c*d*e*f - 12*I*a^3*b*c*d*e*f - 6*a^4*c^2*f^2 + 6*I*a^3*b*c^2*f^
2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((4*a^4*d^2*f^2*x^2 - 4*I*a^3*b*d^2*f
^2*x^2 + 8*a^4*d^2*e*f*x - 8*I*a^3*b*d^2*e*f*x + 8*a^4*c*d*e*f - 8*I*a^3*b*
c*d*e*f - 4*a^4*c^2*f^2 + 4*I*a^3*b*c^2*f^2)*cosh(d*x + c)^3 - (4*a^4*d^2*f
^2*x^2 - 4*I*a^3*b*d^2*f^2*x^2 + 8*a^4*d^2*e*f*x - 8*I*a^3*b*d^2*e*f*x + 8*
a^4*c*d*e*f - 8*I*a^3*b*c*d*e*f - 4*a^4*c^2*f^2 + 4*I*a^3*b*c^2*f^2)*cosh(d
*x + c))*sinh(d*x + c))*log(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) - (a^4*d
^2*f^2*x^2 + I*a^3*b*d^2*f^2*x^2 + 2*a^4*d^2*e*f*x + 2*I*a^3*b*d^2*e*f*x +
2*a^4*c*d*e*f + 2*I*a^3*b*c*d*e*f - a^4*c^2*f^2 - I*a^3*b*c^2*f^2 + (a^4*d^
2*f^2*x^2 + I*a^3*b*d^2*f^2*x^2 + 2*a^4*d^2*e*f*x + 2*I*a^3*b*d^2*e*f*x + 2
*a^4*c*d*e*f + 2*I*a^3*b*c*d*e*f - a^4*c^2*f^2 - I*a^3*b*c^2*f^2)*cosh(d*x
+ c)^4 + (4*a^4*d^2*f^2*x^2 + 4*I*a^3*b*d^2*f^2*x^2 + 8*a^4*d^2*e*f*x + 8*I
*a^3*b*d^2*e*f*x + 8*a^4*c*d*e*f + 8*I*a^3*b*c*d*e*f - 4*a^4*c^2*f^2 - 4*I*
a^3*b*c^2*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4*d^2*f^2*x^2 + I*a^3*b*d
^2*f^2*x^2 + 2*a^4*d^2*e*f*x + 2*I*a^3*b*d^2*e*f*x + 2*a^4*c*d*e*f + 2*I*a^
3*b*c*d*e*f - a^4*c^2*f^2 - I*a^3*b*c^2*f^2)*sinh(d*x + c)^4 - (2*a^4*d^2*f
^2*x^2 + 2*I*a^3*b*d^2*f^2*x^2 + 4*a^4*d^2*e*f*x + 4*I*a^3*b*d^2*e*f*x + 4*
a^4*c*d*e*f + 4*I*a^3*b*c*d*e*f - 2*a^4*c^2*f^2 - 2*I*a^3*b*c^2*f^2)*cosh(d
*x + c)^2 - (2*a^4*d^2*f^2*x^2 + 2*I*a^3*b*d^2*f^2*x^2 + 4*a^4*d^2*e*f*x +
4*I*a^3*b*d^2*e*f*x + 4*a^4*c*d*e*f + 4*I*a^3*b*c*d*e*f - 2*a^4*c^2*f^2 - 2
*I*a^3*b*c^2*f^2 - (6*a^4*d^2*f^2*x^2 + 6*I*a^3*b*d^2*f^2*x^2 + 12*a^4*d^2*
e*f*x + 12*I*a^3*b*d^2*e*f*x + 12*a^4*c*d*e*f + 12*I*a^3*b*c*d*e*f - 6*a^4*
c^2*f^2 - 6*I*a^3*b*c^2*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((4*a^4*d^2
*f^2*x^2 + 4*I*a^3*b*d^2*f^2*x^2 + 8*a^4*d^2*e*f*x + 8*I*a^3*b*d^2*e*f*x +
8*a^4*c*d*e*f + 8*I*a^3*b*c*d*e*f - 4*a^4*c^2*f^2 - 4*I*a^3*b*c^2*f^2)*cosh
(d*x + c)^3 - (4*a^4*d^2*f^2*x^2 + 4*I*a^3*b*d^2*f^2*x^2 + 8*a^4*d^2*e*f*x
+ 8*I*a^3*b*d^2*e*f*x + 8*a^4*c*d*e*f + 8*I*a^3*b*c*d*e*f - 4*a^4*c^2*f^2 -

```
4*I*a^3*b*c^2*f^2)*cosh(d*x + c))*sinh(d*x + c))*log(-I*cosh(d*x + c) - I*
sinh(d*x + c) + 1) + ((a^4 - b^4)*d^2*f^2*x^2 + 2*(a^4 - b^4)*c*d*e*f + ((a
^4 - b^4)*d^2*f^2*x^2 + 2*(a^4 - b^4)*c*d*e*f - ((a^4 - b^4)*c^2 - 2*(a^3*b
 + a*b^3)*c)*f^2 + 2*((a^4 - b^4)*d^2*e*f + (a^3*b + a*b^3)*d*f^2)*x)*cosh(
d*x + c)^4 + 4*((a^4 - b^4)*d^2*f^2*x^2 + 2*(a^4 - b^4)*c*d*e*f - ((a^4 - b
^4)*c^2 - 2*(a^3*b + a*b^3)*c)*f^2 + 2*((a^4 - b^4)*d^2*e*f + (a^3*b + a*b^
3)*d*f^2)*x)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 - b^4)*d^2*f^2*x^2 + 2*(
a^4 - b^4)*c*d*e*f - ((a^4 - b^4)*c^2 - 2*(a^3*b + a*b^3)*c)*f^2 + 2*((a^4
- b^4)*d^2*e*f + (a^3*b + a*b^3)*d*f^2)*x)*sinh(d*x + c)^4 - ((a^4 - b^4)*c
^2 - 2*(a^3*b + a*b^3)*c)*f^2 - 2*((a^4 - b^4)*d^2*f^2*x^2 + 2*(a^4 - b^4)*
c*d*e*f - ((a^4 - b^4)*c^2 - 2*(a^3*b + a*b^3)*c)*f^2 + 2*((a^4 - b^4)*d^2*
e*f + (a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x + c)^2 - 2*((a^4 - b^4)*d^2*f^2*x^
2 + 2*(a^4 - b^4)*c*d*e*f - ((a^4 - b^4)*c^2 - 2*(a^3*b + a*b^3)*c)*f^2 - 3
*((a^4 - b^4)*d^2*f^2*x^2 + 2*(a^4 - b^4)*c*d*e*f - ((a^4 - b^4)*c^2 - 2*(a
^3*b + a*b^3)*c)*f^2 + 2*((a^4 - b^4)*d^2*e*f + (a^3*b + a*b^3)*d*f^2)*x)*c
osh(d*x + c)^2 + 2*((a^4 - b^4)*d^2*e*f + (a^3*b + a*b^3)*d*f^2)*x)*sinh(d*
x + c)^2 + 2*((a^4 - b^4)*d^2*e*f + (a^3*b + a*b^3)*d*f^2)*x + 4*(((a^4 - b
^4)*d^2*f^2*x^2 + 2*(a^4 - b^4)*c*d*e*f - ((a^4 - b^4)*c^2 - 2*(a^3*b + a*b
^3)*c)*f^2 + 2*((a^4 - b^4)*d^2*e*f + (a^3*b + a*b^3)*d*f^2)*x)*cosh(d*x +
c)^3 - ((a^4 - b^4)*d^2*f^2*x^2 + 2*(a^4 - b^4)*c*d*e*f - ((a^4 - b^4)*c^2
- 2*(a^3*b + a*b^3)*c)*f^2 + 2*((a^4 - b^4)*d^2*e*f + (a^3*b + a*b^3)*d*f^2
)*x)*cosh(d*x + c))*sinh(d*x + c))*log(-cosh(d*x + c) - sinh(d*x + c) + 1)
- 2*(b^4*f^2*cosh(d*x + c)^4 + 4*b^4*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + b^
4*f^2*sinh(d*x + c)^4 - 2*b^4*f^2*cosh(d*x + c)^2 + b^4*f^2 + 2*(3*b^4*f^2*
cosh(d*x + c)^2 - b^4*f^2)*sinh(d*x + c)^2 + 4*(b^4*f^2*cosh(d*x + c)^3 - b
^4*f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d
*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2
*(b^4*f^2*cosh(d*x + c)^4 + 4*b^4*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + b^4*f
^2*sinh(d*x + c)^4 - 2*b^4*f^2*cosh(d*x + c)^2 + b^4*f^2 + 2*(3*b^4*f^2*cos
h(d*x + c)^2 - b^4*f^2)*sinh(d*x + c)^2 + 4*(b^4*f^2*cosh(d*x + c)^3 - b^4*
f^2*cosh(d*x + c))*sinh(d*x + c))*polylog(3, (a*cosh(d*x + c) + a*sinh(d*x
+ c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2))/b) - 2*((
a^4 - b^4)*f^2*cosh(d*x + c)^4 + 4*(a^4 - b^4)*f^2*cosh(d*x + c)*sinh(d*x +
 c)^3 + (a^4 - b^4)*f^2*sinh(d*x + c)^4 - 2*(a^4 - b^4)*f^2*cosh(d*x + c)^2
 + (a^4 - b^4)*f^2 + 2*(3*(a^4 - b^4)*f^2*cosh(d*x + c)^2 - (a^4 - b^4)*f^2
)*sinh(d*x + c)^2 + 4*((a^4 - b^4)*f^2*cosh(d*x + c)^3 - (a^4 - b^4)*f^2*co
sh(d*x + c))*sinh(d*x + c))*polylog(3, cosh(d*x + c) + sinh(d*x + c)) + (2*
a^4*f^2 + 2*I*a^3*b*f^2 + (2*a^4*f^2 + 2*I*a^3*b*f^2)*cosh(d*x + c)^4 + (8*
a^4*f^2 + 8*I*a^3*b*f^2)*cosh(d*x + c)*sinh(d*x + c)^3 + (2*a^4*f^2 + 2*I*a
^3*b*f^2)*sinh(d*x + c)^4 - (4*a^4*f^2 + 4*I*a^3*b*f^2)*cosh(d*x + c)^2 - (
4*a^4*f^2 + 4*I*a^3*b*f^2 - (12*a^4*f^2 + 12*I*a^3*b*f^2)*cosh(d*x + c)^2)*
sinh(d*x + c)^2 + ((8*a^4*f^2 + 8*I*a^3*b*f^2)*cosh(d*x + c)^3 - (8*a^4*f^2
 + 8*I*a^3*b*f^2)*cosh(d*x + c))*sinh(d*x + c))*polylog(3, I*cosh(d*x + c)
+ I*sinh(d*x + c)) + (2*a^4*f^2 - 2*I*a^3*b*f^2 + (2*a^4*f^2 - 2*I*a^3*b*f^
2)*cosh(d*x + c)^4 + (8*a^4*f^2 - 8*I*a^3*b*f^2)*cosh(d*x + c)*sinh(d*x + c
```

```
)^3 + (2*a^4*f^2 - 2*I*a^3*b*f^2)*sinh(d*x + c)^4 - (4*a^4*f^2 - 4*I*a^3*b*
f^2)*cosh(d*x + c)^2 - (4*a^4*f^2 - 4*I*a^3*b*f^2 - (12*a^4*f^2 - 12*I*a^3*
b*f^2)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((8*a^4*f^2 - 8*I*a^3*b*f^2)*cosh
(d*x + c)^3 - (8*a^4*f^2 - 8*I*a^3*b*f^2)*cosh(d*x + c))*sinh(d*x + c))*pol
ylog(3, -I*cosh(d*x + c) - I*sinh(d*x + c)) - 2*((a^4 - b^4)*f^2*cosh(d*x +
 c)^4 + 4*(a^4 - b^4)*f^2*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 - b^4)*f^2*s
inh(d*x + c)^4 - 2*(a^4 - b^4)*f^2*cosh(d*x + c)^2 + (a^4 - b^4)*f^2 + 2*(3
*(a^4 - b^4)*f^2*cosh(d*x + c)^2 - (a^4 - b^4)*f^2)*sinh(d*x + c)^2 + 4*((a
^4 - b^4)*f^2*cosh(d*x + c)^3 - (a^4 - b^4)*f^2*cosh(d*x + c))*sinh(d*x + c
))*polylog(3, -cosh(d*x + c) - sinh(d*x + c)) + 2*((a^3*b + a*b^3)*d^2*f^2*
x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + (a^3*b + a*b^3)*d^2*e^2 + 4*((a^4 + a^2
*b^2)*d*f^2*x + (a^4 + a^2*b^2)*c*f^2)*cosh(d*x + c)^3 - 3*((a^3*b + a*b^3)
*d^2*f^2*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f*x + (a^3*b + a*b^3)*d^2*e^2)*cosh(
d*x + c)^2 + 2*((a^4 + a^2*b^2)*d^2*f^2*x^2 + (a^4 + a^2*b^2)*d^2*e^2 + (a^
4 + a^2*b^2)*d*e*f - 2*(a^4 + a^2*b^2)*c*f^2 + (2*(a^4 + a^2*b^2)*d^2*e*f -
 (a^4 + a^2*b^2)*d*f^2)*x)*cosh(d*x + c))*sinh(d*x + c))/((a^5 + a^3*b^2)*d
^3*cosh(d*x + c)^4 + 4*(a^5 + a^3*b^2)*d^3*cosh(d*x + c)*sinh(d*x + c)^3 +
(a^5 + a^3*b^2)*d^3*sinh(d*x + c)^4 - 2*(a^5 + a^3*b^2)*d^3*cosh(d*x + c)^2
 + (a^5 + a^3*b^2)*d^3 + 2*(3*(a^5 + a^3*b^2)*d^3*cosh(d*x + c)^2 - (a^5 +
a^3*b^2)*d^3)*sinh(d*x + c)^2 + 4*((a^5 + a^3*b^2)*d^3*cosh(d*x + c)^3 - (a
^5 + a^3*b^2)*d^3*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.89, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \operatorname{csch}\left(dx+c\right)^{3} \operatorname{sech}\left(dx+c\right)}{a+b\sinh\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^2*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")

[Out] -(b^4*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^5 + a^3*b^2)*d) +
 2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) - a*log(e^(-2*d*x - 2*c) + 1)/((a
^2 + b^2)*d) + 2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))
/((2*a^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) + (a^2 - b^2)*lo
g(e^(-d*x - c) + 1)/(a^3*d) + (a^2 - b^2)*log(e^(-d*x - c) - 1)/(a^3*d))*e^
2 + 2*(a*f^2*x + a*e*f + (b*d*f^2*x^2*e^(3*c) + 2*b*d*e*f*x*e^(3*c))*e^(3*d
*x) - (a*d*f^2*x^2*e^(2*c) + a*e*f*e^(2*c) + (2*d*e*f + f^2)*a*x*e^(2*c))*e
^(2*d*x) - (b*d*f^2*x^2*e^c + 2*b*d*e*f*x*e^c)*e^(d*x))/(a^2*d^2*e^(4*d*x +
 4*c) - 2*a^2*d^2*e^(2*d*x + 2*c) + a^2*d^2) - (2*b*d*e*f + a*f^2)*x/(a^2*d
^2) + (2*b*d*e*f - a*f^2)*x/(a^2*d^2) + (2*b*d*e*f + a*f^2)*log(e^(d*x + c)
 + 1)/(a^2*d^3) - (2*b*d*e*f - a*f^2)*log(e^(d*x + c) - 1)/(a^2*d^3) - (d^2
*x^2*log(e^(d*x + c) + 1) + 2*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*
x + c)))*(a^2*f^2 - b^2*f^2)/(a^3*d^3) - (d^2*x^2*log(-e^(d*x + c) + 1) + 2
*d*x*dilog(e^(d*x + c)) - 2*polylog(3, e^(d*x + c)))*(a^2*f^2 - b^2*f^2)/(a
^3*d^3) - 2*(a^2*d*e*f - b^2*d*e*f - a*b*f^2)*(d*x*log(e^(d*x + c) + 1) + d
ilog(-e^(d*x + c)))/(a^3*d^3) - 2*(a^2*d*e*f - b^2*d*e*f + a*b*f^2)*(d*x*lo
g(-e^(d*x + c) + 1) + dilog(e^(d*x + c)))/(a^3*d^3) + 1/3*((a^2*f^2 - b^2*f
^2)*d^3*x^3 + 3*(a^2*d*e*f - b^2*d*e*f + a*b*f^2)*d^2*x^2)/(a^3*d^3) + 1/3*
((a^2*f^2 - b^2*f^2)*d^3*x^3 + 3*(a^2*d*e*f - b^2*d*e*f - a*b*f^2)*d^2*x^2)
/(a^3*d^3) + integrate(2*(b^5*f^2*x^2 + 2*b^5*e*f*x - (a*b^4*f^2*x^2*e^c +
2*a*b^4*e*f*x*e^c)*e^(d*x))/(a^5*b + a^3*b^3 - (a^5*b*e^(2*c) + a^3*b^3*e^(
2*c))*e^(2*d*x) - 2*(a^6*e^c + a^4*b^2*e^c)*e^(d*x)), x) + integrate(-2*(a*
f^2*x^2 + 2*a*e*f*x - (b*f^2*x^2*e^c + 2*b*e*f*x*e^c)*e^(d*x))/(a^2 + b^2 +
 (a^2*e^(2*c) + b^2*e^(2*c))*e^(2*d*x)), x)

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^2}{\mathrm{cosh}\left(c+d\,x\right)\,{\mathrm{sinh}\left(c+d\,x\right)}^3\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((e + f*x)^2/(cosh(c + d*x)*sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)

[Out] int((e + f*x)^2/(cosh(c + d*x)*sinh(c + d*x)^3*(a + b*sinh(c + d*x))), x)

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)**3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.493 $\int \frac{(e+fx)\mathrm{csch}^3(c+dx)\mathrm{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=762

$$-\frac{b^2 f \mathrm{Li}_2\left(-e^{2c+2dx}\right)}{2a^3d^2}+\frac{b^2 f \mathrm{Li}_2\left(e^{2c+2dx}\right)}{2a^3d^2}-\frac{2b^2(e+fx)\tanh^{-1}\left(e^{2c+2dx}\right)}{a^3d}+\frac{ib^3 f \mathrm{Li}_2\left(-ie^{c+dx}\right)}{a^2d^2\left(a^2+b^2\right)}-\frac{ib^3 f \mathrm{Li}_2\left(ie^{c+dx}\right)}{a^2d^2\left(a^2+b^2\right)}-\frac{2b^3(e+\ldots}{a\ldots}$$

```
[Out] b*(f*x+e)*arctan(sinh(d*x+c))/a^2/d-2*b^2*(f*x+e)*arctanh(exp(2*d*x+2*c))/a
^3/d+b*f*arctanh(cosh(d*x+c))/a^2/d^2+b*(f*x+e)*csch(d*x+c)/a^2/d-1/2*b^2*f
*polylog(2,-exp(2*d*x+2*c))/a^3/d^2-I*b*f*polylog(2,-I*exp(d*x+c))/a^2/d^2+
2*b*f*x*arctan(exp(d*x+c))/a^2/d-2*b^3*(f*x+e)*arctan(exp(d*x+c))/a^2/(a^2+
b^2)/d-b*f*x*arctan(sinh(d*x+c))/a^2/d+I*b*f*polylog(2,I*exp(d*x+c))/a^2/d^
2+1/2*b^4*f*polylog(2,-exp(2*d*x+2*c))/a^3/(a^2+b^2)/d^2+I*b^3*f*polylog(2,
-I*exp(d*x+c))/a^2/(a^2+b^2)/d^2-I*b^3*f*polylog(2,I*exp(d*x+c))/a^2/(a^2+b
^2)/d^2+1/2*b^2*f*polylog(2,exp(2*d*x+2*c))/a^3/d^2+2*f*x*arctanh(exp(2*d*x
+2*c))/a/d-1/2*(f*x+e)*coth(d*x+c)^2/a/d-1/2*f*coth(d*x+c)/a/d^2+1/2*f*poly
log(2,-exp(2*d*x+2*c))/a/d^2-1/2*f*polylog(2,exp(2*d*x+2*c))/a/d^2+1/2*f*x/
a/d+b^4*(f*x+e)*ln(1+exp(2*d*x+2*c))/a^3/(a^2+b^2)/d-b^4*(f*x+e)*ln(1+b*exp
(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d-b^4*(f*x+e)*ln(1+b*exp(d*x+c)/
(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)/d-b^4*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+
b^2)^(1/2)))/a^3/(a^2+b^2)/d^2-b^4*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(
1/2)))/a^3/(a^2+b^2)/d^2-(f*x+e)*ln(tanh(d*x+c))/a/d+f*x*ln(tanh(d*x+c))/a/
d
```

Rubi [A] time = 1.14, antiderivative size = 762, normalized size of antiderivative = 1.00, number of steps used = 49, number of rules used = 23, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.719$, Rules used = {5589, 2620, 14, 5462, 3473, 8, 2548, 12, 4182, 2279, 2391, 2621, 321, 207, 5203, 4180, 3770, 5461, 5573, 5561, 2190, 6742, 3718}

$$-\frac{b^4 f \mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^3d^2\left(a^2+b^2\right)}-\frac{b^4 f \mathrm{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^3d^2\left(a^2+b^2\right)}+\frac{b^4 f \mathrm{PolyLog}\left(2,-e^{2(c+dx)}\right)}{2a^3d^2\left(a^2+b^2\right)}+\frac{ib^3 f \mathrm{PolyLog}\left(2,-ie^{c+d\ldots}\right)}{a^2d^2\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]^3*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (f*x)/(2*a*d) + (2*b*f*x*ArcTan[E^(c + d*x)])/(a^2*d) - (2*b^3*(e + f*x)*Ar
cTan[E^(c + d*x)])/(a^2*(a^2 + b^2)*d) - (b*f*x*ArcTan[Sinh[c + d*x]])/(a^2
*d) + (b*(e + f*x)*ArcTan[Sinh[c + d*x]])/(a^2*d) + (2*f*x*ArcTanh[E^(2*c +
 2*d*x)])/(a*d) - (2*b^2*(e + f*x)*ArcTanh[E^(2*c + 2*d*x)])/(a^3*d) + (b*f
*ArcTanh[Cosh[c + d*x]])/(a^2*d^2) - (f*Coth[c + d*x])/(2*a*d^2) - ((e + f*
x)*Coth[c + d*x]^2)/(2*a*d) + (b*(e + f*x)*Csch[c + d*x])/(a^2*d) - (b^4*(e
```

```
 + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])]])/(a^3*(a^2 + b^2)*d)
 - (b^4*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])]])/(a^3*(a^2
 + b^2)*d) + (b^4*(e + f*x)*Log[1 + E^(2*(c + d*x))])/(a^3*(a^2 + b^2)*d) +
 (f*x*Log[Tanh[c + d*x]])/(a*d) - ((e + f*x)*Log[Tanh[c + d*x]])/(a*d) - (I
*b*f*PolyLog[2, (-I)*E^(c + d*x)])/(a^2*d^2) + (I*b^3*f*PolyLog[2, (-I)*E^(
c + d*x)])/(a^2*(a^2 + b^2)*d^2) + (I*b*f*PolyLog[2, I*E^(c + d*x)])/(a^2*d
^2) - (I*b^3*f*PolyLog[2, I*E^(c + d*x)])/(a^2*(a^2 + b^2)*d^2) - (b^4*f*Po
lyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))]])/(a^3*(a^2 + b^2)*d^2) -
 (b^4*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]])/(a^3*(a^2 + b
^2)*d^2) + (b^4*f*PolyLog[2, -E^(2*(c + d*x))])/(2*a^3*(a^2 + b^2)*d^2) + (
f*PolyLog[2, -E^(2*c + 2*d*x)])/(2*a*d^2) - (b^2*f*PolyLog[2, -E^(2*c + 2*d
*x)])/(2*a^3*d^2) - (f*PolyLog[2, E^(2*c + 2*d*x)])/(2*a*d^2) + (b^2*f*Poly
Log[2, E^(2*c + 2*d*x)])/(2*a^3*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2548

```
Int[Log[u_], x_Symbol] :> Simp[x*Log[u], x] - Int[SimplifyIntegrand[(x*D[u,
 x])/u, x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
```

```
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 5203

```
Int[ArcTan[u_], x_Symbol] :> Simp[x*ArcTan[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/(1 + u^2), x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\operatorname{csch}^3(c+dx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\operatorname{csch}^3(c+dx)\operatorname{sech}(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\operatorname{csch}^2(c+dx)\operatorname{sech}(c+}{a+b\sinh(c+dx)}}{a}$$

$$= -\frac{(e+fx)\coth^2(c+dx)}{2ad} - \frac{(e+fx)\log(\tanh(c+dx))}{ad} - \frac{b\int (e+fx}{}$$

$$= \frac{b(e+fx)\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{(e+fx)\coth^2(c+dx)}{2ad} + \frac{b(e+fx)}{}$$

$$= \frac{b(e+fx)\tan^{-1}(\sinh(c+dx))}{a^2d} - \frac{f\coth(c+dx)}{2ad^2} - \frac{(e+fx)\coth^2(c}{2ad}$$

$$= \frac{fx}{2ad} + \frac{b^4(e+fx)^2}{2a^3(a^2+b^2)f} - \frac{bfx\tan^{-1}(\sinh(c+dx))}{a^2d} + \frac{b(e+fx)\tan^{-1}}{a^2}$$

$$= \frac{fx}{2ad} + \frac{b^4(e+fx)^2}{2a^3(a^2+b^2)f} - \frac{bfx\tan^{-1}(\sinh(c+dx))}{a^2d} + \frac{b(e+fx)\tan^{-1}}{a^2}$$

$$= \frac{fx}{2ad} + \frac{2bfx\tan^{-1}(e^{c+dx})}{a^2d} - \frac{2b^3(e+fx)\tan^{-1}(e^{c+dx})}{a^2(a^2+b^2)d} - \frac{bfx\tan^{-1}(}{}$$

$$= \frac{fx}{2ad} + \frac{2bfx\tan^{-1}(e^{c+dx})}{a^2d} - \frac{2b^3(e+fx)\tan^{-1}(e^{c+dx})}{a^2(a^2+b^2)d} - \frac{bfx\tan^{-1}(}{}$$

$$= \frac{fx}{2ad} + \frac{2bfx\tan^{-1}(e^{c+dx})}{a^2d} - \frac{2b^3(e+fx)\tan^{-1}(e^{c+dx})}{a^2(a^2+b^2)d} - \frac{bfx\tan^{-1}(}{}$$

$$= \frac{fx}{2ad} + \frac{2bfx\tan^{-1}(e^{c+dx})}{a^2d} - \frac{2b^3(e+fx)\tan^{-1}(e^{c+dx})}{a^2(a^2+b^2)d} - \frac{bfx\tan^{-1}(}{}$$

Mathematica [A] time = 7.73, size = 913, normalized size = 1.20

$$-\frac{\left(-\frac{1}{2}f(c+dx)^2 + f\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)(c+dx) + f\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)(c+dx) + de\log(a+b\sinh(c+dx)) - }{a^3(a^2+b^2)d^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]^3*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x
]
```

```
[Out] ((2*b*d*e*Cosh[(c + d*x)/2] - a*f*Cosh[(c + d*x)/2] - 2*b*c*f*Cosh[(c + d*x
)/2] + 2*b*f*(c + d*x)*Cosh[(c + d*x)/2])*Csch[(c + d*x)/2])/(4*a^2*d^2) +
((-(d*e) + c*f - f*(c + d*x))*Csch[(c + d*x)/2]^2)/(8*a*d^2) - (e*Log[Sinh[
c + d*x]])/(a*d) + (b^2*e*Log[Sinh[c + d*x]])/(a^3*d) + (c*f*Log[Sinh[c + d
*x]])/(a*d^2) - (b^2*c*f*Log[Sinh[c + d*x]])/(a^3*d^2) - (b*f*Log[Tanh[(c +
 d*x)/2]])/(a^2*d^2) + (I*f*(I*(c + d*x)*Log[1 - E^(-2*(c + d*x))] - (I/2)*
(-(c + d*x)^2 + PolyLog[2, E^(-2*(c + d*x))])))/(a*d^2) - (I*b^2*f*(I*(c +
d*x)*Log[1 - E^(-2*(c + d*x))] - (I/2)*(-(c + d*x)^2 + PolyLog[2, E^(-2*(c
+ d*x))])))/(a^3*d^2) - (b^4*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b
*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/
(a + Sqrt[a^2 + b^2])] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[
c + d*x]] + f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLo
g[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(a^3*(a^2 + b^2)*d^2) + (-
(a*d*e*(c + d*x)) + a*c*f*(c + d*x) - (a*f*(c + d*x)^2)/2 + 2*b*d*e*ArcTan[
Cosh[c + d*x] + Sinh[c + d*x]] - 2*b*c*f*ArcTan[Cosh[c + d*x] + Sinh[c + d*
x]] + 2*b*f*(c + d*x)*ArcTan[Cosh[c + d*x] + Sinh[c + d*x]] + a*d*e*Log[1 +
 Cosh[2*(c + d*x)] + Sinh[2*(c + d*x)]] - a*c*f*Log[1 + Cosh[2*(c + d*x)] +
 Sinh[2*(c + d*x)]] + a*f*(c + d*x)*Log[1 + Cosh[2*(c + d*x)] + Sinh[2*(c +
 d*x)]] - I*b*f*PolyLog[2, (-I)*(Cosh[c + d*x] + Sinh[c + d*x])] + I*b*f*Po
lyLog[2, I*(Cosh[c + d*x] + Sinh[c + d*x])] + (a*f*PolyLog[2, -Cosh[2*(c +
d*x)] - Sinh[2*(c + d*x)]])/2)/((a^2 + b^2)*d^2) + ((d*e - c*f + f*(c + d*x
))*Sech[(c + d*x)/2]^2)/(8*a*d^2) + (Sech[(c + d*x)/2]*(-2*b*d*e*Sinh[(c +
d*x)/2] - a*f*Sinh[(c + d*x)/2] + 2*b*c*f*Sinh[(c + d*x)/2] - 2*b*f*(c + d*
x)*Sinh[(c + d*x)/2]))/(4*a^2*d^2)
```

fricas [B] time = 0.73, size = 5767, normalized size = 7.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] (2*((a^3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e)*cosh(d*x + c)^3 + 2*((a^3*
b + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e)*sinh(d*x + c)^3 - (2*(a^4 + a^2*b^2
)*d*f*x + 2*(a^4 + a^2*b^2)*d*e + (a^4 + a^2*b^2)*f)*cosh(d*x + c)^2 - (2*(
a^4 + a^2*b^2)*d*f*x + 2*(a^4 + a^2*b^2)*d*e + (a^4 + a^2*b^2)*f - 6*((a^3*
b + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e)*cosh(d*x + c))*sinh(d*x + c)^2 + (a
^4 + a^2*b^2)*f - 2*((a^3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e)*cosh(d*x
+ c) - (b^4*f*cosh(d*x + c)^4 + 4*b^4*f*cosh(d*x + c)*sinh(d*x + c)^3 + b^4
*f*sinh(d*x + c)^4 - 2*b^4*f*cosh(d*x + c)^2 + b^4*f + 2*(3*b^4*f*cosh(d*x
+ c)^2 - b^4*f)*sinh(d*x + c)^2 + 4*(b^4*f*cosh(d*x + c)^3 - b^4*f*cosh(d*x
```

 + c))*sinh(d*x + c))*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*
x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - (b^4*f*cosh(d
*x + c)^4 + 4*b^4*f*cosh(d*x + c)*sinh(d*x + c)^3 + b^4*f*sinh(d*x + c)^4 -
 2*b^4*f*cosh(d*x + c)^2 + b^4*f + 2*(3*b^4*f*cosh(d*x + c)^2 - b^4*f)*sinh
(d*x + c)^2 + 4*(b^4*f*cosh(d*x + c)^3 - b^4*f*cosh(d*x + c))*sinh(d*x + c)
)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x
+ c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) - ((a^4 - b^4)*f*cosh(d*x + c)^4 +
4*(a^4 - b^4)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 - b^4)*f*sinh(d*x + c)
^4 - 2*(a^4 - b^4)*f*cosh(d*x + c)^2 + 2*(3*(a^4 - b^4)*f*cosh(d*x + c)^2 -
 (a^4 - b^4)*f)*sinh(d*x + c)^2 + (a^4 - b^4)*f + 4*((a^4 - b^4)*f*cosh(d*x
 + c)^3 - (a^4 - b^4)*f*cosh(d*x + c))*sinh(d*x + c))*dilog(cosh(d*x + c) +
 sinh(d*x + c)) + (a^4*f + I*a^3*b*f + (a^4*f + I*a^3*b*f)*cosh(d*x + c)^4
+ (4*a^4*f + 4*I*a^3*b*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4*f + I*a^3*b*
f)*sinh(d*x + c)^4 - (2*a^4*f + 2*I*a^3*b*f)*cosh(d*x + c)^2 - (2*a^4*f + 2
*I*a^3*b*f - (6*a^4*f + 6*I*a^3*b*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((4
*a^4*f + 4*I*a^3*b*f)*cosh(d*x + c)^3 - (4*a^4*f + 4*I*a^3*b*f)*cosh(d*x +
c))*sinh(d*x + c))*dilog(I*cosh(d*x + c) + I*sinh(d*x + c)) + (a^4*f - I*a^
3*b*f + (a^4*f - I*a^3*b*f)*cosh(d*x + c)^4 + (4*a^4*f - 4*I*a^3*b*f)*cosh(
d*x + c)*sinh(d*x + c)^3 + (a^4*f - I*a^3*b*f)*sinh(d*x + c)^4 - (2*a^4*f -
 2*I*a^3*b*f)*cosh(d*x + c)^2 - (2*a^4*f - 2*I*a^3*b*f - (6*a^4*f - 6*I*a^3
*b*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((4*a^4*f - 4*I*a^3*b*f)*cosh(d*x
+ c)^3 - (4*a^4*f - 4*I*a^3*b*f)*cosh(d*x + c))*sinh(d*x + c))*dilog(-I*cos
h(d*x + c) - I*sinh(d*x + c)) - ((a^4 - b^4)*f*cosh(d*x + c)^4 + 4*(a^4 - b
^4)*f*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4 - b^4)*f*sinh(d*x + c)^4 - 2*(a^
4 - b^4)*f*cosh(d*x + c)^2 + 2*(3*(a^4 - b^4)*f*cosh(d*x + c)^2 - (a^4 - b^
4)*f)*sinh(d*x + c)^2 + (a^4 - b^4)*f + 4*((a^4 - b^4)*f*cosh(d*x + c)^3 -
(a^4 - b^4)*f*cosh(d*x + c))*sinh(d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x
 + c)) - (b^4*d*e - b^4*c*f + (b^4*d*e - b^4*c*f)*cosh(d*x + c)^4 + 4*(b^4*
d*e - b^4*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d*e - b^4*c*f)*sinh(d*x
 + c)^4 - 2*(b^4*d*e - b^4*c*f)*cosh(d*x + c)^2 - 2*(b^4*d*e - b^4*c*f - 3*
(b^4*d*e - b^4*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d*e - b^4*c*
f)*cosh(d*x + c)^3 - (b^4*d*e - b^4*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(
2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) -
(b^4*d*e - b^4*c*f + (b^4*d*e - b^4*c*f)*cosh(d*x + c)^4 + 4*(b^4*d*e - b^4
*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d*e - b^4*c*f)*sinh(d*x + c)^4 -
 2*(b^4*d*e - b^4*c*f)*cosh(d*x + c)^2 - 2*(b^4*d*e - b^4*c*f - 3*(b^4*d*e
- b^4*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d*e - b^4*c*f)*cosh(d
*x + c)^3 - (b^4*d*e - b^4*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(2*b*cosh(
d*x + c) + 2*b*sinh(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a) - (b^4*d*f*
x + b^4*c*f + (b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^4 + 4*(b^4*d*f*x + b^4*c*
f)*cosh(d*x + c)*sinh(d*x + c)^3 + (b^4*d*f*x + b^4*c*f)*sinh(d*x + c)^4 -
2*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^2 - 2*(b^4*d*f*x + b^4*c*f - 3*(b^4*d
*f*x + b^4*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*((b^4*d*f*x + b^4*c*f)
*cosh(d*x + c)^3 - (b^4*d*f*x + b^4*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(
-(a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*s

qrt((a^2 + b^2)/b^2) - b)/b) - (b^4*d*f*x + b^4*c*f + (b^4*d*f*x + b^4*c*f)
*cosh(d*x + c)^4 + 4*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 +
(b^4*d*f*x + b^4*c*f)*sinh(d*x + c)^4 - 2*(b^4*d*f*x + b^4*c*f)*cosh(d*x +
c)^2 - 2*(b^4*d*f*x + b^4*c*f - 3*(b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^2)*si
nh(d*x + c)^2 + 4*((b^4*d*f*x + b^4*c*f)*cosh(d*x + c)^3 - (b^4*d*f*x + b^4
*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-(a*cosh(d*x + c) + a*sinh(d*x + c)
 - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2) - b)/b) - (((a
^4 - b^4)*d*f*x + (a^4 - b^4)*d*e - (a^3*b + a*b^3)*f)*cosh(d*x + c)^4 + 4*
((a^4 - b^4)*d*f*x + (a^4 - b^4)*d*e - (a^3*b + a*b^3)*f)*cosh(d*x + c)*sin
h(d*x + c)^3 + ((a^4 - b^4)*d*f*x + (a^4 - b^4)*d*e - (a^3*b + a*b^3)*f)*si
nh(d*x + c)^4 + (a^4 - b^4)*d*f*x + (a^4 - b^4)*d*e - 2*((a^4 - b^4)*d*f*x
+ (a^4 - b^4)*d*e - (a^3*b + a*b^3)*f)*cosh(d*x + c)^2 - 2*((a^4 - b^4)*d*f
*x + (a^4 - b^4)*d*e - 3*((a^4 - b^4)*d*f*x + (a^4 - b^4)*d*e - (a^3*b + a*
b^3)*f)*cosh(d*x + c)^2 - (a^3*b + a*b^3)*f)*sinh(d*x + c)^2 - (a^3*b + a*b
^3)*f + 4*(((a^4 - b^4)*d*f*x + (a^4 - b^4)*d*e - (a^3*b + a*b^3)*f)*cosh(d
*x + c)^3 - ((a^4 - b^4)*d*f*x + (a^4 - b^4)*d*e - (a^3*b + a*b^3)*f)*cosh(
d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) + (a^4*d*e
+ I*a^3*b*d*e - a^4*c*f - I*a^3*b*c*f + (a^4*d*e + I*a^3*b*d*e - a^4*c*f -
I*a^3*b*c*f)*cosh(d*x + c)^4 + (4*a^4*d*e + 4*I*a^3*b*d*e - 4*a^4*c*f - 4*I
*a^3*b*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4*d*e + I*a^3*b*d*e - a^4*c*
f - I*a^3*b*c*f)*sinh(d*x + c)^4 - (2*a^4*d*e + 2*I*a^3*b*d*e - 2*a^4*c*f -
 2*I*a^3*b*c*f)*cosh(d*x + c)^2 - (2*a^4*d*e + 2*I*a^3*b*d*e - 2*a^4*c*f -
2*I*a^3*b*c*f - (6*a^4*d*e + 6*I*a^3*b*d*e - 6*a^4*c*f - 6*I*a^3*b*c*f)*cos
h(d*x + c)^2)*sinh(d*x + c)^2 + ((4*a^4*d*e + 4*I*a^3*b*d*e - 4*a^4*c*f - 4
*I*a^3*b*c*f)*cosh(d*x + c)^3 - (4*a^4*d*e + 4*I*a^3*b*d*e - 4*a^4*c*f - 4*
I*a^3*b*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c
) + I) + (a^4*d*e - I*a^3*b*d*e - a^4*c*f + I*a^3*b*c*f + (a^4*d*e - I*a^3*
b*d*e - a^4*c*f + I*a^3*b*c*f)*cosh(d*x + c)^4 + (4*a^4*d*e - 4*I*a^3*b*d*e
 - 4*a^4*c*f + 4*I*a^3*b*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4*d*e - I*
a^3*b*d*e - a^4*c*f + I*a^3*b*c*f)*sinh(d*x + c)^4 - (2*a^4*d*e - 2*I*a^3*b
*d*e - 2*a^4*c*f + 2*I*a^3*b*c*f)*cosh(d*x + c)^2 - (2*a^4*d*e - 2*I*a^3*b*
d*e - 2*a^4*c*f + 2*I*a^3*b*c*f - (6*a^4*d*e - 6*I*a^3*b*d*e - 6*a^4*c*f +
6*I*a^3*b*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((4*a^4*d*e - 4*I*a^3*b*d
*e - 4*a^4*c*f + 4*I*a^3*b*c*f)*cosh(d*x + c)^3 - (4*a^4*d*e - 4*I*a^3*b*d*
e - 4*a^4*c*f + 4*I*a^3*b*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x +
 c) + sinh(d*x + c) - I) - (((a^4 - b^4)*d*e + (a^3*b + a*b^3 - (a^4 - b^4)
*c)*f)*cosh(d*x + c)^4 + 4*((a^4 - b^4)*d*e + (a^3*b + a*b^3 - (a^4 - b^4)*
c)*f)*cosh(d*x + c)*sinh(d*x + c)^3 + ((a^4 - b^4)*d*e + (a^3*b + a*b^3 - (
a^4 - b^4)*c)*f)*sinh(d*x + c)^4 + (a^4 - b^4)*d*e - 2*((a^4 - b^4)*d*e + (
a^3*b + a*b^3 - (a^4 - b^4)*c)*f)*cosh(d*x + c)^2 - 2*((a^4 - b^4)*d*e - 3*
((a^4 - b^4)*d*e + (a^3*b + a*b^3 - (a^4 - b^4)*c)*f)*cosh(d*x + c)^2 + (a^
3*b + a*b^3 - (a^4 - b^4)*c)*f)*sinh(d*x + c)^2 + (a^3*b + a*b^3 - (a^4 - b
^4)*c)*f + 4*(((a^4 - b^4)*d*e + (a^3*b + a*b^3 - (a^4 - b^4)*c)*f)*cosh(d*
x + c)^3 - ((a^4 - b^4)*d*e + (a^3*b + a*b^3 - (a^4 - b^4)*c)*f)*cosh(d*x +
 c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - 1) + (a^4*d*f*x - I

```
*a^3*b*d*f*x + a^4*c*f - I*a^3*b*c*f + (a^4*d*f*x - I*a^3*b*d*f*x + a^4*c*f
 - I*a^3*b*c*f)*cosh(d*x + c)^4 + (4*a^4*d*f*x - 4*I*a^3*b*d*f*x + 4*a^4*c*
f - 4*I*a^3*b*c*f)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4*d*f*x - I*a^3*b*d*f
*x + a^4*c*f - I*a^3*b*c*f)*sinh(d*x + c)^4 - (2*a^4*d*f*x - 2*I*a^3*b*d*f*
x + 2*a^4*c*f - 2*I*a^3*b*c*f)*cosh(d*x + c)^2 - (2*a^4*d*f*x - 2*I*a^3*b*d
*f*x + 2*a^4*c*f - 2*I*a^3*b*c*f - (6*a^4*d*f*x - 6*I*a^3*b*d*f*x + 6*a^4*c
*f - 6*I*a^3*b*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((4*a^4*d*f*x - 4*I*
a^3*b*d*f*x + 4*a^4*c*f - 4*I*a^3*b*c*f)*cosh(d*x + c)^3 - (4*a^4*d*f*x - 4
*I*a^3*b*d*f*x + 4*a^4*c*f - 4*I*a^3*b*c*f)*cosh(d*x + c))*sinh(d*x + c))*l
og(I*cosh(d*x + c) + I*sinh(d*x + c) + 1) + (a^4*d*f*x + I*a^3*b*d*f*x + a^
4*c*f + I*a^3*b*c*f + (a^4*d*f*x + I*a^3*b*d*f*x + a^4*c*f + I*a^3*b*c*f)*c
osh(d*x + c)^4 + (4*a^4*d*f*x + 4*I*a^3*b*d*f*x + 4*a^4*c*f + 4*I*a^3*b*c*f
)*cosh(d*x + c)*sinh(d*x + c)^3 + (a^4*d*f*x + I*a^3*b*d*f*x + a^4*c*f + I*
a^3*b*c*f)*sinh(d*x + c)^4 - (2*a^4*d*f*x + 2*I*a^3*b*d*f*x + 2*a^4*c*f + 2
*I*a^3*b*c*f)*cosh(d*x + c)^2 - (2*a^4*d*f*x + 2*I*a^3*b*d*f*x + 2*a^4*c*f
+ 2*I*a^3*b*c*f - (6*a^4*d*f*x + 6*I*a^3*b*d*f*x + 6*a^4*c*f + 6*I*a^3*b*c*
f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + ((4*a^4*d*f*x + 4*I*a^3*b*d*f*x + 4*a
^4*c*f + 4*I*a^3*b*c*f)*cosh(d*x + c)^3 - (4*a^4*d*f*x + 4*I*a^3*b*d*f*x +
4*a^4*c*f + 4*I*a^3*b*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-I*cosh(d*x +
c) - I*sinh(d*x + c) + 1) - (((a^4 - b^4)*d*f*x + (a^4 - b^4)*c*f)*cosh(d*x
 + c)^4 + 4*((a^4 - b^4)*d*f*x + (a^4 - b^4)*c*f)*cosh(d*x + c)*sinh(d*x +
c)^3 + ((a^4 - b^4)*d*f*x + (a^4 - b^4)*c*f)*sinh(d*x + c)^4 + (a^4 - b^4)*
d*f*x + (a^4 - b^4)*c*f - 2*((a^4 - b^4)*d*f*x + (a^4 - b^4)*c*f)*cosh(d*x
+ c)^2 - 2*((a^4 - b^4)*d*f*x + (a^4 - b^4)*c*f - 3*((a^4 - b^4)*d*f*x + (a
^4 - b^4)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(((a^4 - b^4)*d*f*x + (
a^4 - b^4)*c*f)*cosh(d*x + c)^3 - ((a^4 - b^4)*d*f*x + (a^4 - b^4)*c*f)*cos
h(d*x + c))*sinh(d*x + c))*log(-cosh(d*x + c) - sinh(d*x + c) + 1) - 2*((a^
3*b + a*b^3)*d*f*x + (a^3*b + a*b^3)*d*e - 3*((a^3*b + a*b^3)*d*f*x + (a^3*
b + a*b^3)*d*e)*cosh(d*x + c)^2 + (2*(a^4 + a^2*b^2)*d*f*x + 2*(a^4 + a^2*b
^2)*d*e + (a^4 + a^2*b^2)*f)*cosh(d*x + c))*sinh(d*x + c))/((a^5 + a^3*b^2)
*d^2*cosh(d*x + c)^4 + 4*(a^5 + a^3*b^2)*d^2*cosh(d*x + c)*sinh(d*x + c)^3
+ (a^5 + a^3*b^2)*d^2*sinh(d*x + c)^4 - 2*(a^5 + a^3*b^2)*d^2*cosh(d*x + c)
^2 + (a^5 + a^3*b^2)*d^2 + 2*(3*(a^5 + a^3*b^2)*d^2*cosh(d*x + c)^2 - (a^5
+ a^3*b^2)*d^2)*sinh(d*x + c)^2 + 4*((a^5 + a^3*b^2)*d^2*cosh(d*x + c)^3 -
(a^5 + a^3*b^2)*d^2*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [B] time = 0.35, size = 1478, normalized size = 1.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/a/d*e*ln(exp(d*x+c)+1)-1/a/d*e*ln(exp(d*x+c)-1)+1/d/a^3*b^2*f*ln(exp(d*x
+c)+1)*x-1/d^2/a^3*b^2*f*c*ln(exp(d*x+c)-1)-1/d^2*f/a*dilog(exp(d*x+c)+1)+1
/d^2*f*dilog(exp(d*x+c))/a-(-2*b*d*f*x*exp(3*d*x+3*c)+2*a*d*f*x*exp(2*d*x+2
*c)-2*b*d*e*exp(3*d*x+3*c)+2*a*d*e*exp(2*d*x+2*c)+2*b*d*f*x*exp(d*x+c)+a*f*
exp(2*d*x+2*c)+2*b*d*e*exp(d*x+c)-a*f)/d^2/a^2/(exp(2*d*x+2*c)-1)^2+1/d^2*b
^2*f/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d^
2/a^3*f*b^4/(a^2+b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2
)))*c-1/d^2/a^3*f*b^4/(a^2+b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a
^2+b^2)^(1/2)))*c+1/d^2/a^3*f*b^4*c/(a^2+b^2)*ln(b*exp(2*d*x+2*c)+2*a*exp(d
*x+c)-b)-1/d/a^3*f*b^4/(a^2+b^2)*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^
2+b^2)^(1/2)))*x-1/d/a^3*f*b^4/(a^2+b^2)*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-
a)/(-a+(a^2+b^2)^(1/2)))*x-4*I/d^2*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*b*c-4
*I/d*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*b*x+4*I/d*f/(4*a^2+4*b^2)*ln(1-I*ex
p(d*x+c))*b*x+4*I/d^2*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*b*c-8/d^2*f*c/(4*a
^2+4*b^2)*b*arctan(exp(d*x+c))-1/a/d*ln(exp(d*x+c)+1)*f*x+1/a/d^2*f*c*ln(ex
p(d*x+c)-1)+4/d*e/(4*a^2+4*b^2)*a*ln(1+exp(2*d*x+2*c))+8/d*e/(4*a^2+4*b^2)*
b*arctan(exp(d*x+c))+4/d^2*f/(4*a^2+4*b^2)*dilog(1+I*exp(d*x+c))*a+4/d^2*f/
(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))*a+4/d*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c)
)*a*x+4/d^2*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*a*c+4/d*f/(4*a^2+4*b^2)*ln(1
-I*exp(d*x+c))*a*x+4/d^2*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*a*c-4/d^2*f*c/(
4*a^2+4*b^2)*a*ln(1+exp(2*d*x+2*c))+1/d/a^3*b^2*e*ln(exp(d*x+c)+1)+1/d/a^3*
b^2*e*ln(exp(d*x+c)-1)+1/d^2/a^3*b^2*f*dilog(exp(d*x+c)+1)-1/d^2/a^3*b^2*f*
dilog(exp(d*x+c))+1/d^2/a^2*b*f*ln(exp(d*x+c)+1)-1/d^2/a^2*b*f*ln(exp(d*x+c
)-1)-1/d^2/a^3*f*b^4/(a^2+b^2)*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a
^2+b^2)^(1/2)))+1/d^2/a^2*f*b^4/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b*exp(d*x+c)
+2*a)/(a^2+b^2)^(1/2))-1/d^2/a^2*f*b^2/(a^2+b^2)^(1/2)*arctanh(1/2*(2*b*exp
(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/d^2/a^3*f*b^4/(a^2+b^2)*dilog((-b*exp(d*x+c
)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))-1/d/a^3*b^4*e/(a^2+b^2)*ln(b*exp
(2*d*x+2*c)+2*a*exp(d*x+c)-b)-4*I/d^2*f/(4*a^2+4*b^2)*dilog(1+I*exp(d*x+c))
*b+4*I/d^2*f/(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))*b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(\frac{b^4\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^5+a^3b^2\right)d}+\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}-\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}+\frac{2\left(be^{(-dx-c)}-ae^{(-2\,dx-2\,c)}\right.}{\left(2\,a^2e^{(-2\,dx-2\,c)}-a^2e^{(-\right.}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -(b^4*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^5 + a^3*b^2)*d) +
 2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) - a*log(e^(-2*d*x - 2*c) + 1)/((a
^2 + b^2)*d) + 2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))
/((2*a^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) + (a^2 - b^2)*lo
g(e^(-d*x - c) + 1)/(a^3*d) + (a^2 - b^2)*log(e^(-d*x - c) - 1)/(a^3*d))*e
+ (16*a^2*d*integrate(1/16*x/(a^3*d*e^(d*x + c) + a^3*d), x) - 16*b^2*d*int
egrate(1/16*x/(a^3*d*e^(d*x + c) + a^3*d), x) - 16*a^2*d*integrate(1/16*x/(
a^3*d*e^(d*x + c) - a^3*d), x) + 16*b^2*d*integrate(1/16*x/(a^3*d*e^(d*x +
c) - a^3*d), x) - a*b*((d*x + c)/(a^3*d^2) - log(e^(d*x + c) + 1)/(a^3*d^2)
) + a*b*((d*x + c)/(a^3*d^2) - log(e^(d*x + c) - 1)/(a^3*d^2)) + (2*b*d*x*e
^(3*d*x + 3*c) - 2*b*d*x*e^(d*x + c) - (2*a*d*x*e^(2*c) + a*e^(2*c))*e^(2*d
*x) + a)/(a^2*d^2*e^(4*d*x + 4*c) - 2*a^2*d^2*e^(2*d*x + 2*c) + a^2*d^2) +
16*integrate(-1/8*(a*b^4*x*e^(d*x + c) - b^5*x)/(a^5*b + a^3*b^3 - (a^5*b*e
^(2*c) + a^3*b^3*e^(2*c))*e^(2*d*x) - 2*(a^6*e^c + a^4*b^2*e^c)*e^(d*x)), x
) + 16*integrate(1/8*(b*x*e^(d*x + c) - a*x)/(a^2 + b^2 + (a^2*e^(2*c) + b^
2*e^(2*c))*e^(2*d*x)), x))*f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{\cosh\left(c+d\,x\right)\,{\sinh\left(c+d\,x\right)}^3\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)*sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)*sinh(c + d*x)^3*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)**3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.494 $\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=130

$$\frac{b\tan^{-1}(\sinh(c+dx))}{d(a^2+b^2)}+\frac{a\log(\cosh(c+dx))}{d(a^2+b^2)}+\frac{b\operatorname{csch}(c+dx)}{a^2d}-\frac{(a^2-b^2)\log(\sinh(c+dx))}{a^3d}-\frac{b^4\log(a+b\sinh(c+dx))}{a^3d(a^2+b^2)}$$

```
[Out] b*arctan(sinh(d*x+c))/(a^2+b^2)/d+b*csch(d*x+c)/a^2/d-1/2*csch(d*x+c)^2/a/d
+a*ln(cosh(d*x+c))/(a^2+b^2)/d-(a^2-b^2)*ln(sinh(d*x+c))/a^3/d-b^4*ln(a+b*s
inh(d*x+c))/a^3/(a^2+b^2)/d
```

Rubi [A] time = 0.24, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2837, 12, 894, 635, 203, 260}

$$-\frac{b^4\log(a+b\sinh(c+dx))}{a^3d(a^2+b^2)}-\frac{(a^2-b^2)\log(\sinh(c+dx))}{a^3d}+\frac{b\tan^{-1}(\sinh(c+dx))}{d(a^2+b^2)}+\frac{a\log(\cosh(c+dx))}{d(a^2+b^2)}+\frac{b\operatorname{csch}(c+dx)}{a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(Csch[c + d*x]^3*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*ArcTan[Sinh[c + d*x]])/((a^2 + b^2)*d) + (b*Csch[c + d*x])/(a^2*d) - Csc
h[c + d*x]^2/(2*a*d) + (a*Log[Cosh[c + d*x]])/((a^2 + b^2)*d) - ((a^2 - b^2
)*Log[Sinh[c + d*x]])/(a^3*d) - (b^4*Log[a + b*Sinh[c + d*x]])/(a^3*(a^2 +
b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}(c+dx)}{a+b\sinh(c+dx)}\,dx = -\frac{b\,\text{Subst}\left(\int \frac{b^3}{x^3(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{b^4\,\text{Subst}\left(\int \frac{1}{x^3(a+x)\left(-b^2-x^2\right)}\,dx, x, b\sinh(c+dx)\right)}{d}$$

$$= -\frac{b^4\,\text{Subst}\left(\int \left(-\frac{1}{ab^2x^3}+\frac{1}{a^2b^2x^2}+\frac{a^2-b^2}{a^3b^4x}+\frac{1}{a^3\left(a^2+b^2\right)(a+x)}+\frac{-b^2-ax}{b^4\left(a^2+b^2\right)\left(b^2+x^2\right)}\right)dx, x,\right.}{d}$$

$$= \frac{b\operatorname{csch}(c+dx)}{a^2d} - \frac{\operatorname{csch}^2(c+dx)}{2ad} - \frac{\left(a^2-b^2\right)\log(\sinh(c+dx))}{a^3d} - \frac{b^4\log(a+b\,}{a^3\left(a^2\right.}$$

$$= \frac{b\operatorname{csch}(c+dx)}{a^2d} - \frac{\operatorname{csch}^2(c+dx)}{2ad} - \frac{\left(a^2-b^2\right)\log(\sinh(c+dx))}{a^3d} - \frac{b^4\log(a+b\,}{a^3\left(a^2\right.}$$

$$= \frac{b\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)d} + \frac{b\operatorname{csch}(c+dx)}{a^2d} - \frac{\operatorname{csch}^2(c+dx)}{2ad} + \frac{a\log(\cosh(c+dx}{\left(a^2+b^2\right)d}$$

Mathematica [A] time = 0.36, size = 164, normalized size = 1.26

$$\frac{-\frac{2(a-b)(a+b)\log(\sinh(c+dx))}{a^3}+\frac{\left(a-\sqrt{-b^2}\right)\log\left(\sqrt{-b^2}-b\sinh(c+dx)\right)}{a^2+b^2}+\frac{\left(a+\sqrt{-b^2}\right)\log\left(\sqrt{-b^2}+b\sinh(c+dx)\right)}{a^2+b^2}+\frac{2b\operatorname{csch}(c+dx)}{a^2}-\frac{2b^4\log(a+b\,\mathrm{si}}{a^3\left(a^2+\right.}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Csch[c + d*x]^3*Sech[c + d*x])/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((2*b*Csch[c + d*x])/a^2 - Csch[c + d*x]^2/a - (2*(a - b)*(a + b)*Log[Sinh[
c + d*x]])/a^3 + ((a - Sqrt[-b^2])*Log[Sqrt[-b^2] - b*Sinh[c + d*x]])/(a^2
+ b^2) - (2*b^4*Log[a + b*Sinh[c + d*x]])/(a^3*(a^2 + b^2)) + ((a + Sqrt[-b
^2])*Log[Sqrt[-b^2] + b*Sinh[c + d*x]])/(a^2 + b^2))/(2*d)
```

fricas [B] time = 0.79, size = 1035, normalized size = 7.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="fricas"
)
```

```
[Out] (2*(a^3*b + a*b^3)*cosh(d*x + c)^3 + 2*(a^3*b + a*b^3)*sinh(d*x + c)^3 - 2*
(a^4 + a^2*b^2)*cosh(d*x + c)^2 - 2*(a^4 + a^2*b^2 - 3*(a^3*b + a*b^3)*cosh
(d*x + c))*sinh(d*x + c)^2 + 2*(a^3*b*cosh(d*x + c)^4 + 4*a^3*b*cosh(d*x +
c)*sinh(d*x + c)^3 + a^3*b*sinh(d*x + c)^4 - 2*a^3*b*cosh(d*x + c)^2 + a^3*
b + 2*(3*a^3*b*cosh(d*x + c)^2 - a^3*b)*sinh(d*x + c)^2 + 4*(a^3*b*cosh(d*x
 + c)^3 - a^3*b*cosh(d*x + c))*sinh(d*x + c))*arctan(cosh(d*x + c) + sinh(d
*x + c)) - 2*(a^3*b + a*b^3)*cosh(d*x + c) - (b^4*cosh(d*x + c)^4 + 4*b^4*c
osh(d*x + c)*sinh(d*x + c)^3 + b^4*sinh(d*x + c)^4 - 2*b^4*cosh(d*x + c)^2
+ b^4 + 2*(3*b^4*cosh(d*x + c)^2 - b^4)*sinh(d*x + c)^2 + 4*(b^4*cosh(d*x +
 c)^3 - b^4*cosh(d*x + c))*sinh(d*x + c))*log(2*(b*sinh(d*x + c) + a)/(cosh
(d*x + c) - sinh(d*x + c))) + (a^4*cosh(d*x + c)^4 + 4*a^4*cosh(d*x + c)*si
nh(d*x + c)^3 + a^4*sinh(d*x + c)^4 - 2*a^4*cosh(d*x + c)^2 + a^4 + 2*(3*a^
4*cosh(d*x + c)^2 - a^4)*sinh(d*x + c)^2 + 4*(a^4*cosh(d*x + c)^3 - a^4*cos
h(d*x + c))*sinh(d*x + c))*log(2*cosh(d*x + c)/(cosh(d*x + c) - sinh(d*x +
c))) - ((a^4 - b^4)*cosh(d*x + c)^4 + 4*(a^4 - b^4)*cosh(d*x + c)*sinh(d*x
+ c)^3 + (a^4 - b^4)*sinh(d*x + c)^4 + a^4 - b^4 - 2*(a^4 - b^4)*cosh(d*x +
 c)^2 - 2*(a^4 - b^4 - 3*(a^4 - b^4)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 4*(
(a^4 - b^4)*cosh(d*x + c)^3 - (a^4 - b^4)*cosh(d*x + c))*sinh(d*x + c))*log
(2*sinh(d*x + c)/(cosh(d*x + c) - sinh(d*x + c))) - 2*(a^3*b + a*b^3 - 3*(a
^3*b + a*b^3)*cosh(d*x + c)^2 + 2*(a^4 + a^2*b^2)*cosh(d*x + c))*sinh(d*x +
 c))/((a^5 + a^3*b^2)*d*cosh(d*x + c)^4 + 4*(a^5 + a^3*b^2)*d*cosh(d*x + c)
*sinh(d*x + c)^3 + (a^5 + a^3*b^2)*d*sinh(d*x + c)^4 - 2*(a^5 + a^3*b^2)*d*
cosh(d*x + c)^2 + 2*(3*(a^5 + a^3*b^2)*d*cosh(d*x + c)^2 - (a^5 + a^3*b^2)*
d)*sinh(d*x + c)^2 + (a^5 + a^3*b^2)*d + 4*((a^5 + a^3*b^2)*d*cosh(d*x + c)
^3 - (a^5 + a^3*b^2)*d*cosh(d*x + c))*sinh(d*x + c))
```

giac [B] time = 2.87, size = 263, normalized size = 2.02

$$-\frac{\frac{2\,b^5\log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{a^5b+a^3b^3}-\frac{\left(\pi+2\,\arctan\left(\frac{1}{2}\,\left(e^{(2\,dx+2\,c)}-1\right)e^{(-dx-c)}\right)\right)b}{a^2+b^2}-\frac{a\log\left(\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+4\right)}{a^2+b^2}+\frac{2\,\left(a^2-b^2\right)\log\left(\left|e^{(dx+c)}-e^{(-dx-c)}\right|\right)}{a^3}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(2*b^5*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/(a^5*b + a^3*b^3
) - (pi + 2*arctan(1/2*(e^(2*d*x + 2*c) - 1)*e^(-d*x - c)))*b/(a^2 + b^2) -
 a*log((e^(d*x + c) - e^(-d*x - c))^2 + 4)/(a^2 + b^2) + 2*(a^2 - b^2)*log(
abs(e^(d*x + c) - e^(-d*x - c)))/a^3 - (3*a^2*(e^(d*x + c) - e^(-d*x - c))^
2 - 3*b^2*(e^(d*x + c) - e^(-d*x - c))^2 + 4*a*b*(e^(d*x + c) - e^(-d*x - c
)) - 4*a^2)/(a^3*(e^(d*x + c) - e^(-d*x - c))^2))/d
```

maple [A] time = 0.00, size = 219, normalized size = 1.68

$$-\frac{\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)}{8da}-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b}{2d\,a^2}-\frac{b^4\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\,a^3\left(a^2+b^2\right)}-\frac{1}{8da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}-\frac{\ln\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/8/d/a*tanh(1/2*d*x+1/2*c)^2-1/2/d/a^2*tanh(1/2*d*x+1/2*c)*b-1/d*b^4/a^3/
(a^2+b^2)*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)-1/8/d/a/tan
h(1/2*d*x+1/2*c)^2-1/d/a*ln(tanh(1/2*d*x+1/2*c))+1/d/a^3*ln(tanh(1/2*d*x+1/
2*c))*b^2+1/2/d*b/a^2/tanh(1/2*d*x+1/2*c)+1/d/(a^2+b^2)*a*ln(tanh(1/2*d*x+1
/2*c)^2+1)+2/d/(a^2+b^2)*b*arctan(tanh(1/2*d*x+1/2*c))
```

maxima [A] time = 0.41, size = 236, normalized size = 1.82

$$-\frac{b^4\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^5+a^3b^2\right)d}-\frac{2\,b\arctan\left(e^{(-dx-c)}\right)}{\left(a^2+b^2\right)d}+\frac{a\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^2+b^2\right)d}-\frac{2\left(be^{(-dx-c)}-ae^{(-2\,dx-2\,c)}-b\right.}{\left(2\,a^2e^{(-2\,dx-2\,c)}-a^2e^{(-4\,dx-}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)/(a+b*sinh(d*x+c)),x, algorithm="maxima"
)
```

```
[Out] -b^4*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^5 + a^3*b^2)*d) -
2*b*arctan(e^(-d*x - c))/((a^2 + b^2)*d) + a*log(e^(-2*d*x - 2*c) + 1)/((a^
2 + b^2)*d) - 2*(b*e^(-d*x - c) - a*e^(-2*d*x - 2*c) - b*e^(-3*d*x - 3*c))/
((2*a^2*e^(-2*d*x - 2*c) - a^2*e^(-4*d*x - 4*c) - a^2)*d) - (a^2 - b^2)*log
(e^(-d*x - c) + 1)/(a^3*d) - (a^2 - b^2)*log(e^(-d*x - c) - 1)/(a^3*d)
```

mupad [B] time = 3.61, size = 196, normalized size = 1.51

$$\frac{\ln\left(\mathrm{e}^{c+d\,x}+1\mathrm{i}\right)}{a\,d-b\,d\,1\mathrm{i}}-\frac{\frac{2}{a\,d}-\frac{2\,b\,\mathrm{e}^{c+d\,x}}{a^2\,d}}{\mathrm{e}^{2\,c+2\,d\,x}-1}-\frac{2}{a\,d\,\left(\mathrm{e}^{4\,c+4\,d\,x}-2\,\mathrm{e}^{2\,c+2\,d\,x}+1\right)}-\frac{b^4\,\ln\left(2\,a\,\mathrm{e}^{c+d\,x}-b+b\,\mathrm{e}^{2\,c+2\,d\,x}\right)}{d\,a^5+d\,a^3\,b^2}-\frac{\ln\left(\mathrm{e}^{2\,c+2\,d\,x}-1\right)}{a^3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
```

```
[Out] log(exp(c + d*x) + 1i)/(a*d - b*d*1i) - (2/(a*d) - (2*b*exp(c + d*x))/(a^2*
d))/(exp(2*c + 2*d*x) - 1) + (log(exp(c + d*x)*1i + 1)*1i)/(a*d*1i - b*d) -
 2/(a*d*(exp(4*c + 4*d*x) - 2*exp(2*c + 2*d*x) + 1)) - (b^4*log(2*a*exp(c +
```

```
 d*x) - b + b*exp(2*c + 2*d*x)))/(a^5*d + a^3*b^2*d) - (log(exp(2*c + 2*d*x
) - 1)*(a^2 - b^2))/(a^3*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3*sech(d*x+c)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.495 $\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=37

$$\operatorname{Int}\left(\frac{\operatorname{csch}^3(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^3*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Csch[c + d*x]^3*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Csch[c + d*x]^3*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x])
), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx = \int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [A] time = 158.10, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Csch[c + d*x]^3*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
,x]
```

```
[Out] Integrate[(Csch[c + d*x]^3*Sech[c + d*x])/((e + f*x)*(a + b*Sinh[c + d*x]))
, x]
```

fricas [A] time = 83.48, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(dx+c)^3\operatorname{sech}(dx+c)}{afx+ae+\left(bfx+be\right)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"fricas")
```

```
[Out] integral(csch(d*x + c)^3*sech(d*x + c)/(a*f*x + a*e + (b*f*x + b*e)*sinh(d*
x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"giac")
```

```
[Out] Timed out
```

maple [A] time = 4.13, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{csch}\left(dx+c\right)^{3}\mathrm{sech}\left(dx+c\right)}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^3*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{af-2\left(bdfxe^{(3c)}+bdee^{(3c)}\right)e^{(3dx)}+\left(2adfxe^{(2c)}+\left(2de-f\right)ae^{(2c)}\right)e^{(2dx)}+2\left(bdfxe^{c}+b\right.}{a^{2}d^{2}f^{2}x^{2}+2a^{2}d^{2}efx+a^{2}d^{2}e^{2}+\left(a^{2}d^{2}f^{2}x^{2}e^{(4c)}+2a^{2}d^{2}efxe^{(4c)}+a^{2}d^{2}e^{2}e^{(4c)}\right)e^{(4dx)}-2\left(a^{2}d^{2}f^{2}x^{2}e^{(2c)}+2a^{2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x, algorithm=
"maxima")
```

```
[Out] -(a*f - 2*(b*d*f*x*e^(3*c) + b*d*e*e^(3*c))*e^(3*d*x) + (2*a*d*f*x*e^(2*c)
+ (2*d*e - f)*a*e^(2*c))*e^(2*d*x) + 2*(b*d*f*x*e^c + b*d*e*e^c)*e^(d*x))/(
a^2*d^2*f^2*x^2 + 2*a^2*d^2*e*f*x + a^2*d^2*e^2 + (a^2*d^2*f^2*x^2*e^(4*c)
+ 2*a^2*d^2*e*f*x*e^(4*c) + a^2*d^2*e^2*e^(4*c))*e^(4*d*x) - 2*(a^2*d^2*f^2
*x^2*e^(2*c) + 2*a^2*d^2*e*f*x*e^(2*c) + a^2*d^2*e^2*e^(2*c))*e^(2*d*x)) -
16*integrate(1/16*(b^2*d^2*e^2 + a*b*d*e*f - (d^2*e^2 - f^2)*a^2 - (a^2*d^2
```

```
*f^2 - b^2*d^2*f^2)*x^2 - (2*a^2*d^2*e*f - 2*b^2*d^2*e*f - a*b*d*f^2)*x)/(a
^3*d^2*f^3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3*d^2*e^2*f*x + a^3*d^2*e^3 - (a
^3*d^2*f^3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c + 3*a^3*d^2*e^2*f*x*e^c + a^3*
d^2*e^3*e^c)*e^(d*x)), x) + 16*integrate(-1/16*(b^2*d^2*e^2 - a*b*d*e*f - (
d^2*e^2 - f^2)*a^2 - (a^2*d^2*f^2 - b^2*d^2*f^2)*x^2 - (2*a^2*d^2*e*f - 2*b
^2*d^2*e*f + a*b*d*f^2)*x)/(a^3*d^2*f^3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3*d
^2*e^2*f*x + a^3*d^2*e^3 + (a^3*d^2*f^3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c +
 3*a^3*d^2*e^2*f*x*e^c + a^3*d^2*e^3*e^c)*e^(d*x)), x) + 16*integrate(-1/8*
(a*b^4*e^(d*x + c) - b^5)/(a^5*b*e + a^3*b^3*e + (a^5*b*f + a^3*b^3*f)*x -
(a^5*b*e*e^(2*c) + a^3*b^3*e*e^(2*c) + (a^5*b*f*e^(2*c) + a^3*b^3*f*e^(2*c)
)*x)*e^(2*d*x) - 2*(a^6*e*e^c + a^4*b^2*e*e^c + (a^6*f*e^c + a^4*b^2*f*e^c)
*x)*e^(d*x)), x) + 16*integrate(1/8*(b*e^(d*x + c) - a)/(a^2*e + b^2*e + (a
^2*f + b^2*f)*x + (a^2*e*e^(2*c) + b^2*e*e^(2*c) + (a^2*f*e^(2*c) + b^2*f*e
^(2*c))*x)*e^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh (c+d\,x)\,\sinh (c+d\,x)^3\,\left(e+f\,x\right)\,\left(a+b\,\sinh (c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)*sinh(c + d*x)^3*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)*sinh(c + d*x)^3*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3*sech(d*x+c)/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.496 $\int \frac{(e+fx)^2\operatorname{csch}^3(c+dx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1245

$$-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^5}{a^3\left(a^2+b^2\right)^{3/2}d}+\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^5}{a^3\left(a^2+b^2\right)^{3/2}d}-\frac{2f(e+fx)\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b^5}{a^3\left(a^2+b^2\right)^{3/2}d^2}+\frac{2f(e+fx)\text{L}}{a^3\left(a^2\right.}$$

```
[Out] -b^3*(f*x+e)^2/a^2/(a^2+b^2)/d+4*f^2*x*arctan(exp(d*x+c))/a/d^2+2*e*f*arcta
n(sinh(d*x+c))/a/d^2+2*b*(f*x+e)^2*coth(2*d*x+2*c)/a^2/d-e*f*csch(d*x+c)/a/
d^2-f^2*x*csch(d*x+c)/a/d^2-1/2*b*f^2*polylog(2,exp(4*d*x+4*c))/a^2/d^3+b^2
*(f*x+e)^2*sech(d*x+c)/a^3/d-1/2*(f*x+e)^2*csch(d*x+c)^2*sech(d*x+c)/a/d-2*
I*f^2*polylog(2,-I*exp(d*x+c))/a/d^3-4*b^2*f*(f*x+e)*arctan(exp(d*x+c))/a^3
/d^2+2*I*f^2*polylog(2,I*exp(d*x+c))/a/d^3+b^3*f^2*polylog(2,-exp(2*d*x+2*c
))/a^2/(a^2+b^2)/d^3-b^4*(f*x+e)^2*sech(d*x+c)/a^3/(a^2+b^2)/d-b^3*(f*x+e)^
2*tanh(d*x+c)/a^2/(a^2+b^2)/d-2*I*b^2*f^2*polylog(2,I*exp(d*x+c))/a^3/d^3+4
*b^4*f*(f*x+e)*arctan(exp(d*x+c))/a^3/(a^2+b^2)/d^2+2*I*b^2*f^2*polylog(2,-
I*exp(d*x+c))/a^3/d^3-2*I*b^4*f^2*polylog(2,-I*exp(d*x+c))/a^3/(a^2+b^2)/d^
3+2*I*b^4*f^2*polylog(2,I*exp(d*x+c))/a^3/(a^2+b^2)/d^3+2*b*(f*x+e)^2/a^2/d
-3/2*(f*x+e)^2*sech(d*x+c)/a/d-2*b^2*(f*x+e)^2*arctanh(exp(d*x+c))/a^3/d+2*
b^2*f^2*polylog(3,-exp(d*x+c))/a^3/d^3-2*b^2*f^2*polylog(3,exp(d*x+c))/a^3/
d^3-2*b^2*f*(f*x+e)*polylog(2,-exp(d*x+c))/a^3/d^2+2*b^2*f*(f*x+e)*polylog(
2,exp(d*x+c))/a^3/d^2+3*f*(f*x+e)*polylog(2,-exp(d*x+c))/a/d^2-3*f*(f*x+e)*
polylog(2,exp(d*x+c))/a/d^2-f^2*arctanh(cosh(d*x+c))/a/d^3+3*(f*x+e)^2*arct
anh(exp(d*x+c))/a/d-3*f^2*polylog(3,-exp(d*x+c))/a/d^3+3*f^2*polylog(3,exp(
d*x+c))/a/d^3-2*b*f*(f*x+e)*ln(1-exp(4*d*x+4*c))/a^2/d^2-b^5*(f*x+e)^2*ln(1
+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)^(3/2)/d+b^5*(f*x+e)^2*ln(1
+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)^(3/2)/d+2*b^5*f^2*polylog(
3,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)^(3/2)/d^3-2*b^5*f^2*poly
log(3,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)^(3/2)/d^3+2*b^3*f*(f
*x+e)*ln(1+exp(2*d*x+2*c))/a^2/(a^2+b^2)/d^2-2*b^5*f*(f*x+e)*polylog(2,-b*e
xp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)^(3/2)/d^2+2*b^5*f*(f*x+e)*poly
log(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)^(3/2)/d^2
```

Rubi [A] time = 3.44, antiderivative size = 1245, normalized size of antiderivative = 1.00, number of steps used = 88, number of rules used = 33, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.917, Rules used = {5589, 2622, 288, 321, 207, 5462, 6688, 12, 6742, 6273, 4182, 2531, 2282, 6589, 4133, 453, 203, 4180, 2279, 2391, 2621, 5203, 3770, 5461, 4184, 3716, 2190, 6741, 5573, 3322, 2264, 3718, 5451}

$$-\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^5}{a^3\left(a^2+b^2\right)^{3/2}d}+\frac{(e+fx)^2\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^5}{a^3\left(a^2+b^2\right)^{3/2}d}-\frac{2f(e+fx)\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)b^5}{a^3\left(a^2+b^2\right)^{3/2}d^2}+\frac{2f(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csch[c + d*x]^3*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (2*b*(e + f*x)^2)/(a^2*d) - (b^3*(e + f*x)^2)/(a^2*(a^2 + b^2)*d) + (4*f^2*
x*ArcTan[E^(c + d*x)])/(a*d^2) - (4*b^2*f*(e + f*x)*ArcTan[E^(c + d*x)])/(a
^3*d^2) + (4*b^4*f*(e + f*x)*ArcTan[E^(c + d*x)])/(a^3*(a^2 + b^2)*d^2) + (
2*e*f*ArcTan[Sinh[c + d*x]])/(a*d^2) + (3*(e + f*x)^2*ArcTanh[E^(c + d*x)])
/(a*d) - (2*b^2*(e + f*x)^2*ArcTanh[E^(c + d*x)])/(a^3*d) - (f^2*ArcTanh[Co
sh[c + d*x]])/(a*d^3) + (2*b*(e + f*x)^2*Coth[2*c + 2*d*x])/(a^2*d) - (e*f*
Csch[c + d*x])/(a*d^2) - (f^2*x*Csch[c + d*x])/(a*d^2) - (b^5*(e + f*x)^2*L
og[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(a^3*(a^2 + b^2)^(3/2)*d) +
(b^5*(e + f*x)^2*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(a^3*(a^2
+ b^2)^(3/2)*d) + (2*b^3*f*(e + f*x)*Log[1 + E^(2*(c + d*x))])/(a^2*(a^2 +
b^2)*d^2) - (2*b*f*(e + f*x)*Log[1 - E^(4*(c + d*x))])/(a^2*d^2) + (3*f*(e
+ f*x)*PolyLog[2, -E^(c + d*x)])/(a*d^2) - (2*b^2*f*(e + f*x)*PolyLog[2, -E
^(c + d*x)])/(a^3*d^2) - ((2*I)*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(a*d^3) +
 ((2*I)*b^2*f^2*PolyLog[2, (-I)*E^(c + d*x)])/(a^3*d^3) - ((2*I)*b^4*f^2*Po
lyLog[2, (-I)*E^(c + d*x)])/(a^3*(a^2 + b^2)*d^3) + ((2*I)*f^2*PolyLog[2, I
*E^(c + d*x)])/(a*d^3) - ((2*I)*b^2*f^2*PolyLog[2, I*E^(c + d*x)])/(a^3*d^3
) + ((2*I)*b^4*f^2*PolyLog[2, I*E^(c + d*x)])/(a^3*(a^2 + b^2)*d^3) - (3*f*
(e + f*x)*PolyLog[2, E^(c + d*x)])/(a*d^2) + (2*b^2*f*(e + f*x)*PolyLog[2,
E^(c + d*x)])/(a^3*d^2) - (2*b^5*f*(e + f*x)*PolyLog[2, -((b*E^(c + d*x))/(
a - Sqrt[a^2 + b^2]))])/(a^3*(a^2 + b^2)^(3/2)*d^2) + (2*b^5*f*(e + f*x)*Po
lyLog[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*(a^2 + b^2)^(3/2)*
d^2) + (b^3*f^2*PolyLog[2, -E^(2*(c + d*x))])/(a^2*(a^2 + b^2)*d^3) - (b*f^
2*PolyLog[2, E^(4*(c + d*x))])/(2*a^2*d^3) - (3*f^2*PolyLog[3, -E^(c + d*x)
])/(a*d^3) + (2*b^2*f^2*PolyLog[3, -E^(c + d*x)])/(a^3*d^3) + (3*f^2*PolyLo
g[3, E^(c + d*x)])/(a*d^3) - (2*b^2*f^2*PolyLog[3, E^(c + d*x)])/(a^3*d^3)
+ (2*b^5*f^2*PolyLog[3, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/(a^3*(a^
2 + b^2)^(3/2)*d^3) - (2*b^5*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2
 + b^2]))])/(a^3*(a^2 + b^2)^(3/2)*d^3) - (3*(e + f*x)^2*Sech[c + d*x])/(2*
a*d) + (b^2*(e + f*x)^2*Sech[c + d*x])/(a^3*d) - (b^4*(e + f*x)^2*Sech[c +
d*x])/(a^3*(a^2 + b^2)*d) - ((e + f*x)^2*Csch[c + d*x]^2*Sech[c + d*x])/(2*
a*d) - (b^3*(e + f*x)^2*Tanh[c + d*x])/(a^2*(a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 453

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(c*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*e*(m + 1)),
 x] + Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(a*e^n*(m + 1)), Int[(e*
x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b*c
 - a*d, 0] && (IntegerQ[n] || GtQ[e, 0]) && ((GtQ[n, 0] && LtQ[m, -1]) || (
LtQ[n, 0] && GtQ[m + n, -1])) &&  !ILtQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
```

```
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3716

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_
.)*(x_)], x_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2
*I, Int[((c + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(E^(2*I*k*Pi)*(1 + E^(2*(-(I*
e) + f*fz*x))/E^(2*I*k*Pi))), x], x] /; FreeQ[{c, d, e, f, fz}, x] && Integ
erQ[4*k] && IGtQ[m, 0]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4133

```
Int[((a_) + (b_.)*sec[(e_.) + (f_.)*(x_)]^(n_))^(p_.)*sin[(e_.) + (f_.)*(x_
)]^(m_.), x_Symbol] :> With[{ff = FreeFactors[Cos[e + f*x], x]}, -Dist[ff/f
, Subst[Int[((1 - ff^2*x^2)^((m - 1)/2)*(b + a*(ff*x)^n)^p)/(ff*x)^(n*p), x
], x, Cos[e + f*x]/ff], x]] /; FreeQ[{a, b, e, f}, x] && IntegerQ[(m - 1)/2
] && IntegerQ[n] && IntegerQ[p]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5203

```
Int[ArcTan[u_], x_Symbol] :> Simp[x*ArcTan[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/(1 + u^2), x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
```

```
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6273

```
Int[((a_.) + ArcTanh[u_]*(b_.))*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*(a + b*ArcTanh[u]))/(d*(m + 1)), x] - Dist[b/(d*(m +
1)), Int[SimplifyIntegrand[((c + d*x)^(m + 1)*D[u, x])/(1 - u^2), x], x], x
] /; FreeQ[{a, b, c, d, m}, x] && NeQ[m, -1] && InverseFunctionFreeQ[u, x]
&&  !FunctionOfQ[(c + d*x)^(m + 1), u, x] && FalseQ[PowerVariableExpn[u, m
+ 1, x]]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\text{csch}^3(c+dx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)^2\text{csch}^3(c+dx)\text{sech}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\text{csch}^2(c+dx)\text{sech}}{a+b\sinh(c+dx)}}{a}$$

$$= \frac{3(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{2ad} - \frac{3(e+fx)^2\text{sech}(c+dx)}{2ad} - \frac{(e+}{}$$

$$= \frac{3(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{2ad} - \frac{3(e+fx)^2\text{sech}(c+dx)}{2ad} - \frac{(e+}{}$$

$$= \frac{3(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{2ad} - \frac{b^2(e+fx)^2\tanh^{-1}(\cosh(c+dx}{a^3d}$$

$$= \frac{2b(e+fx)^2}{a^2d} + \frac{3(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{2ad} - \frac{b^2(e+fx)^2\tanh}{a}$$

$$= \frac{2b(e+fx)^2}{a^2d} + \frac{3(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{2ad} - \frac{b^2(e+fx)^2\tanh}{a}$$

$$= \frac{2b(e+fx)^2}{a^2d} - \frac{b^2(e+fx)^2\tanh^{-1}(\cosh(c+dx))}{a^3d} + \frac{2b(e+fx)^2\coth}{a^2d}$$

$$= \frac{2b(e+fx)^2}{a^2d} - \frac{b^3(e+fx)^2}{a^2\left(a^2+b^2\right)d} + \frac{4b^4f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^3\left(a^2+b^2\right)d^2} - \frac{b^2(e+}{}$$

$$= \frac{2b(e+fx)^2}{a^2d} - \frac{b^3(e+fx)^2}{a^2\left(a^2+b^2\right)d} - \frac{4b^2f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^3d^2} + \frac{4b^4f(}{}$$

$$= \frac{2b(e+fx)^2}{a^2d} - \frac{b^3(e+fx)^2}{a^2\left(a^2+b^2\right)d} - \frac{4b^2f(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^3d^2} + \frac{4b^4f(}{}$$

$$= \frac{2b(e+fx)^2}{a^2d} - \frac{b^3(e+fx)^2}{a^2\left(a^2+b^2\right)d} + \frac{6f^2x\tan^{-1}\left(e^{c+dx}\right)}{ad^2} - \frac{4b^2f(e+fx)\text{t}}{a^3d}$$

$$= \frac{2b(e+fx)^2}{a^2d} - \frac{b^3(e+fx)^2}{a^2\left(a^2+b^2\right)d} + \frac{6f^2x\tan^{-1}\left(e^{c+dx}\right)}{ad^2} - \frac{4b^2f(e+fx)\text{t}}{a^3d}$$

$$= \frac{2b(e+fx)^2}{a^2d} - \frac{b^3(e+fx)^2}{a^2\left(a^2+b^2\right)d} + \frac{6f^2x\tan^{-1}\left(e^{c+dx}\right)}{ad^2} - \frac{4b^2f(e+fx)\text{t}}{a^3d}$$

$$= \frac{2b(e+fx)^2}{} - \frac{b^3(e+fx)^2}{} + \frac{6f^2x\tan^{-1}\left(e^{c+dx}\right)}{} - \frac{4b^2f(e+fx)\text{t}}{}$$

Mathematica [B] time = 27.06, size = 2574, normalized size = 2.07

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Csch[c + d*x]^3*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x
]),x]
```

```
[Out] (8*a*b*d^2*e*E^(2*c)*f*x + 4*a*b*d^2*E^(2*c)*f^2*x^2 - 6*a^2*d^2*e^2*ArcTan
h[E^(c + d*x)] + 4*b^2*d^2*e^2*ArcTanh[E^(c + d*x)] + 6*a^2*d^2*e^2*E^(2*c)
*ArcTanh[E^(c + d*x)] - 4*b^2*d^2*e^2*E^(2*c)*ArcTanh[E^(c + d*x)] + 4*a^2*
f^2*ArcTanh[E^(c + d*x)] - 4*a^2*E^(2*c)*f^2*ArcTanh[E^(c + d*x)] + 6*a^2*d
^2*e*f*x*Log[1 - E^(c + d*x)] - 4*b^2*d^2*e*f*x*Log[1 - E^(c + d*x)] - 6*a^
2*d^2*e*E^(2*c)*f*x*Log[1 - E^(c + d*x)] + 4*b^2*d^2*e*E^(2*c)*f*x*Log[1 -
E^(c + d*x)] + 3*a^2*d^2*f^2*x^2*Log[1 - E^(c + d*x)] - 2*b^2*d^2*f^2*x^2*L
og[1 - E^(c + d*x)] - 3*a^2*d^2*E^(2*c)*f^2*x^2*Log[1 - E^(c + d*x)] + 2*b^
2*d^2*E^(2*c)*f^2*x^2*Log[1 - E^(c + d*x)] - 6*a^2*d^2*e*f*x*Log[1 + E^(c +
 d*x)] + 4*b^2*d^2*e*f*x*Log[1 + E^(c + d*x)] + 6*a^2*d^2*e*E^(2*c)*f*x*Log
[1 + E^(c + d*x)] - 4*b^2*d^2*e*E^(2*c)*f*x*Log[1 + E^(c + d*x)] - 3*a^2*d^
2*f^2*x^2*Log[1 + E^(c + d*x)] + 2*b^2*d^2*f^2*x^2*Log[1 + E^(c + d*x)] + 3
*a^2*d^2*E^(2*c)*f^2*x^2*Log[1 + E^(c + d*x)] - 2*b^2*d^2*E^(2*c)*f^2*x^2*L
og[1 + E^(c + d*x)] + 4*a*b*d*e*f*Log[1 - E^(2*(c + d*x))] - 4*a*b*d*e*E^(2
*c)*f*Log[1 - E^(2*(c + d*x))] + 4*a*b*d*f^2*x*Log[1 - E^(2*(c + d*x))] - 4
*a*b*d*E^(2*c)*f^2*x*Log[1 - E^(2*(c + d*x))] + 2*(3*a^2 - 2*b^2)*d*(-1 + E
^(2*c))*f*(e + f*x)*PolyLog[2, -E^(c + d*x)] - 2*(3*a^2 - 2*b^2)*d*(-1 + E^
(2*c))*f*(e + f*x)*PolyLog[2, E^(c + d*x)] + 2*a*b*f^2*PolyLog[2, E^(2*(c +
 d*x))] - 2*a*b*E^(2*c)*f^2*PolyLog[2, E^(2*(c + d*x))] + 6*a^2*f^2*PolyLog
[3, -E^(c + d*x)] - 4*b^2*f^2*PolyLog[3, -E^(c + d*x)] - 6*a^2*E^(2*c)*f^2*
PolyLog[3, -E^(c + d*x)] + 4*b^2*E^(2*c)*f^2*PolyLog[3, -E^(c + d*x)] - 6*a
^2*f^2*PolyLog[3, E^(c + d*x)] + 4*b^2*f^2*PolyLog[3, E^(c + d*x)] + 6*a^2*
E^(2*c)*f^2*PolyLog[3, E^(c + d*x)] - 4*b^2*E^(2*c)*f^2*PolyLog[3, E^(c + d
*x)])/(2*a^3*d^3*(-1 + E^(2*c))) + (b^5*(2*d^2*e^2*ArcTanh[(a + b*E^(c + d*
x))/Sqrt[a^2 + b^2]] - 2*d^2*e*f*x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 +
b^2])] - d^2*f^2*x^2*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])] + 2*d^2
*e*f*x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] + d^2*f^2*x^2*Log[1 +
 (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - 2*d*f*(e + f*x)*PolyLog[2, (b*E^(
c + d*x))/(-a + Sqrt[a^2 + b^2])] + 2*d*f*(e + f*x)*PolyLog[2, -((b*E^(c +
d*x))/(a + Sqrt[a^2 + b^2]))] + 2*f^2*PolyLog[3, (b*E^(c + d*x))/(-a + Sqrt
[a^2 + b^2])] - 2*f^2*PolyLog[3, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))])
)/(a^3*(a^2 + b^2)^(3/2)*d^3) - (2*b*e*f*Sech[c]*(Cosh[c]*Log[Cosh[c]*Cosh[
d*x] + Sinh[c]*Sinh[d*x]] - d*x*Sinh[c]))/((a^2 + b^2)*d^2*(Cosh[c]^2 - Sin
h[c]^2)) + (4*a*e*f*ArcTan[(Sinh[c] + Cosh[c]*Tanh[(d*x)/2])/Sqrt[Cosh[c]^2
 - Sinh[c]^2]])/((a^2 + b^2)*d^2*Sqrt[Cosh[c]^2 - Sinh[c]^2]) - (b*f^2*Csch
[c]*((d^2*x^2)/E^ArcTanh[Coth[c]] - (I*Coth[c]*(-(d*x*(-Pi + (2*I)*ArcTanh[
```

```
Coth[c]])) - Pi*Log[1 + E^(2*d*x)] - 2*(I*d*x + I*ArcTanh[Coth[c]])*Log[1 -
 E^((2*I)*(I*d*x + I*ArcTanh[Coth[c]]))] + Pi*Log[Cosh[d*x]] + (2*I)*ArcTan
h[Coth[c]]*Log[I*Sinh[d*x + ArcTanh[Coth[c]]]] + I*PolyLog[2, E^((2*I)*(I*d
*x + I*ArcTanh[Coth[c]]))]))/Sqrt[1 - Coth[c]^2])*Sech[c])/((a^2 + b^2)*d^3
*Sqrt[Csch[c]^2*(-Cosh[c]^2 + Sinh[c]^2)]) + (2*a*f^2*(((-I)*Csch[c]*(I*(d*
x + ArcTanh[Coth[c]])*(Log[1 - E^(-(d*x) - ArcTanh[Coth[c]])] - Log[1 + E^(
-(d*x) - ArcTanh[Coth[c]])]) + I*(PolyLog[2, -E^(-(d*x) - ArcTanh[Coth[c]])
] - PolyLog[2, E^(-(d*x) - ArcTanh[Coth[c]])])))/Sqrt[1 - Coth[c]^2] - (2*A
rcTan[(Sinh[c] + Cosh[c]*Tanh[(d*x)/2])/Sqrt[Cosh[c]^2 - Sinh[c]^2]]*ArcTan
h[Coth[c]])/Sqrt[Cosh[c]^2 - Sinh[c]^2]))/((a^2 + b^2)*d^3) + (Csch[c]*Csch
[c + d*x]^2*Sech[c]*Sech[c + d*x]*(2*a^3*e*f*Cosh[2*d*x] + 2*a*b^2*e*f*Cosh
[2*d*x] + 2*a^3*f^2*x*Cosh[2*d*x] + 2*a*b^2*f^2*x*Cosh[2*d*x] + 4*a^2*b*d*e
^2*Cosh[c - d*x] + 8*a^2*b*d*e*f*x*Cosh[c - d*x] + 4*a^2*b*d*f^2*x^2*Cosh[c
 - d*x] + 2*b^3*d*e^2*Cosh[c + d*x] + 4*b^3*d*e*f*x*Cosh[c + d*x] + 2*b^3*d
*f^2*x^2*Cosh[c + d*x] + 2*b^3*d*e^2*Cosh[3*c + d*x] + 4*b^3*d*e*f*x*Cosh[3
*c + d*x] + 2*b^3*d*f^2*x^2*Cosh[3*c + d*x] - 2*a^3*e*f*Cosh[4*c + 2*d*x] -
 2*a*b^2*e*f*Cosh[4*c + 2*d*x] - 2*a^3*f^2*x*Cosh[4*c + 2*d*x] - 2*a*b^2*f^
2*x*Cosh[4*c + 2*d*x] - 4*a^2*b*d*e^2*Cosh[c + 3*d*x] - 2*b^3*d*e^2*Cosh[c
+ 3*d*x] - 8*a^2*b*d*e*f*x*Cosh[c + 3*d*x] - 4*b^3*d*e*f*x*Cosh[c + 3*d*x]
- 4*a^2*b*d*f^2*x^2*Cosh[c + 3*d*x] - 2*b^3*d*f^2*x^2*Cosh[c + 3*d*x] - 2*b
^3*d*e^2*Cosh[3*c + 3*d*x] - 4*b^3*d*e*f*x*Cosh[3*c + 3*d*x] - 2*b^3*d*f^2*
x^2*Cosh[3*c + 3*d*x] + 2*a^3*d*e^2*Sinh[2*c] - 2*a*b^2*d*e^2*Sinh[2*c] + 4
*a^3*d*e*f*x*Sinh[2*c] - 4*a*b^2*d*e*f*x*Sinh[2*c] + 2*a^3*d*f^2*x^2*Sinh[2
*c] - 2*a*b^2*d*f^2*x^2*Sinh[2*c] + 3*a^3*d*e^2*Sinh[2*d*x] + a*b^2*d*e^2*S
inh[2*d*x] + 6*a^3*d*e*f*x*Sinh[2*d*x] + 2*a*b^2*d*e*f*x*Sinh[2*d*x] + 3*a^
3*d*f^2*x^2*Sinh[2*d*x] + a*b^2*d*f^2*x^2*Sinh[2*d*x] - 3*a^3*d*e^2*Sinh[4*
c + 2*d*x] - a*b^2*d*e^2*Sinh[4*c + 2*d*x] - 6*a^3*d*e*f*x*Sinh[4*c + 2*d*x
] - 2*a*b^2*d*e*f*x*Sinh[4*c + 2*d*x] - 3*a^3*d*f^2*x^2*Sinh[4*c + 2*d*x] -
 a*b^2*d*f^2*x^2*Sinh[4*c + 2*d*x]))/(16*a^2*(a^2 + b^2)*d^2)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="giac")
```

```
[Out] Timed out
```

maple [F] time = 5.70, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \operatorname{csch}(dx+c)^3 \operatorname{sech}(dx+c)^2}{a+b\sinh(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algori
thm="maxima")
```

```
[Out] 2*b*e*f*(2*(d*x + c)/((a^2 + b^2)*d^2) - log(e^(2*d*x + 2*c) + 1)/((a^2 + b
^2)*d^2)) + 4*a*f^2*integrate(x*e^(d*x + c)/(a^2*d*e^(2*d*x + 2*c) + b^2*d*
e^(2*d*x + 2*c) + a^2*d + b^2*d), x) + 4*b*f^2*integrate(x/(a^2*d*e^(2*d*x
+ 2*c) + b^2*d*e^(2*d*x + 2*c) + a^2*d + b^2*d), x) - 1/2*(2*b^5*log((b*e^(
-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(a^2 + b^2)))/((
a^5 + a^3*b^2)*sqrt(a^2 + b^2)*d) + 2*(4*a^2*b*e^(-2*d*x - 2*c) + 2*b^3*e^(
-4*d*x - 4*c) - 4*a^2*b - 2*b^3 + (3*a^3 + a*b^2)*e^(-d*x - c) - 2*(a^3 - a
*b^2)*e^(-3*d*x - 3*c) + (3*a^3 + a*b^2)*e^(-5*d*x - 5*c))/((a^4 + a^2*b^2
- (a^4 + a^2*b^2)*e^(-2*d*x - 2*c) - (a^4 + a^2*b^2)*e^(-4*d*x - 4*c) + (a^
4 + a^2*b^2)*e^(-6*d*x - 6*c))*d) - (3*a^2 - 2*b^2)*log(e^(-d*x - c) + 1)/(
a^3*d) + (3*a^2 - 2*b^2)*log(e^(-d*x - c) - 1)/(a^3*d))*e^2 + 4*a*e*f*arcta
n(e^(d*x + c))/((a^2 + b^2)*d^2) - (2*(2*a^2*b*d*f^2 + b^3*d*f^2)*x^2 + 4*(
2*a^2*b*d*e*f + b^3*d*e*f)*x + (2*a^3*e*f*e^(5*c) + 2*a*b^2*e*f*e^(5*c) + (
3*a^3*d*f^2*e^(5*c) + a*b^2*d*f^2*e^(5*c))*x^2 + 2*((3*d*e*f + f^2)*a^3*e^(
5*c) + (d*e*f + f^2)*a*b^2*e^(5*c))*x)*e^(5*d*x) - 2*(b^3*d*f^2*x^2*e^(4*c)
 + 2*b^3*d*e*f*x*e^(4*c))*e^(4*d*x) - 2*((a^3*d*f^2*e^(3*c) - a*b^2*d*f^2*e
^(3*c))*x^2 + 2*(a^3*d*e*f*e^(3*c) - a*b^2*d*e*f*e^(3*c))*x)*e^(3*d*x) - 4*
(a^2*b*d*f^2*x^2*e^(2*c) + 2*a^2*b*d*e*f*x*e^(2*c))*e^(2*d*x) - (2*a^3*e*f*
e^c + 2*a*b^2*e*f*e^c - (3*a^3*d*f^2*e^c + a*b^2*d*f^2*e^c)*x^2 - 2*((3*d*e
*f - f^2)*a^3*e^c + (d*e*f - f^2)*a*b^2*e^c)*x)*e^(d*x))/(a^4*d^2 + a^2*b^2
*d^2 + (a^4*d^2*e^(6*c) + a^2*b^2*d^2*e^(6*c))*e^(6*d*x) - (a^4*d^2*e^(4*c)
```

```
 + a^2*b^2*d^2*e^(4*c))*e^(4*d*x) - (a^4*d^2*e^(2*c) + a^2*b^2*d^2*e^(2*c))
*e^(2*d*x)) + (2*b*d*e*f + a*f^2)*x/(a^2*d^2) + (2*b*d*e*f - a*f^2)*x/(a^2*
d^2) - (2*b*d*e*f + a*f^2)*log(e^(d*x + c) + 1)/(a^2*d^3) - (2*b*d*e*f - a*
f^2)*log(e^(d*x + c) - 1)/(a^2*d^3) + 1/2*(d^2*x^2*log(e^(d*x + c) + 1) + 2
*d*x*dilog(-e^(d*x + c)) - 2*polylog(3, -e^(d*x + c)))*(3*a^2*f^2 - 2*b^2*f
^2)/(a^3*d^3) - 1/2*(d^2*x^2*log(-e^(d*x + c) + 1) + 2*d*x*dilog(e^(d*x + c
)) - 2*polylog(3, e^(d*x + c)))*(3*a^2*f^2 - 2*b^2*f^2)/(a^3*d^3) + (3*a^2*
d*e*f - 2*b^2*d*e*f - 2*a*b*f^2)*(d*x*log(e^(d*x + c) + 1) + dilog(-e^(d*x
+ c)))/(a^3*d^3) - (3*a^2*d*e*f - 2*b^2*d*e*f + 2*a*b*f^2)*(d*x*log(-e^(d*x
 + c) + 1) + dilog(e^(d*x + c)))/(a^3*d^3) + 1/6*((3*a^2*f^2 - 2*b^2*f^2)*d
^3*x^3 + 3*(3*a^2*d*e*f - 2*b^2*d*e*f + 2*a*b*f^2)*d^2*x^2)/(a^3*d^3) - 1/6
*((3*a^2*f^2 - 2*b^2*f^2)*d^3*x^3 + 3*(3*a^2*d*e*f - 2*b^2*d*e*f - 2*a*b*f^
2)*d^2*x^2)/(a^3*d^3) - integrate(-2*(b^5*f^2*x^2*e^c + 2*b^5*e*f*x*e^c)*e^
(d*x)/(a^5*b + a^3*b^3 - (a^5*b*e^(2*c) + a^3*b^3*e^(2*c))*e^(2*d*x) - 2*(a
^6*e^c + a^4*b^2*e^c)*e^(d*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e+f\,x\right)^2}{{\mathrm{cosh}\left(c+d\,x\right)}^2\,{\mathrm{sinh}\left(c+d\,x\right)}^3\,\left(a+b\,\mathrm{sinh}\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cosh(c + d*x)^2*sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
[Out] int((e + f*x)^2/(cosh(c + d*x)^2*sinh(c + d*x)^3*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csch(d*x+c)**3*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.497 $\int \frac{(e+fx)\mathbf{csch}^3(c+dx)\mathbf{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=699

$$-\frac{b^2f\text{Li}_2\left(-e^{c+dx}\right)}{a^3d^2}+\frac{b^2f\text{Li}_2\left(e^{c+dx}\right)}{a^3d^2}-\frac{b^2f\tan^{-1}(\sinh(c+dx))}{a^3d^2}+\frac{b^2(e+fx)\text{sech}(c+dx)}{a^3d}-\frac{b^2(e+fx)\tanh^{-1}(\cosh(c$$

```
[Out] 2*b*(f*x+e)*coth(2*d*x+2*c)/a^2/d-1/2*(f*x+e)*csch(d*x+c)^2*sech(d*x+c)/a/d
-3/2*f*x*arctanh(cosh(d*x+c))/a/d-2*b^2*f*x*arctanh(exp(d*x+c))/a^3/d+3*f*x
*arctanh(exp(d*x+c))/a/d+3/2*(f*x+e)*arctanh(cosh(d*x+c))/a/d-3/2*(f*x+e)*s
ech(d*x+c)/a/d+f*arctan(sinh(d*x+c))/a/d^2-1/2*f*csch(d*x+c)/a/d^2+3/2*f*po
lylog(2,-exp(d*x+c))/a/d^2-3/2*f*polylog(2,exp(d*x+c))/a/d^2+b^3*f*ln(cosh(
d*x+c))/a^2/(a^2+b^2)/d^2-b^5*(f*x+e)*ln(1+b*exp(d*x+c)/(a-(a^2+b^2)^(1/2))
)/a^3/(a^2+b^2)^(3/2)/d+b^5*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/
a^3/(a^2+b^2)^(3/2)/d-b^5*f*polylog(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^
3/(a^2+b^2)^(3/2)/d^2+b^5*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^
3/(a^2+b^2)^(3/2)/d^2-b^4*(f*x+e)*sech(d*x+c)/a^3/(a^2+b^2)/d-b^3*(f*x+e)*t
anh(d*x+c)/a^2/(a^2+b^2)/d+b^4*f*arctan(sinh(d*x+c))/a^3/(a^2+b^2)/d^2+b^2*
f*x*arctanh(cosh(d*x+c))/a^3/d-b^2*(f*x+e)*arctanh(cosh(d*x+c))/a^3/d-b*f*l
n(sinh(2*d*x+2*c))/a^2/d^2+b^2*(f*x+e)*sech(d*x+c)/a^3/d-b^2*f*arctan(sinh(
d*x+c))/a^3/d^2-b^2*f*polylog(2,-exp(d*x+c))/a^3/d^2+b^2*f*polylog(2,exp(d*
x+c))/a^3/d^2
```

Rubi [A] time = 1.36, antiderivative size = 699, normalized size of antiderivative = 1.00, number of steps used = 44, number of rules used = 22, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.647, Rules used = {5589, 2622, 288, 321, 207, 5462, 6271, 12, 4182, 2279, 2391, 3770, 2621, 5461, 4184, 3475, 5573, 3322, 2264, 2190, 6742, 5451}

$$-\frac{b^5f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{a^3d^2\left(a^2+b^2\right)^{3/2}}+\frac{b^5f\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{a^3d^2\left(a^2+b^2\right)^{3/2}}-\frac{b^2f\text{PolyLog}\left(2,-e^{c+dx}\right)}{a^3d^2}+\frac{b^2f\text{PolyLog}\left(2,e^{c+dx}\right)}{a^3d^2}+$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]^3*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (f*ArcTan[Sinh[c + d*x]])/(a*d^2) - (b^2*f*ArcTan[Sinh[c + d*x]])/(a^3*d^2)
 + (b^4*f*ArcTan[Sinh[c + d*x]])/(a^3*(a^2 + b^2)*d^2) + (3*f*x*ArcTanh[E^(
c + d*x)])/(a*d) - (2*b^2*f*x*ArcTanh[E^(c + d*x)])/(a^3*d) - (3*f*x*ArcTan
h[Cosh[c + d*x]])/(2*a*d) + (b^2*f*x*ArcTanh[Cosh[c + d*x]])/(a^3*d) + (3*(
e + f*x)*ArcTanh[Cosh[c + d*x]])/(2*a*d) - (b^2*(e + f*x)*ArcTanh[Cosh[c +
d*x]])/(a^3*d) + (2*b*(e + f*x)*Coth[2*c + 2*d*x])/(a^2*d) - (f*Csch[c + d*
```

```
x])/(2*a*d^2) - (b^5*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]
)])/(a^3*(a^2 + b^2)^(3/2)*d) + (b^5*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a +
 Sqrt[a^2 + b^2])])/(a^3*(a^2 + b^2)^(3/2)*d) + (b^3*f*Log[Cosh[c + d*x]])/
(a^2*(a^2 + b^2)*d^2) - (b*f*Log[Sinh[2*c + 2*d*x]])/(a^2*d^2) + (3*f*PolyL
og[2, -E^(c + d*x)])/(2*a*d^2) - (b^2*f*PolyLog[2, -E^(c + d*x)])/(a^3*d^2)
 - (3*f*PolyLog[2, E^(c + d*x)])/(2*a*d^2) + (b^2*f*PolyLog[2, E^(c + d*x)]
)/(a^3*d^2) - (b^5*f*PolyLog[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))])/
(a^3*(a^2 + b^2)^(3/2)*d^2) + (b^5*f*PolyLog[2, -((b*E^(c + d*x))/(a + Sqrt
[a^2 + b^2]))])/(a^3*(a^2 + b^2)^(3/2)*d^2) - (3*(e + f*x)*Sech[c + d*x])/(
2*a*d) + (b^2*(e + f*x)*Sech[c + d*x])/(a^3*d) - (b^4*(e + f*x)*Sech[c + d*
x])/(a^3*(a^2 + b^2)*d) - ((e + f*x)*Csch[c + d*x]^2*Sech[c + d*x])/(2*a*d)
 - (b^3*(e + f*x)*Tanh[c + d*x])/(a^2*(a^2 + b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3322

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (Complex[0, fz_])*
(f_.)*(x_)]), x_Symbol] :> Dist[2, Int[((c + d*x)^m*E^(-(I*e) + f*fz*x))/(-
(I*b) + 2*a*E^(-(I*e) + f*fz*x) + I*b*E^(2*(-(I*e) + f*fz*x))), x], x] /; F
reeQ[{a, b, c, d, e, f, fz}, x] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6271

```
Int[ArcTanh[u_], x_Symbol] :> Simp[x*ArcTanh[u], x] - Int[SimplifyIntegrand
[(x*D[u, x])/(1 - u^2), x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\text{csch}^3(c+dx)\text{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\text{csch}^3(c+dx)\text{sech}^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\text{csch}^2(c+dx)\text{sech}^2(c}{a+b\sinh(c+dx)}}{a}$$

$$= \frac{3(e+fx)\tanh^{-1}(\cosh(c+dx))}{2ad} - \frac{3(e+fx)\text{sech}(c+dx)}{2ad} - \frac{(e+fx)}{}$$

$$= \frac{3(e+fx)\tanh^{-1}(\cosh(c+dx))}{2ad} - \frac{3(e+fx)\text{sech}(c+dx)}{2ad} - \frac{(e+fx)}{}$$

$$= \frac{3f\tan^{-1}(\sinh(c+dx))}{2ad^2} - \frac{3fx\tanh^{-1}(\cosh(c+dx))}{2ad} + \frac{3(e+fx)\tan}{}$$

$$= \frac{3f\tan^{-1}(\sinh(c+dx))}{2ad^2} - \frac{3fx\tanh^{-1}(\cosh(c+dx))}{2ad} + \frac{3(e+fx)\tan}{}$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{ad^2} - \frac{b^2f\tan^{-1}(\sinh(c+dx))}{a^3d^2} + \frac{3fx\tanh^{-1}\left(e^{c+}\right.}{ad}$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{ad^2} - \frac{b^2f\tan^{-1}(\sinh(c+dx))}{a^3d^2} + \frac{3fx\tanh^{-1}\left(e^{c+}\right.}{ad}$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{ad^2} - \frac{b^2f\tan^{-1}(\sinh(c+dx))}{a^3d^2} + \frac{b^4f\tan^{-1}(\sinh(}{a^3\left(a^2+b^2\right.}$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{ad^2} - \frac{b^2f\tan^{-1}(\sinh(c+dx))}{a^3d^2} + \frac{b^4f\tan^{-1}(\sinh(}{a^3\left(a^2+b^2\right.}$$

$$= \frac{f\tan^{-1}(\sinh(c+dx))}{ad^2} - \frac{b^2f\tan^{-1}(\sinh(c+dx))}{a^3d^2} + \frac{b^4f\tan^{-1}(\sinh(}{a^3\left(a^2+b^2\right.}$$

Mathematica [C] time = 8.40, size = 863, normalized size = 1.23

$$\frac{\left(2de\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) - 2cf\tanh^{-1}\left(\frac{a+be^{c+dx}}{\sqrt{a^2+b^2}}\right) - f(c+dx)\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right) + f(c+dx)\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right) - f\right.}{a^3\left(a^2+b^2\right)^{3/2}d^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]^3*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] (2*a*f*ArcTan[Tanh[(c + d*x)/2]])/(d*(a^2*d + b^2*d)) + ((2*b*d*e*Cosh[(c +
 d*x)/2] - a*f*Cosh[(c + d*x)/2] - 2*b*c*f*Cosh[(c + d*x)/2] + 2*b*f*(c + d
*x)*Cosh[(c + d*x)/2])*Csch[(c + d*x)/2])/(4*a^2*d^2) + ((-(d*e) + c*f - f*
(c + d*x))*Csch[(c + d*x)/2]^2)/(8*a*d^2) - (b*f*Log[Cosh[c + d*x]])/((a^2
+ b^2)*d^2) - (b*f*Log[Sinh[c + d*x]])/(a^2*d^2) - (3*e*Log[Tanh[(c + d*x)/
2]])/(2*a*d) + (b^2*e*Log[Tanh[(c + d*x)/2]])/(a^3*d) + (3*c*f*Log[Tanh[(c
+ d*x)/2]])/(2*a*d^2) - (b^2*c*f*Log[Tanh[(c + d*x)/2]])/(a^3*d^2) + (((3*I
)/2)*f*(I*(c + d*x)*(Log[1 - E^(-c - d*x)] - Log[1 + E^(-c - d*x)]) + I*(Po
lyLog[2, -E^(-c - d*x)] - PolyLog[2, E^(-c - d*x)])))/(a*d^2) - (I*b^2*f*(I
*(c + d*x)*(Log[1 - E^(-c - d*x)] - Log[1 + E^(-c - d*x)]) + I*(PolyLog[2,
-E^(-c - d*x)] - PolyLog[2, E^(-c - d*x)])))/(a^3*d^2) + (b^5*(2*d*e*ArcTan
h[(a + b*E^(c + d*x))/Sqrt[a^2 + b^2]] - 2*c*f*ArcTanh[(a + b*E^(c + d*x))/
Sqrt[a^2 + b^2]] - f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]
)] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])] - f*PolyLog
[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^(c + d*x)
)/(a + Sqrt[a^2 + b^2]))]))/(a^3*(a^2 + b^2)^(3/2)*d^2) + ((-(d*e) + c*f -
f*(c + d*x))*Sech[(c + d*x)/2]^2)/(8*a*d^2) + (Sech[(c + d*x)/2]*(2*b*d*e*S
inh[(c + d*x)/2] + a*f*Sinh[(c + d*x)/2] - 2*b*c*f*Sinh[(c + d*x)/2] + 2*b*
f*(c + d*x)*Sinh[(c + d*x)/2]))/(4*a^2*d^2) + (Sech[c + d*x]*(-(a*d*e) + a*
c*f - a*f*(c + d*x) + b*d*e*Sinh[c + d*x] - b*c*f*Sinh[c + d*x] + b*f*(c +
d*x)*Sinh[c + d*x]))/((a^2 + b^2)*d^2)
```

fricas [B] time = 0.85, size = 11126, normalized size = 15.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] 1/2*(4*((2*a^5*b + 3*a^3*b^3 + a*b^5)*d*f*x + (a^5*b + 2*a^3*b^3 + a*b^5)*c
*f)*cosh(d*x + c)^6 + 4*((2*a^5*b + 3*a^3*b^3 + a*b^5)*d*f*x + (a^5*b + 2*a
^3*b^3 + a*b^5)*c*f)*sinh(d*x + c)^6 - 2*((3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*f
*x + (3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*e + (a^6 + 2*a^4*b^2 + a^2*b^4)*f)*cos
h(d*x + c)^5 - 2*((3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*f*x + (3*a^6 + 4*a^4*b^2
+ a^2*b^4)*d*e + (a^6 + 2*a^4*b^2 + a^2*b^4)*f - 12*((2*a^5*b + 3*a^3*b^3 +
 a*b^5)*d*f*x + (a^5*b + 2*a^3*b^3 + a*b^5)*c*f)*cosh(d*x + c))*sinh(d*x +
c)^5 - 4*(2*(a^5*b + a^3*b^3)*d*f*x - (a^3*b^3 + a*b^5)*d*e + (a^5*b + 2*a^
3*b^3 + a*b^5)*c*f)*cosh(d*x + c)^4 - 2*(4*(a^5*b + a^3*b^3)*d*f*x - 2*(a^3
*b^3 + a*b^5)*d*e + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*c*f - 30*((2*a^5*b + 3*a^
```

3*b^3 + a*b^5)*d*f*x + (a^5*b + 2*a^3*b^3 + a*b^5)*c*f)*cosh(d*x + c)^2 + 5 *((3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*f*x + (3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*e + (a^6 + 2*a^4*b^2 + a^2*b^4)*f)*cosh(d*x + c))*sinh(d*x + c)^4 + 4*((a^6 - a^2*b^4)*d*f*x + (a^6 - a^2*b^4)*d*e)*cosh(d*x + c)^3 + 4*((a^6 - a^2*b^4)* d*f*x + 20*((2*a^5*b + 3*a^3*b^3 + a*b^5)*d*f*x + (a^5*b + 2*a^3*b^3 + a*b^ 5)*c*f)*cosh(d*x + c)^3 + (a^6 - a^2*b^4)*d*e - 5*((3*a^6 + 4*a^4*b^2 + a^2 *b^4)*d*f*x + (3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*e + (a^6 + 2*a^4*b^2 + a^2*b^ 4)*f)*cosh(d*x + c)^2 - 4*(2*(a^5*b + a^3*b^3)*d*f*x - (a^3*b^3 + a*b^5)*d* e + (a^5*b + 2*a^3*b^3 + a*b^5)*c*f)*cosh(d*x + c))*sinh(d*x + c)^3 - 4*(2* a^5*b + 3*a^3*b^3 + a*b^5)*d*e + 4*(a^5*b + 2*a^3*b^3 + a*b^5)*c*f - 4*((a^ 3*b^3 + a*b^5)*d*f*x - 2*(a^5*b + a^3*b^3)*d*e + (a^5*b + 2*a^3*b^3 + a*b^5)*c*f)*cosh(d*x + c)^2 + 4*(15*((2*a^5*b + 3*a^3*b^3 + a*b^5)*d*f*x + (a^5* b + 2*a^3*b^3 + a*b^5)*c*f)*cosh(d*x + c)^4 - (a^3*b^3 + a*b^5)*d*f*x - 5*((3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*f*x + (3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*e + (a^6 + 2*a^4*b^2 + a^2*b^4)*f)*cosh(d*x + c)^3 + 2*(a^5*b + a^3*b^3)*d*e - (a^5*b + 2*a^3*b^3 + a*b^5)*c*f - 6*(2*(a^5*b + a^3*b^3)*d*f*x - (a^3*b^3 + a*b^5)*d*e + (a^5*b + 2*a^3*b^3 + a*b^5)*c*f)*cosh(d*x + c)^2 + 3*((a^6 - a ^2*b^4)*d*f*x + (a^6 - a^2*b^4)*d*e)*cosh(d*x + c))*sinh(d*x + c)^2 - 2*(b^ 6*f*cosh(d*x + c)^6 + 6*b^6*f*cosh(d*x + c)*sinh(d*x + c)^5 + b^6*f*sinh(d* x + c)^6 - b^6*f*cosh(d*x + c)^4 - b^6*f*cosh(d*x + c)^2 + b^6*f + (15*b^6* f*cosh(d*x + c)^2 - b^6*f)*sinh(d*x + c)^4 + 4*(5*b^6*f*cosh(d*x + c)^3 - b ^6*f*cosh(d*x + c))*sinh(d*x + c)^3 + (15*b^6*f*cosh(d*x + c)^4 - 6*b^6*f*c osh(d*x + c)^2 - b^6*f)*sinh(d*x + c)^2 + 2*(3*b^6*f*cosh(d*x + c)^5 - 2*b^ 6*f*cosh(d*x + c)^3 - b^6*f*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/ b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d *x + c))*sqrt((a^2 + b^2)/b^2) - b)/b + 1) + 2*(b^6*f*cosh(d*x + c)^6 + 6*b ^6*f*cosh(d*x + c)*sinh(d*x + c)^5 + b^6*f*sinh(d*x + c)^6 - b^6*f*cosh(d*x + c)^4 - b^6*f*cosh(d*x + c)^2 + b^6*f + (15*b^6*f*cosh(d*x + c)^2 - b^6*f)*sinh(d*x + c)^4 + 4*(5*b^6*f*cosh(d*x + c)^3 - b^6*f*cosh(d*x + c))*sinh(d*x + c)^3 + (15*b^6*f*cosh(d*x + c)^4 - 6*b^6*f*cosh(d*x + c)^2 - b^6*f)*s inh(d*x + c)^2 + 2*(3*b^6*f*cosh(d*x + c)^5 - 2*b^6*f*cosh(d*x + c)^3 - b^6 *f*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*dilog((a*cosh(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^2 + b^2) /b^2) - b)/b + 1) + 2*(b^6*d*e - b^6*c*f + (b^6*d*e - b^6*c*f)*cosh(d*x + c)^6 + 6*(b^6*d*e - b^6*c*f)*cosh(d*x + c)*sinh(d*x + c)^5 + (b^6*d*e - b^6* c*f)*sinh(d*x + c)^6 - (b^6*d*e - b^6*c*f)*cosh(d*x + c)^4 - (b^6*d*e - b^6 *c*f - 15*(b^6*d*e - b^6*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^4 + 4*(5*(b^6* d*e - b^6*c*f)*cosh(d*x + c)^3 - (b^6*d*e - b^6*c*f)*cosh(d*x + c))*sinh(d* x + c)^3 - (b^6*d*e - b^6*c*f)*cosh(d*x + c)^2 - (b^6*d*e - b^6*c*f - 15*(b ^6*d*e - b^6*c*f)*cosh(d*x + c)^4 + 6*(b^6*d*e - b^6*c*f)*cosh(d*x + c)^2)* sinh(d*x + c)^2 + 2*(3*(b^6*d*e - b^6*c*f)*cosh(d*x + c)^5 - 2*(b^6*d*e - b ^6*c*f)*cosh(d*x + c)^3 - (b^6*d*e - b^6*c*f)*cosh(d*x + c))*sinh(d*x + c)) *sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) + 2*b*sqrt ((a^2 + b^2)/b^2) + 2*a) - 2*(b^6*d*e - b^6*c*f + (b^6*d*e - b^6*c*f)*cosh(d*x + c)^6 + 6*(b^6*d*e - b^6*c*f)*cosh(d*x + c)*sinh(d*x + c)^5 + (b^6*d*e

```
 - b^6*c*f)*sinh(d*x + c)^6 - (b^6*d*e - b^6*c*f)*cosh(d*x + c)^4 - (b^6*d*
e - b^6*c*f - 15*(b^6*d*e - b^6*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^4 + 4*(
5*(b^6*d*e - b^6*c*f)*cosh(d*x + c)^3 - (b^6*d*e - b^6*c*f)*cosh(d*x + c))*
sinh(d*x + c)^3 - (b^6*d*e - b^6*c*f)*cosh(d*x + c)^2 - (b^6*d*e - b^6*c*f
- 15*(b^6*d*e - b^6*c*f)*cosh(d*x + c)^4 + 6*(b^6*d*e - b^6*c*f)*cosh(d*x +
 c)^2)*sinh(d*x + c)^2 + 2*(3*(b^6*d*e - b^6*c*f)*cosh(d*x + c)^5 - 2*(b^6*
d*e - b^6*c*f)*cosh(d*x + c)^3 - (b^6*d*e - b^6*c*f)*cosh(d*x + c))*sinh(d*
x + c))*sqrt((a^2 + b^2)/b^2)*log(2*b*cosh(d*x + c) + 2*b*sinh(d*x + c) - 2
*b*sqrt((a^2 + b^2)/b^2) + 2*a) - 2*(b^6*d*f*x + b^6*c*f + (b^6*d*f*x + b^6
*c*f)*cosh(d*x + c)^6 + 6*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)*sinh(d*x + c)
^5 + (b^6*d*f*x + b^6*c*f)*sinh(d*x + c)^6 - (b^6*d*f*x + b^6*c*f)*cosh(d*x
 + c)^4 - (b^6*d*f*x + b^6*c*f - 15*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)^2)*
sinh(d*x + c)^4 + 4*(5*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)^3 - (b^6*d*f*x +
 b^6*c*f)*cosh(d*x + c))*sinh(d*x + c)^3 - (b^6*d*f*x + b^6*c*f)*cosh(d*x +
 c)^2 - (b^6*d*f*x + b^6*c*f - 15*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)^4 + 6
*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 2*(3*(b^6*d*f*x +
 b^6*c*f)*cosh(d*x + c)^5 - 2*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)^3 - (b^6*
d*f*x + b^6*c*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(
a*cosh(d*x + c) + a*sinh(d*x + c) + (b*cosh(d*x + c) + b*sinh(d*x + c))*sqr
t((a^2 + b^2)/b^2) - b)/b) + 2*(b^6*d*f*x + b^6*c*f + (b^6*d*f*x + b^6*c*f)
*cosh(d*x + c)^6 + 6*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)*sinh(d*x + c)^5 +
(b^6*d*f*x + b^6*c*f)*sinh(d*x + c)^6 - (b^6*d*f*x + b^6*c*f)*cosh(d*x + c)
^4 - (b^6*d*f*x + b^6*c*f - 15*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)^2)*sinh(
d*x + c)^4 + 4*(5*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)^3 - (b^6*d*f*x + b^6*
c*f)*cosh(d*x + c))*sinh(d*x + c)^3 - (b^6*d*f*x + b^6*c*f)*cosh(d*x + c)^2
 - (b^6*d*f*x + b^6*c*f - 15*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)^4 + 6*(b^6
*d*f*x + b^6*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 2*(3*(b^6*d*f*x + b^6*
c*f)*cosh(d*x + c)^5 - 2*(b^6*d*f*x + b^6*c*f)*cosh(d*x + c)^3 - (b^6*d*f*x
 + b^6*c*f)*cosh(d*x + c))*sinh(d*x + c))*sqrt((a^2 + b^2)/b^2)*log(-(a*cos
h(d*x + c) + a*sinh(d*x + c) - (b*cosh(d*x + c) + b*sinh(d*x + c))*sqrt((a^
2 + b^2)/b^2) - b)/b) + 4*((a^6 + a^4*b^2)*f*cosh(d*x + c)^6 + 6*(a^6 + a^4
*b^2)*f*cosh(d*x + c)*sinh(d*x + c)^5 + (a^6 + a^4*b^2)*f*sinh(d*x + c)^6 -
 (a^6 + a^4*b^2)*f*cosh(d*x + c)^4 + (15*(a^6 + a^4*b^2)*f*cosh(d*x + c)^2
- (a^6 + a^4*b^2)*f)*sinh(d*x + c)^4 - (a^6 + a^4*b^2)*f*cosh(d*x + c)^2 +
4*(5*(a^6 + a^4*b^2)*f*cosh(d*x + c)^3 - (a^6 + a^4*b^2)*f*cosh(d*x + c))*s
inh(d*x + c)^3 + (15*(a^6 + a^4*b^2)*f*cosh(d*x + c)^4 - 6*(a^6 + a^4*b^2)*
f*cosh(d*x + c)^2 - (a^6 + a^4*b^2)*f)*sinh(d*x + c)^2 + (a^6 + a^4*b^2)*f
+ 2*(3*(a^6 + a^4*b^2)*f*cosh(d*x + c)^5 - 2*(a^6 + a^4*b^2)*f*cosh(d*x + c
)^3 - (a^6 + a^4*b^2)*f*cosh(d*x + c))*sinh(d*x + c))*arctan(cosh(d*x + c)
+ sinh(d*x + c)) - 2*((3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*f*x + (3*a^6 + 4*a^4*
b^2 + a^2*b^4)*d*e - (a^6 + 2*a^4*b^2 + a^2*b^4)*f)*cosh(d*x + c) - ((3*a^6
 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^6 + 6*(3*a^6 + 4*a^4*b^2 -
a^2*b^4 - 2*b^6)*f*cosh(d*x + c)*sinh(d*x + c)^5 + (3*a^6 + 4*a^4*b^2 - a^2
*b^4 - 2*b^6)*f*sinh(d*x + c)^6 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*c
osh(d*x + c)^4 + (15*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^
```

2 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f)*sinh(d*x + c)^4 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^2 + 4*(5*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c))*sinh(d*x + c)^3 + (15*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^4 - 6*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^2 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f)*sinh(d*x + c)^2 + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f + 2*(3*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^5 - 2*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c))*sinh(d*x + c))*dilog(cosh(d*x + c) + sinh(d*x + c)) + ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^6 + 6*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)*sinh(d*x + c)^5 + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*sinh(d*x + c)^6 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^4 + (15*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^2 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f)*sinh(d*x + c)^4 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^2 + 4*(5*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c))*sinh(d*x + c)^3 + (15*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^4 - 6*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^2 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f)*sinh(d*x + c)^2 + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f + 2*(3*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^5 - 2*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*f*cosh(d*x + c))*sinh(d*x + c))*dilog(-cosh(d*x + c) - sinh(d*x + c)) - 2*((a^5*b + a^3*b^3)*f*cosh(d*x + c)^6 + 6*(a^5*b + a^3*b^3)*f*cosh(d*x + c)*sinh(d*x + c)^5 + (a^5*b + a^3*b^3)*f*sinh(d*x + c)^6 - (a^5*b + a^3*b^3)*f*cosh(d*x + c)^4 + (15*(a^5*b + a^3*b^3)*f*cosh(d*x + c)^2 - (a^5*b + a^3*b^3)*f)*sinh(d*x + c)^4 - (a^5*b + a^3*b^3)*f*cosh(d*x + c)^2 + 4*(5*(a^5*b + a^3*b^3)*f*cosh(d*x + c)^3 - (a^5*b + a^3*b^3)*f*cosh(d*x + c))*sinh(d*x + c)^3 + (15*(a^5*b + a^3*b^3)*f*cosh(d*x + c)^4 - 6*(a^5*b + a^3*b^3)*f*cosh(d*x + c)^2 - (a^5*b + a^3*b^3)*f)*sinh(d*x + c)^2 + (a^5*b + a^3*b^3)*f + 2*(3*(a^5*b + a^3*b^3)*f*cosh(d*x + c)^5 - 2*(a^5*b + a^3*b^3)*f*cosh(d*x + c)^3 - (a^5*b + a^3*b^3)*f*cosh(d*x + c))*sinh(d*x + c))*log(2*cosh(d*x + c)/(cosh(d*x + c) - sinh(d*x + c))) + (((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c)^6 + 6*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c)*sinh(d*x + c)^5 + ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*sinh(d*x + c)^6 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c)^4 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 15*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c)^2 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*sinh(d*x + c)^4 + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + 4*(5*((3

*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c)^3 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c))*sinh(d*x + c)^3 + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c)^2 + (15*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c)^4 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 6*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c)^2 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*sinh(d*x + c)^2 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f + 2*(3*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c)^5 - 2*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c)^3 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) - (((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c)^6 + 6*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c)*sinh(d*x + c)^5 + ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*sinh(d*x + c)^6 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c)^4 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 15*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c)^2 + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*sinh(d*x + c)^4 + 4*(5*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c)^3 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c))*sinh(d*x + c)^3 + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c)^2 + (15*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c)^4 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e - 6*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c)^2 - (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*sinh(d*x + c)^2 + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c)*f + 2*(3*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a

^4*b^2 - a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c)^5 - 2*((3*a^6 + 4*a^4*b^2 - a
^2*b^4 - 2*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 -
 a^2*b^4 - 2*b^6)*c)*f)*cosh(d*x + c)^3 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2
*b^6)*d*e + (2*a^5*b + 4*a^3*b^3 + 2*a*b^5 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 -
 2*b^6)*c)*f)*cosh(d*x + c))*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x +
c) - 1) - (((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^
2 - a^2*b^4 - 2*b^6)*c*f)*cosh(d*x + c)^6 + 6*((3*a^6 + 4*a^4*b^2 - a^2*b^4
 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f)*cosh(d*x + c)*
sinh(d*x + c)^5 + ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4
*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f)*sinh(d*x + c)^6 - ((3*a^6 + 4*a^4*b^2 - a^
2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f)*cosh(d*x
+ c)^4 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2
- a^2*b^4 - 2*b^6)*c*f - 15*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x +
(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f)*cosh(d*x + c)^2)*sinh(d*x + c)^4
 + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + 4*(5*((3*a^6 + 4*a^4*b^2 -
 a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f)*cosh(d
*x + c)^3 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b
^2 - a^2*b^4 - 2*b^6)*c*f)*cosh(d*x + c))*sinh(d*x + c)^3 + (3*a^6 + 4*a^4*
b^2 - a^2*b^4 - 2*b^6)*c*f - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x +
 (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f)*cosh(d*x + c)^2 + (15*((3*a^6 +
 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)
*c*f)*cosh(d*x + c)^4 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x - (3*a^
6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f - 6*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*
b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f)*cosh(d*x + c)^2)*si
nh(d*x + c)^2 + 2*(3*((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6
+ 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f)*cosh(d*x + c)^5 - 2*((3*a^6 + 4*a^4*b^2
 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f)*cosh
(d*x + c)^3 - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f*x + (3*a^6 + 4*a^4
*b^2 - a^2*b^4 - 2*b^6)*c*f)*cosh(d*x + c))*sinh(d*x + c))*log(-cosh(d*x +
c) - sinh(d*x + c) + 1) + 2*(12*((2*a^5*b + 3*a^3*b^3 + a*b^5)*d*f*x + (a^5
*b + 2*a^3*b^3 + a*b^5)*c*f)*cosh(d*x + c)^5 - 5*((3*a^6 + 4*a^4*b^2 + a^2*
b^4)*d*f*x + (3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*e + (a^6 + 2*a^4*b^2 + a^2*b^4
)*f)*cosh(d*x + c)^4 - (3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*f*x - 8*(2*(a^5*b +
a^3*b^3)*d*f*x - (a^3*b^3 + a*b^5)*d*e + (a^5*b + 2*a^3*b^3 + a*b^5)*c*f)*c
osh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 + a^2*b^4)*d*e + 6*((a^6 - a^2*b^4)*d*f
*x + (a^6 - a^2*b^4)*d*e)*cosh(d*x + c)^2 + (a^6 + 2*a^4*b^2 + a^2*b^4)*f -
 4*((a^3*b^3 + a*b^5)*d*f*x - 2*(a^5*b + a^3*b^3)*d*e + (a^5*b + 2*a^3*b^3
+ a*b^5)*c*f)*cosh(d*x + c))*sinh(d*x + c))/((a^7 + 2*a^5*b^2 + a^3*b^4)*d^
2*cosh(d*x + c)^6 + 6*(a^7 + 2*a^5*b^2 + a^3*b^4)*d^2*cosh(d*x + c)*sinh(d*
x + c)^5 + (a^7 + 2*a^5*b^2 + a^3*b^4)*d^2*sinh(d*x + c)^6 - (a^7 + 2*a^5*b
^2 + a^3*b^4)*d^2*cosh(d*x + c)^4 - (a^7 + 2*a^5*b^2 + a^3*b^4)*d^2*cosh(d*
x + c)^2 + (15*(a^7 + 2*a^5*b^2 + a^3*b^4)*d^2*cosh(d*x + c)^2 - (a^7 + 2*a
^5*b^2 + a^3*b^4)*d^2)*sinh(d*x + c)^4 + 4*(5*(a^7 + 2*a^5*b^2 + a^3*b^4)*d
^2*cosh(d*x + c)^3 - (a^7 + 2*a^5*b^2 + a^3*b^4)*d^2*cosh(d*x + c))*sinh(d*
x + c)^3 + (a^7 + 2*a^5*b^2 + a^3*b^4)*d^2 + (15*(a^7 + 2*a^5*b^2 + a^3*b^4

```
)*d^2*cosh(d*x + c)^4 - 6*(a^7 + 2*a^5*b^2 + a^3*b^4)*d^2*cosh(d*x + c)^2 -
 (a^7 + 2*a^5*b^2 + a^3*b^4)*d^2)*sinh(d*x + c)^2 + 2*(3*(a^7 + 2*a^5*b^2 +
 a^3*b^4)*d^2*cosh(d*x + c)^5 - 2*(a^7 + 2*a^5*b^2 + a^3*b^4)*d^2*cosh(d*x
+ c)^3 - (a^7 + 2*a^5*b^2 + a^3*b^4)*d^2*cosh(d*x + c))*sinh(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.44, size = 2767, normalized size = 3.96

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/(a^2+b^2)^(5/2)/d^2*f*b*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))
*a^3+2/(a^2+b^2)^(5/2)/d^2*f*b^3*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)
^(1/2))*a-1/d^2/(a^2+b^2)*b*f*ln(exp(d*x+c)+1)-1/d^2/(a^2+b^2)*b*f*ln(exp(d
*x+c)-1)-1/d^2/(a^2+b^2)^(5/2)/a^3*b^7*f*c*arctanh(1/2*(2*b*exp(d*x+c)+2*a)
/(a^2+b^2)^(1/2))-1/d^2/(a^2+b^2)^(3/2)/a^3*b^5*f*c*arctanh(1/2*(2*b*exp(d*
x+c)+2*a)/(a^2+b^2)^(1/2))-1/d^2/(a^2+b^2)^(5/2)/a^3*b^7*f*ln((-b*exp(d*x+c
)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/d^2/(a^2+b^2)^(5/2)/a^3*b^7*
f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*c-1/d/(a^2+b^2)^
(5/2)/a^3*b^7*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*
x+1/d/(a^2+b^2)^(5/2)/a^3*b^7*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2
+b^2)^(1/2)))*x-2/d^2*a/(a^2+b^2)^(5/2)*b^3*f*c*arctanh(1/2*(2*b*exp(d*x+c)
+2*a)/(a^2+b^2)^(1/2))-1/d^2/(a^2+b^2)^(3/2)*f*b^3/a*arctanh(1/2*(2*b*exp(d
*x+c)+2*a)/(a^2+b^2)^(1/2))-3/2*b/d*e/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b*exp(
d*x+c)+2*a)/(a^2+b^2)^(1/2))*a-3/2/d^2/(a^2+b^2)^(5/2)*b^5*f*c/a*arctanh(1/
2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-3/2/d^2/(a^2+b^2)^(5/2)*a^3*f*b*c*a
rctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/2/d^2/(a^2+b^2)^(3/2)*b^
3*f*c/a*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d/(a^2+b^2)^(5/
2)*f*b^5/a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/d^2
/(a^2+b^2)^(5/2)*f*b^5/a*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)
^(1/2)))*c+1/d^2/(a^2+b^2)^(5/2)*f*b^5/a*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a
)/(a+(a^2+b^2)^(1/2)))*c-1/d/(a^2+b^2)^(5/2)*f*b^5/a*ln((-b*exp(d*x+c)+(a^2
+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*x+4/(a^2+b^2)/d^2*b*f*ln(exp(d*x+c))+3
```

```
/2/d^2/(a^2+b^2)*a*f*dilog(exp(d*x+c)+1)+3/2/d^2/(a^2+b^2)*a*f*dilog(exp(d*
x+c))+3/2/d/(a^2+b^2)*a*e*ln(exp(d*x+c)+1)-3/2/d/(a^2+b^2)*a*e*ln(exp(d*x+c
)-1)+3/2*b/d^2*f*c/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^
2)^(1/2))*a-1/d^2/(a^2+b^2)/a^2*b^3*f*ln(exp(d*x+c)+1)-1/d^2/(a^2+b^2)/a^2*
b^3*f*ln(exp(d*x+c)-1)+2/d^2/(a^2+b^2)/a^2*b^3*f*ln(exp(d*x+c))-1/d/(a^2+b^
2)/a^3*b^4*e*ln(exp(d*x+c)+1)+1/d/(a^2+b^2)/a^3*b^4*e*ln(exp(d*x+c)-1)-1/d^
2/(a^2+b^2)/a^3*b^4*f*dilog(exp(d*x+c)+1)-1/d^2/(a^2+b^2)/a^3*b^4*f*dilog(e
xp(d*x+c))-1/d/(a^2+b^2)/a^3*b^4*f*ln(exp(d*x+c)+1)*x+1/d/(a^2+b^2)^(5/2)/a
^3*b^7*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d/(a^2+b^2)^(3
/2)/a^3*b^5*e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/d^2/(a^2+
b^2)^(5/2)*f*b^5/a*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2
)))-1/d^2/(a^2+b^2)^(5/2)*f*b^5/a*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(
-a+(a^2+b^2)^(1/2)))-1/d^2/(a^2+b^2)^(3/2)*a*f*b*arctanh(1/2*(2*b*exp(d*x+c
)+2*a)/(a^2+b^2)^(1/2))+1/d^2/(a^2+b^2)^(5/2)*f*b^5/a*arctanh(1/2*(2*b*exp(
d*x+c)+2*a)/(a^2+b^2)^(1/2))+8/d^2/(a^2+b^2)*a*b^2*f/(4*a^2+4*b^2)*arctan(e
xp(d*x+c))+1/2/d^2/(a^2+b^2)*b^2*f*c/a*ln(exp(d*x+c)-1)+1/2/d/(a^2+b^2)*b^2
*f/a*ln(exp(d*x+c)+1)*x+3/2/d/(a^2+b^2)^(5/2)*a^3*b*e*arctanh(1/2*(2*b*exp(
d*x+c)+2*a)/(a^2+b^2)^(1/2))+3/2/d/(a^2+b^2)^(5/2)*b^5*e/a*arctanh(1/2*(2*b
*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/2/d/(a^2+b^2)^(3/2)*b^3*e/a*arctanh(1/2
*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-4/d^2/(a^2+b^2)*a^2*b*f/(4*a^2+4*b^2
)*ln(1+exp(2*d*x+2*c))-1/d^2/(a^2+b^2)/a^3*b^4*f*c*ln(exp(d*x+c)-1)-1/d^2/(
a^2+b^2)^(5/2)/a^3*b^7*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b
^2)^(1/2)))+1/d^2/(a^2+b^2)^(5/2)/a^3*b^7*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(
1/2)+a)/(a+(a^2+b^2)^(1/2)))+2/d*a/(a^2+b^2)^(5/2)*b^3*e*arctanh(1/2*(2*b*e
xp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-(3*a^3*d*f*x*exp(5*d*x+5*c)+a*b^2*d*f*x*exp
(5*d*x+5*c)+3*a^3*d*e*exp(5*d*x+5*c)+a*b^2*d*e*exp(5*d*x+5*c)-2*b^3*d*f*x*e
xp(4*d*x+4*c)-2*a^3*d*f*x*exp(3*d*x+3*c)+a^3*f*exp(5*d*x+5*c)+2*a*b^2*d*f*x
*exp(3*d*x+3*c)+a*b^2*f*exp(5*d*x+5*c)-2*b^3*d*e*exp(4*d*x+4*c)-2*a^3*d*e*e
xp(3*d*x+3*c)-4*a^2*b*d*f*x*exp(2*d*x+2*c)+2*a*b^2*d*e*exp(3*d*x+3*c)+3*a^3
*d*f*x*exp(d*x+c)-4*a^2*b*d*e*exp(2*d*x+2*c)+a*b^2*d*f*x*exp(d*x+c)+3*a^3*d
*e*exp(d*x+c)+4*a^2*b*d*f*x+a*b^2*d*e*exp(d*x+c)+2*b^3*d*f*x-a^3*f*exp(d*x+
c)+4*a^2*b*d*e-a*b^2*f*exp(d*x+c)+2*b^3*d*e)/d^2/a^2/(exp(2*d*x+2*c)-1)^2/(
a^2+b^2)/(1+exp(2*d*x+2*c))+1/2/d/(a^2+b^2)*b^2*e/a*ln(exp(d*x+c)+1)-1/2/d/
(a^2+b^2)*b^2*e/a*ln(exp(d*x+c)-1)+1/2/d^2/(a^2+b^2)*b^2*f/a*dilog(exp(d*x+
c)+1)+1/2/d^2/(a^2+b^2)*b^2*f*dilog(exp(d*x+c))/a+3/2/d^2/(a^2+b^2)*a*f*c*l
n(exp(d*x+c)-1)+8/d^2/(a^2+b^2)*a^3*f/(4*a^2+4*b^2)*arctan(exp(d*x+c))-4/d^
2/(a^2+b^2)*f*b^3/(4*a^2+4*b^2)*ln(1+exp(2*d*x+2*c))+3/2/d/(a^2+b^2)*ln(exp
(d*x+c)+1)*a*f*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorith
```

```
m="maxima")
```

```
[Out] -1/2*(2*b^5*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a
+ sqrt(a^2 + b^2)))/((a^5 + a^3*b^2)*sqrt(a^2 + b^2)*d) + 2*(4*a^2*b*e^(-2*
d*x - 2*c) + 2*b^3*e^(-4*d*x - 4*c) - 4*a^2*b - 2*b^3 + (3*a^3 + a*b^2)*e^(
-d*x - c) - 2*(a^3 - a*b^2)*e^(-3*d*x - 3*c) + (3*a^3 + a*b^2)*e^(-5*d*x -
5*c))/((a^4 + a^2*b^2 - (a^4 + a^2*b^2)*e^(-2*d*x - 2*c) - (a^4 + a^2*b^2)*
e^(-4*d*x - 4*c) + (a^4 + a^2*b^2)*e^(-6*d*x - 6*c))*d) - (3*a^2 - 2*b^2)*l
og(e^(-d*x - c) + 1)/(a^3*d) + (3*a^2 - 2*b^2)*log(e^(-d*x - c) - 1)/(a^3*d
))*e - (32*b^5*integrate(-1/16*x*e^(d*x + c)/(a^5*b + a^3*b^3 - (a^5*b*e^(2
*c) + a^3*b^3*e^(2*c))*e^(2*d*x) - 2*(a^6*e^c + a^4*b^2*e^c)*e^(d*x)), x) +
 96*a^2*d*integrate(1/64*x/(a^3*d*e^(d*x + c) + a^3*d), x) - 64*b^2*d*integ
rate(1/64*x/(a^3*d*e^(d*x + c) + a^3*d), x) + 96*a^2*d*integrate(1/64*x/(a^
3*d*e^(d*x + c) - a^3*d), x) - 64*b^2*d*integrate(1/64*x/(a^3*d*e^(d*x + c)
 - a^3*d), x) - a*b*((d*x + c)/(a^3*d^2) - log(e^(d*x + c) + 1)/(a^3*d^2))
- a*b*((d*x + c)/(a^3*d^2) - log(e^(d*x + c) - 1)/(a^3*d^2)) - (2*b^3*d*x*e
^(4*d*x + 4*c) + 4*a^2*b*d*x*e^(2*d*x + 2*c) + 2*(a^3*d*e^(3*c) - a*b^2*d*e
^(3*c))*x*e^(3*d*x) - 2*(2*a^2*b*d + b^3*d)*x - (a^3*e^(5*c) + a*b^2*e^(5*c
) + (3*a^3*d*e^(5*c) + a*b^2*d*e^(5*c))*x)*e^(5*d*x) + (a^3*e^c + a*b^2*e^c
 - (3*a^3*d*e^c + a*b^2*d*e^c)*x)*e^(d*x))/(a^4*d^2 + a^2*b^2*d^2 + (a^4*d^
2*e^(6*c) + a^2*b^2*d^2*e^(6*c))*e^(6*d*x) - (a^4*d^2*e^(4*c) + a^2*b^2*d^2
*e^(4*c))*e^(4*d*x) - (a^4*d^2*e^(2*c) + a^2*b^2*d^2*e^(2*c))*e^(2*d*x)) -
2*b*x/((a^2 + b^2)*d) - 2*a*arctan(e^(d*x + c))/((a^2 + b^2)*d^2) + b*log(e
^(2*d*x + 2*c) + 1)/((a^2 + b^2)*d^2))*f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{\cosh\left(c+d\,x\right)^2\,\sinh\left(c+d\,x\right)^3\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)^2*sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)^2*sinh(c + d*x)^3*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)**3*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.498 $\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=206

$$\frac{b^2\operatorname{sech}(c+dx)}{a^3d}-\frac{b^2\tanh^{-1}(\cosh(c+dx))}{a^3d}+\frac{b\tanh(c+dx)}{a^2d}+\frac{b\coth(c+dx)}{a^2d}+\frac{2b^5\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^3d\left(a^2+b^2\right)^{3/2}}-\frac{b^3\operatorname{sec}}{}$$

```
[Out] 3/2*arctanh(cosh(d*x+c))/a/d-b^2*arctanh(cosh(d*x+c))/a^3/d+2*b^5*arctanh((
b-a*tanh(1/2*d*x+1/2*c))/(a^2+b^2)^(1/2))/a^3/(a^2+b^2)^(3/2)/d+b*coth(d*x+
c)/a^2/d-3/2*sech(d*x+c)/a/d+b^2*sech(d*x+c)/a^3/d-1/2*csch(d*x+c)^2*sech(d
*x+c)/a/d-b^3*sech(d*x+c)*(b+a*sinh(d*x+c))/a^3/(a^2+b^2)/d+b*tanh(d*x+c)/a
^2/d
```

Rubi [A] time = 0.42, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.414, Rules used = {2898, 2622, 321, 207, 2620, 14, 288, 2696, 12, 2660, 618, 204}

$$\frac{2b^5\tanh^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2+b^2}}\right)}{a^3d\left(a^2+b^2\right)^{3/2}}+\frac{b^2\operatorname{sech}(c+dx)}{a^3d}-\frac{b^2\tanh^{-1}(\cosh(c+dx))}{a^3d}-\frac{b^3\operatorname{sech}(c+dx)(a\sinh(c+dx)+b)}{a^3d\left(a^2+b^2\right)}+\frac{b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Csch[c + d*x]^3*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (3*ArcTanh[Cosh[c + d*x]])/(2*a*d) - (b^2*ArcTanh[Cosh[c + d*x]])/(a^3*d) +
 (2*b^5*ArcTanh[(b - a*Tanh[(c + d*x)/2])/Sqrt[a^2 + b^2]])/(a^3*(a^2 + b^2
)^(3/2)*d) + (b*Coth[c + d*x])/(a^2*d) - (3*Sech[c + d*x])/(2*a*d) + (b^2*S
ech[c + d*x])/(a^3*d) - (Csch[c + d*x]^2*Sech[c + d*x])/(2*a*d) - (b^3*Sech
[c + d*x]*(b + a*Sinh[c + d*x]))/(a^3*(a^2 + b^2)*d) + (b*Tanh[c + d*x])/(a
^2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
```

```
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2696

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_), x_Symbol] :> Simp[((g*Cos[e + f*x])^(p + 1)*(a + b*Sin[e + f*x])
^(m + 1)*(b - a*Sin[e + f*x]))/(f*g*(a^2 - b^2)*(p + 1)), x] + Dist[1/(g^2*
(a^2 - b^2)*(p + 1)), Int[(g*Cos[e + f*x])^(p + 2)*(a + b*Sin[e + f*x])^m*(
a^2*(p + 2) - b^2*(m + p + 2) + a*b*(m + p + 3)*Sin[e + f*x]), x], x] /; Fr
eeQ[{a, b, e, f, g, m}, x] && NeQ[a^2 - b^2, 0] && LtQ[p, -1] && IntegersQ[
2*m, 2*p]
```

Rule 2898

```
Int[((cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*sin[(e_.) + (f_.)*(x_)]^(n_))/((a
_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Symbol] :> Int[ExpandTrig[(g*cos[e +
 f*x])^p, sin[e + f*x]^n/(a + b*sin[e + f*x]), x], x] /; FreeQ[{a, b, e, f,
 g, p}, x] && NeQ[a^2 - b^2, 0] && IntegerQ[n] && (LtQ[n, 0] || IGtQ[p + 1/
2, 0])
```

Rubi steps

$$\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}^2(c+dx)}{a+b\sinh(c+dx)}\,dx = -\left(i\int\left(\frac{ib^2\operatorname{csch}(c+dx)\operatorname{sech}^2(c+dx)}{a^3} - \frac{ib\operatorname{csch}^2(c+dx)\operatorname{sech}^2(c+dx)}{a^2} + \frac{i\mathrm{c}}{}\right.\right.$$

$$= \frac{\int \operatorname{csch}^3(c+dx)\operatorname{sech}^2(c+dx)\,dx}{a} - \frac{b\int \operatorname{csch}^2(c+dx)\operatorname{sech}^2(c+dx)\,dx}{a^2} + \frac{b}{}$$

$$= -\frac{b^3\operatorname{sech}(c+dx)(b+a\sinh(c+dx))}{a^3\left(a^2+b^2\right)d} - \frac{b^3\int \frac{b^2}{a+b\sinh(c+dx)}\,dx}{a^3\left(a^2+b^2\right)} - \frac{\operatorname{Subst}\left(\int \frac{}{(-}\right.}{}$$

$$= \frac{b^2\operatorname{sech}(c+dx)}{a^3d} - \frac{\operatorname{csch}^2(c+dx)\operatorname{sech}(c+dx)}{2ad} - \frac{b^3\operatorname{sech}(c+dx)(b+a\sinh(}{a^3\left(a^2+b^2\right)d}$$

$$= -\frac{b^2\tanh^{-1}(\cosh(c+dx))}{a^3d} + \frac{b\coth(c+dx)}{a^2d} - \frac{3\operatorname{sech}(c+dx)}{2ad} + \frac{b^2\operatorname{sech}(c+}{a^3d}$$

$$= \frac{3\tanh^{-1}(\cosh(c+dx))}{2ad} - \frac{b^2\tanh^{-1}(\cosh(c+dx))}{a^3d} + \frac{b\coth(c+dx)}{a^2d} - \frac{3\mathrm{se}}{}$$

$$= \frac{3\tanh^{-1}(\cosh(c+dx))}{2ad} - \frac{b^2\tanh^{-1}(\cosh(c+dx))}{a^3d} + \frac{2b^5\tanh^{-1}\left(\frac{b-a\tanh(}{\sqrt{a^2-}}\right.}{a^3\left(a^2+b^2\right)^{3/2}}$$

Mathematica [A] time = 2.43, size = 185, normalized size = 0.90

$$\frac{\frac{8\operatorname{sech}(c+dx)(b\sinh(c+dx)-a)}{a^2+b^2} + \frac{4b\tanh\left(\frac{1}{2}(c+dx)\right)}{a^2} + \frac{4b\coth\left(\frac{1}{2}(c+dx)\right)}{a^2} - \frac{4\left(3a^2-2b^2\right)\log\left(\tanh\left(\frac{1}{2}(c+dx)\right)\right)}{a^3} + \frac{16b^5\tan^{-1}\left(\frac{b-a\tanh\left(\frac{1}{2}(c+dx)\right)}{\sqrt{-a^2-b^2}}\right)}{a^3\left(-a^2-b^2\right)^{3/2}} -}{8d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Csch[c + d*x]^3*Sech[c + d*x]^2)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((16*b^5*ArcTan[(b - a*Tanh[(c + d*x)/2])/Sqrt[-a^2 - b^2]])/(a^3*(-a^2 - b
^2)^(3/2)) + (4*b*Coth[(c + d*x)/2])/a^2 - Csch[(c + d*x)/2]^2/a - (4*(3*a^
2 - 2*b^2)*Log[Tanh[(c + d*x)/2]])/a^3 - Sech[(c + d*x)/2]^2/a + (8*Sech[c
+ d*x]*(-a + b*Sinh[c + d*x]))/(a^2 + b^2) + (4*b*Tanh[(c + d*x)/2])/a^2)/(
8*d)
```

fricas [B] time = 1.23, size = 2653, normalized size = 12.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="frica
s")
```

```
[Out] -1/2*(8*a^5*b + 12*a^3*b^3 + 4*a*b^5 + 2*(3*a^6 + 4*a^4*b^2 + a^2*b^4)*cosh
(d*x + c)^5 + 2*(3*a^6 + 4*a^4*b^2 + a^2*b^4)*sinh(d*x + c)^5 - 4*(a^3*b^3
+ a*b^5)*cosh(d*x + c)^4 - 2*(2*a^3*b^3 + 2*a*b^5 - 5*(3*a^6 + 4*a^4*b^2 +
a^2*b^4)*cosh(d*x + c))*sinh(d*x + c)^4 - 4*(a^6 - a^2*b^4)*cosh(d*x + c)^3
 - 4*(a^6 - a^2*b^4 - 5*(3*a^6 + 4*a^4*b^2 + a^2*b^4)*cosh(d*x + c)^2 + 4*(
a^3*b^3 + a*b^5)*cosh(d*x + c))*sinh(d*x + c)^3 - 8*(a^5*b + a^3*b^3)*cosh(
d*x + c)^2 - 4*(2*a^5*b + 2*a^3*b^3 - 5*(3*a^6 + 4*a^4*b^2 + a^2*b^4)*cosh(
d*x + c)^3 + 6*(a^3*b^3 + a*b^5)*cosh(d*x + c)^2 + 3*(a^6 - a^2*b^4)*cosh(d
*x + c))*sinh(d*x + c)^2 - 2*(b^5*cosh(d*x + c)^6 + 6*b^5*cosh(d*x + c)*sin
h(d*x + c)^5 + b^5*sinh(d*x + c)^6 - b^5*cosh(d*x + c)^4 - b^5*cosh(d*x + c
)^2 + b^5 + (15*b^5*cosh(d*x + c)^2 - b^5)*sinh(d*x + c)^4 + 4*(5*b^5*cosh(
d*x + c)^3 - b^5*cosh(d*x + c))*sinh(d*x + c)^3 + (15*b^5*cosh(d*x + c)^4 -
 6*b^5*cosh(d*x + c)^2 - b^5)*sinh(d*x + c)^2 + 2*(3*b^5*cosh(d*x + c)^5 -
2*b^5*cosh(d*x + c)^3 - b^5*cosh(d*x + c))*sinh(d*x + c))*sqrt(a^2 + b^2)*l
og((b^2*cosh(d*x + c)^2 + b^2*sinh(d*x + c)^2 + 2*a*b*cosh(d*x + c) + 2*a^2
 + b^2 + 2*(b^2*cosh(d*x + c) + a*b)*sinh(d*x + c) + 2*sqrt(a^2 + b^2)*(b*c
osh(d*x + c) + b*sinh(d*x + c) + a))/(b*cosh(d*x + c)^2 + b*sinh(d*x + c)^2
 + 2*a*cosh(d*x + c) + 2*(b*cosh(d*x + c) + a)*sinh(d*x + c) - b)) + 2*(3*a
^6 + 4*a^4*b^2 + a^2*b^4)*cosh(d*x + c) - ((3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2
*b^6)*cosh(d*x + c)^6 + 6*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*cosh(d*x +
c)*sinh(d*x + c)^5 + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*sinh(d*x + c)^6
+ 3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^
6)*cosh(d*x + c)^4 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6 - 15*(3*a^6 + 4*a
^4*b^2 - a^2*b^4 - 2*b^6)*cosh(d*x + c)^2)*sinh(d*x + c)^4 + 4*(5*(3*a^6 +
4*a^4*b^2 - a^2*b^4 - 2*b^6)*cosh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 - a^2*b^4
 - 2*b^6)*cosh(d*x + c))*sinh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2
*b^6)*cosh(d*x + c)^2 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6 - 15*(3*a^6 +
4*a^4*b^2 - a^2*b^4 - 2*b^6)*cosh(d*x + c)^4 + 6*(3*a^6 + 4*a^4*b^2 - a^2*b
^4 - 2*b^6)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 2*(3*(3*a^6 + 4*a^4*b^2 - a^
2*b^4 - 2*b^6)*cosh(d*x + c)^5 - 2*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*co
sh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*cosh(d*x + c))*sinh(d
*x + c))*log(cosh(d*x + c) + sinh(d*x + c) + 1) + ((3*a^6 + 4*a^4*b^2 - a^2
*b^4 - 2*b^6)*cosh(d*x + c)^6 + 6*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*cos
h(d*x + c)*sinh(d*x + c)^5 + (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*sinh(d*x
 + c)^6 + 3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6 - (3*a^6 + 4*a^4*b^2 - a^2*b^
4 - 2*b^6)*cosh(d*x + c)^4 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6 - 15*(3*a
```

```
^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*cosh(d*x + c)^2)*sinh(d*x + c)^4 + 4*(5*(
3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*cosh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 -
 a^2*b^4 - 2*b^6)*cosh(d*x + c))*sinh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 - a^2
*b^4 - 2*b^6)*cosh(d*x + c)^2 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6 - 15*(
3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*cosh(d*x + c)^4 + 6*(3*a^6 + 4*a^4*b^2
 - a^2*b^4 - 2*b^6)*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 2*(3*(3*a^6 + 4*a^4*
b^2 - a^2*b^4 - 2*b^6)*cosh(d*x + c)^5 - 2*(3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2
*b^6)*cosh(d*x + c)^3 - (3*a^6 + 4*a^4*b^2 - a^2*b^4 - 2*b^6)*cosh(d*x + c)
)*sinh(d*x + c))*log(cosh(d*x + c) + sinh(d*x + c) - 1) + 2*(3*a^6 + 4*a^4*
b^2 + a^2*b^4 + 5*(3*a^6 + 4*a^4*b^2 + a^2*b^4)*cosh(d*x + c)^4 - 8*(a^3*b^
3 + a*b^5)*cosh(d*x + c)^3 - 6*(a^6 - a^2*b^4)*cosh(d*x + c)^2 - 8*(a^5*b +
 a^3*b^3)*cosh(d*x + c))*sinh(d*x + c))/((a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh
(d*x + c)^6 + 6*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)*sinh(d*x + c)^5
 + (a^7 + 2*a^5*b^2 + a^3*b^4)*d*sinh(d*x + c)^6 - (a^7 + 2*a^5*b^2 + a^3*b
^4)*d*cosh(d*x + c)^4 + (15*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)^2 -
 (a^7 + 2*a^5*b^2 + a^3*b^4)*d)*sinh(d*x + c)^4 - (a^7 + 2*a^5*b^2 + a^3*b^
4)*d*cosh(d*x + c)^2 + 4*(5*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)^3 -
 (a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c))*sinh(d*x + c)^3 + (15*(a^7 +
2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)^4 - 6*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*co
sh(d*x + c)^2 - (a^7 + 2*a^5*b^2 + a^3*b^4)*d)*sinh(d*x + c)^2 + (a^7 + 2*a
^5*b^2 + a^3*b^4)*d + 2*(3*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)^5 -
2*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)^3 - (a^7 + 2*a^5*b^2 + a^3*b^
4)*d*cosh(d*x + c))*sinh(d*x + c))
```

giac [A] time = 0.57, size = 224, normalized size = 1.09

$$-\frac{\frac{2\,b^{5}\log\left(\frac{\left|2\,be^{(dx+c)}+2\,a-2\,\sqrt{a^{2}+b^{2}}\right|}{\left|2\,be^{(dx+c)}+2\,a+2\,\sqrt{a^{2}+b^{2}}\right|}\right)}{\left(a^{5}+a^{3}b^{2}\right)\sqrt{a^{2}+b^{2}}}+\frac{4\left(ae^{(dx+c)}+b\right)}{\left(a^{2}+b^{2}\right)\left(e^{(2\,dx+2\,c)}+1\right)}-\frac{\left(3\,a^{2}-2\,b^{2}\right)\log\left(e^{(dx+c)}+1\right)}{a^{3}}+\frac{\left(3\,a^{2}-2\,b^{2}\right)\log\left(\left|e^{(dx+c)}-1\right|\right)}{a^{3}}+\frac{2\left(ae^{(3\,dx+3\,c)}-2\,be^{(2}\cdots\right.}{a^{2}\left(e^{(2\,d}\cdots\right.}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="giac"
)
```

```
[Out] -1/2*(2*b^5*log(abs(2*b*e^(d*x + c) + 2*a - 2*sqrt(a^2 + b^2))/abs(2*b*e^(d
*x + c) + 2*a + 2*sqrt(a^2 + b^2)))/((a^5 + a^3*b^2)*sqrt(a^2 + b^2)) + 4*(
a*e^(d*x + c) + b)/((a^2 + b^2)*(e^(2*d*x + 2*c) + 1)) - (3*a^2 - 2*b^2)*lo
g(e^(d*x + c) + 1)/a^3 + (3*a^2 - 2*b^2)*log(abs(e^(d*x + c) - 1))/a^3 + 2*
(a*e^(3*d*x + 3*c) - 2*b*e^(2*d*x + 2*c) + a*e^(d*x + c) + 2*b)/(a^2*(e^(2*
d*x + 2*c) - 1)^2))/d
```

maple [A] time = 0.00, size = 233, normalized size = 1.13

$$\frac{\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)}{8da}+\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b}{2d\,a^2}-\frac{2b^5\,\mathrm{arctanh}\left(\frac{2a\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)-2b}{2\sqrt{a^2+b^2}}\right)}{d\,a^3\left(a^2+b^2\right)^{\frac{3}{2}}}-\frac{1}{8da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}-\frac{3\ln\left(\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{2da}+\frac{\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/8/d/a*tanh(1/2*d*x+1/2*c)^2+1/2/d/a^2*tanh(1/2*d*x+1/2*c)*b-2/d/a^3*b^5/(
a^2+b^2)^(3/2)*arctanh(1/2*(2*a*tanh(1/2*d*x+1/2*c)-2*b)/(a^2+b^2)^(1/2))-1
/8/d/a/tanh(1/2*d*x+1/2*c)^2-3/2/d/a*ln(tanh(1/2*d*x+1/2*c))+1/d/a^3*ln(tan
h(1/2*d*x+1/2*c))*b^2+1/2/d*b/a^2/tanh(1/2*d*x+1/2*c)+2/d/(a^2+b^2)/(tanh(1
/2*d*x+1/2*c)^2+1)*tanh(1/2*d*x+1/2*c)*b-2/d/(a^2+b^2)/(tanh(1/2*d*x+1/2*c)
^2+1)*a
```

maxima [A] time = 0.41, size = 334, normalized size = 1.62

$$-\frac{b^5\log\left(\frac{be^{(-dx-c)}-a-\sqrt{a^2+b^2}}{be^{(-dx-c)}-a+\sqrt{a^2+b^2}}\right)}{\left(a^5+a^3b^2\right)\sqrt{a^2+b^2}\,d}-\frac{4\,a^2be^{(-2\,dx-2\,c)}+2\,b^3e^{(-4\,dx-4\,c)}-4\,a^2b-2\,b^3+\left(3\,a^3+ab^2\right)e^{(-dx-c)}-2\left(a^3-ab^2\right)e^{(-}}{\left(a^4+a^2b^2-\left(a^4+a^2b^2\right)e^{(-2\,dx-2\,c)}-\left(a^4+a^2b^2\right)e^{(-4\,dx-4\,c)}+\left(a^4+a^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^2/(a+b*sinh(d*x+c)),x, algorithm="maxim
a")
```

```
[Out] -b^5*log((b*e^(-d*x - c) - a - sqrt(a^2 + b^2))/(b*e^(-d*x - c) - a + sqrt(
a^2 + b^2)))/((a^5 + a^3*b^2)*sqrt(a^2 + b^2)*d) - (4*a^2*b*e^(-2*d*x - 2*c
) + 2*b^3*e^(-4*d*x - 4*c) - 4*a^2*b - 2*b^3 + (3*a^3 + a*b^2)*e^(-d*x - c)
 - 2*(a^3 - a*b^2)*e^(-3*d*x - 3*c) + (3*a^3 + a*b^2)*e^(-5*d*x - 5*c))/((a
^4 + a^2*b^2 - (a^4 + a^2*b^2)*e^(-2*d*x - 2*c) - (a^4 + a^2*b^2)*e^(-4*d*x
 - 4*c) + (a^4 + a^2*b^2)*e^(-6*d*x - 6*c))*d) + 1/2*(3*a^2 - 2*b^2)*log(e^
(-d*x - c) + 1)/(a^3*d) - 1/2*(3*a^2 - 2*b^2)*log(e^(-d*x - c) - 1)/(a^3*d)
```

mupad [B] time = 3.47, size = 531, normalized size = 2.58

$$\frac{b^5\,\ln\left(2\,a^4\,b-4\,a^5\,\mathrm{e}^{c+d\,x}+b^5+3\,a^2\,b^3+4\,a^2\,\mathrm{e}^{c+d\,x}\sqrt{\left(a^2+b^2\right)^3}+b^2\,\mathrm{e}^{c+d\,x}\sqrt{\left(a^2+b^2\right)^3}-7\,a^3\,b^2\,\mathrm{e}^{c+d\,x}-2\,a\,b\,\sqrt{\right.}}{d\,a^9+3\,d\,a^7\,b^2+3\,d\,a^5\,b^4+d\,a^3\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^2*sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
```

```
[Out] (b^5*log(2*a^4*b - 4*a^5*exp(c + d*x) + b^5 + 3*a^2*b^3 + 4*a^2*exp(c + d*x
)*((a^2 + b^2)^3)^(1/2) + b^2*exp(c + d*x)*((a^2 + b^2)^3)^(1/2) - 7*a^3*b^
2*exp(c + d*x) - 2*a*b*((a^2 + b^2)^3)^(1/2) - 3*a*b^4*exp(c + d*x))*((a^2
+ b^2)^3)^(1/2))/(a^9*d + a^3*b^6*d + 3*a^5*b^4*d + 3*a^7*b^2*d) - (exp(c +
 d*x)/(a*d) - (2*(a^2*b + b^3))/(a^2*d*(a^2 + b^2)))/(exp(2*c + 2*d*x) - 1)
 - ((2*b)/(d*(a^2 + b^2)) + (2*a*exp(c + d*x))/(d*(a^2 + b^2)))/(exp(2*c +
2*d*x) + 1) - (log(exp(c + d*x) - 1)*(3*a^2 - 2*b^2))/(2*a^3*d) + (log(exp(
c + d*x) + 1)*(3*a^2 - 2*b^2))/(2*a^3*d) - (b^5*log(4*a^5*exp(c + d*x) - 2*
a^4*b - b^5 - 3*a^2*b^3 + 4*a^2*exp(c + d*x)*((a^2 + b^2)^3)^(1/2) + b^2*ex
p(c + d*x)*((a^2 + b^2)^3)^(1/2) + 7*a^3*b^2*exp(c + d*x) - 2*a*b*((a^2 + b
^2)^3)^(1/2) + 3*a*b^4*exp(c + d*x))*((a^2 + b^2)^3)^(1/2))/(a^9*d + a^3*b^
6*d + 3*a^5*b^4*d + 3*a^7*b^2*d) - (2*exp(c + d*x))/(a*d*(exp(4*c + 4*d*x)
- 2*exp(2*c + 2*d*x) + 1))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3*sech(d*x+c)**2/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.499 $\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$

Optimal. Leaf size=39

$$\operatorname{Int}\left(\frac{\operatorname{csch}^3(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^3*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Csch[c + d*x]^3*Sech[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Csch[c + d*x]^3*Sech[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x
])), x]
```

Rubi steps

$$\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx=\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}^2(c+dx)}{(e+fx)(a+b\sinh(c+dx))}\,dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Csch[c + d*x]^3*Sech[c + d*x]^2)/((e + f*x)*(a + b*Sinh[c + d*x]
)),x]
```

```
[Out] $Aborted
```

fricas [A] time = 3.95, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{csch}(dx+c)^3\operatorname{sech}(dx+c)^2}{afx+ae+(bfx+be)\sinh(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] integral(csch(d*x + c)^3*sech(d*x + c)^2/(a*f*x + a*e + (b*f*x + b*e)*sinh(
d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [A] time = 4.48, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}\left(dx+c\right)^{3} \operatorname{sech}\left(dx+c\right)^{2}}{\left(fx+e\right)\left(a+b\sinh\left(dx+c\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^3*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^2/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -32*b^5*integrate(-1/16*e^(d*x + c)/(a^5*b*e + a^3*b^3*e + (a^5*b*f + a^3*b
^3*f)*x - (a^5*b*e*e^(2*c) + a^3*b^3*e*e^(2*c) + (a^5*b*f*e^(2*c) + a^3*b^3
*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^6*e*e^c + a^4*b^2*e*e^c + (a^6*f*e^c + a^4*
b^2*f*e^c)*x)*e^(d*x)), x) - (4*a^2*b*d*e + 2*b^3*d*e + 2*(2*a^2*b*d*f + b^
3*d*f)*x + ((3*d*e - f)*a^3*e^(5*c) + (d*e - f)*a*b^2*e^(5*c) + (3*a^3*d*f*
e^(5*c) + a*b^2*d*f*e^(5*c))*x)*e^(5*d*x) - 2*(b^3*d*f*x*e^(4*c) + b^3*d*e*
e^(4*c))*e^(4*d*x) - 2*(a^3*d*e*e^(3*c) - a*b^2*d*e*e^(3*c) + (a^3*d*f*e^(3
*c) - a*b^2*d*f*e^(3*c))*x)*e^(3*d*x) - 4*(a^2*b*d*f*x*e^(2*c) + a^2*b*d*e*
```

```
e^(2*c))*e^(2*d*x) + ((3*d*e + f)*a^3*e^c + (d*e + f)*a*b^2*e^c + (3*a^3*d*
f*e^c + a*b^2*d*f*e^c)*x)*e^(d*x))/(a^4*d^2*e^2 + a^2*b^2*d^2*e^2 + (a^4*d^
2*f^2 + a^2*b^2*d^2*f^2)*x^2 + 2*(a^4*d^2*e*f + a^2*b^2*d^2*e*f)*x + (a^4*d
^2*e^2*e^(6*c) + a^2*b^2*d^2*e^2*e^(6*c) + (a^4*d^2*f^2*e^(6*c) + a^2*b^2*d
^2*f^2*e^(6*c))*x^2 + 2*(a^4*d^2*e*f*e^(6*c) + a^2*b^2*d^2*e*f*e^(6*c))*x)*
e^(6*d*x) - (a^4*d^2*e^2*e^(4*c) + a^2*b^2*d^2*e^2*e^(4*c) + (a^4*d^2*f^2*e
^(4*c) + a^2*b^2*d^2*f^2*e^(4*c))*x^2 + 2*(a^4*d^2*e*f*e^(4*c) + a^2*b^2*d^
2*e*f*e^(4*c))*x)*e^(4*d*x) - (a^4*d^2*e^2*e^(2*c) + a^2*b^2*d^2*e^2*e^(2*c
) + (a^4*d^2*f^2*e^(2*c) + a^2*b^2*d^2*f^2*e^(2*c))*x^2 + 2*(a^4*d^2*e*f*e^
(2*c) + a^2*b^2*d^2*e*f*e^(2*c))*x)*e^(2*d*x)) - 32*integrate(1/64*(2*b^2*d
^2*e^2 + 2*a*b*d*e*f - (3*d^2*e^2 - 2*f^2)*a^2 - (3*a^2*d^2*f^2 - 2*b^2*d^2
*f^2)*x^2 - 2*(3*a^2*d^2*e*f - 2*b^2*d^2*e*f - a*b*d*f^2)*x)/(a^3*d^2*f^3*x
^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3*d^2*e^2*f*x + a^3*d^2*e^3 - (a^3*d^2*f^3*x
^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c + 3*a^3*d^2*e^2*f*x*e^c + a^3*d^2*e^3*e^c)
*e^(d*x)), x) - 32*integrate(-1/64*(2*b^2*d^2*e^2 - 2*a*b*d*e*f - (3*d^2*e^
2 - 2*f^2)*a^2 - (3*a^2*d^2*f^2 - 2*b^2*d^2*f^2)*x^2 - 2*(3*a^2*d^2*e*f - 2
*b^2*d^2*e*f + a*b*d*f^2)*x)/(a^3*d^2*f^3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3
*d^2*e^2*f*x + a^3*d^2*e^3 + (a^3*d^2*f^3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c
 + 3*a^3*d^2*e^2*f*x*e^c + a^3*d^2*e^3*e^c)*e^(d*x)), x) - 32*integrate(1/1
6*(a*f*e^(d*x + c) + b*f)/(a^2*d*e^2 + b^2*d*e^2 + (a^2*d*f^2 + b^2*d*f^2)*
x^2 + 2*(a^2*d*e*f + b^2*d*e*f)*x + (a^2*d*e^2*e^(2*c) + b^2*d*e^2*e^(2*c)
+ (a^2*d*f^2*e^(2*c) + b^2*d*f^2*e^(2*c))*x^2 + 2*(a^2*d*e*f*e^(2*c) + b^2*
d*e*f*e^(2*c))*x)*e^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh (c + d x)^2 \sinh (c + d x)^3 \left(e + f x\right) (a + b \sinh (c + d x))} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^2*sinh(c + d*x)^3*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)^2*sinh(c + d*x)^3*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3*sech(d*x+c)**2/(f*x+e)/(a+b*sinh(d*x+c)),x)
[Out] Timed out
```

3.500 $\int \frac{(e+fx)\textbf{csch}^3(c+dx)\textbf{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=1122

$$-\frac{(e+fx)\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^6}{a^3\left(a^2+b^2\right)^2 d}-\frac{(e+fx)\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^6}{a^3\left(a^2+b^2\right)^2 d}+\frac{(e+fx)\log\left(1+e^{2(c+dx)}\right)b^6}{a^3\left(a^2+b^2\right)^2 d}-\frac{f\text{Li}_2\left(-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right.}{a^3\left(a^2+b^2\right)^2}$$

```
[Out] 1/2*b^2*f*x/a^3/d-2*(f*x+e)*coth(2*d*x+2*c)*csch(2*d*x+2*c)/a/d+1/2*b*f*sec
h(d*x+c)/a^2/d^2-1/2*b^2*f*tanh(d*x+c)/a^3/d^2-1/2*b^2*(f*x+e)*tanh(d*x+c)^
2/a^3/d+3/2*b*(f*x+e)*arctan(sinh(d*x+c))/a^2/d+b*f*arctanh(cosh(d*x+c))/a^
2/d^2+3/2*b*(f*x+e)*csch(d*x+c)/a^2/d-1/2*b^2*f*polylog(2,-exp(2*d*x+2*c))/
a^3/d^2-2*b^5*(f*x+e)*arctan(exp(d*x+c))/a^2/(a^2+b^2)^2/d-2*b^2*f*x*arctan
h(exp(2*d*x+2*c))/a^3/d+1/2*b^6*f*polylog(2,-exp(2*d*x+2*c))/a^3/(a^2+b^2)^
2/d^2-1/2*b^3*f*sech(d*x+c)/a^2/(a^2+b^2)/d^2-1/2*b^4*(f*x+e)*sech(d*x+c)^2
/a^3/(a^2+b^2)/d-1/2*b*(f*x+e)*csch(d*x+c)*sech(d*x+c)^2/a^2/d+1/2*b^4*f*ta
nh(d*x+c)/a^3/(a^2+b^2)/d^2-3/2*I*b*f*polylog(2,-I*exp(d*x+c))/a^2/d^2+3*b*
f*x*arctan(exp(d*x+c))/a^2/d-b^3*(f*x+e)*arctan(exp(d*x+c))/a^2/(a^2+b^2)/d
-3/2*b*f*x*arctan(sinh(d*x+c))/a^2/d+I*b^5*f*polylog(2,-I*exp(d*x+c))/a^2/(
a^2+b^2)^2/d^2+3/2*I*b*f*polylog(2,I*exp(d*x+c))/a^2/d^2-1/2*b^3*(f*x+e)*se
ch(d*x+c)*tanh(d*x+c)/a^2/(a^2+b^2)/d-I*b^5*f*polylog(2,I*exp(d*x+c))/a^2/(
a^2+b^2)^2/d^2-1/2*I*b^3*f*polylog(2,I*exp(d*x+c))/a^2/(a^2+b^2)/d^2+1/2*b^
2*f*polylog(2,exp(2*d*x+2*c))/a^3/d^2+1/2*I*b^3*f*polylog(2,-I*exp(d*x+c))/
a^2/(a^2+b^2)/d^2-f*csch(2*d*x+2*c)/a/d^2+4*(f*x+e)*arctanh(exp(2*d*x+2*c))
/a/d+f*polylog(2,-exp(2*d*x+2*c))/a/d^2-f*polylog(2,exp(2*d*x+2*c))/a/d^2-b
^6*f*polylog(2,-b*exp(d*x+c)/(a+(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)^2/d^2+b^6*(
f*x+e)*ln(1+exp(2*d*x+2*c))/a^3/(a^2+b^2)^2/d-b^6*(f*x+e)*ln(1+b*exp(d*x+c)
/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)^2/d-b^6*(f*x+e)*ln(1+b*exp(d*x+c)/(a+(a
^2+b^2)^(1/2)))/a^3/(a^2+b^2)^2/d-b^2*f*x*ln(tanh(d*x+c))/a^3/d-b^6*f*polyl
og(2,-b*exp(d*x+c)/(a-(a^2+b^2)^(1/2)))/a^3/(a^2+b^2)^2/d^2+b^2*(f*x+e)*ln(
tanh(d*x+c))/a^3/d
```

Rubi [A] time = 1.81, antiderivative size = 1122, normalized size of antiderivative = 1.00, number of steps used = 65, number of rules used = 28, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.824$, Rules used = {5589, 5461, 4185, 4182, 2279, 2391, 2621, 288, 321, 207, 5462, 5203, 12, 4180, 3770, 2622, 2620, 14, 2548, 3473, 8, 5573, 5561, 2190, 6742, 3718, 5451, 3767}

$$-\frac{(e+fx)\log\left(\frac{e^{c+dx}b}{a-\sqrt{a^2+b^2}}+1\right)b^6}{a^3\left(a^2+b^2\right)^2 d}-\frac{(e+fx)\log\left(\frac{e^{c+dx}b}{a+\sqrt{a^2+b^2}}+1\right)b^6}{a^3\left(a^2+b^2\right)^2 d}+\frac{(e+fx)\log\left(1+e^{2(c+dx)}\right)b^6}{a^3\left(a^2+b^2\right)^2 d}-\frac{f\text{PolyLog}\left(2,-\right.}{a^3\left(a^2+b\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csch[c + d*x]^3*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b^2*f*x)/(2*a^3*d) + (3*b*f*x*ArcTan[E^(c + d*x)])/(a^2*d) - (2*b^5*(e + f
*x)*ArcTan[E^(c + d*x)])/(a^2*(a^2 + b^2)^2*d) - (b^3*(e + f*x)*ArcTan[E^(c
 + d*x)])/(a^2*(a^2 + b^2)*d) - (3*b*f*x*ArcTan[Sinh[c + d*x]])/(2*a^2*d) +
 (3*b*(e + f*x)*ArcTan[Sinh[c + d*x]])/(2*a^2*d) - (2*b^2*f*x*ArcTanh[E^(2*
c + 2*d*x)])/(a^3*d) + (4*(e + f*x)*ArcTanh[E^(2*c + 2*d*x)])/(a*d) + (b*f*
ArcTanh[Cosh[c + d*x]])/(a^2*d^2) + (3*b*(e + f*x)*Csch[c + d*x])/(2*a^2*d)
 - (f*Csch[2*c + 2*d*x])/(a*d^2) - (2*(e + f*x)*Coth[2*c + 2*d*x]*Csch[2*c
+ 2*d*x])/(a*d) - (b^6*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^
2])])/(a^3*(a^2 + b^2)^2*d) - (b^6*(e + f*x)*Log[1 + (b*E^(c + d*x))/(a + S
qrt[a^2 + b^2])])/(a^3*(a^2 + b^2)^2*d) + (b^6*(e + f*x)*Log[1 + E^(2*(c +
d*x))])/(a^3*(a^2 + b^2)^2*d) - (b^2*f*x*Log[Tanh[c + d*x]])/(a^3*d) + (b^2
*(e + f*x)*Log[Tanh[c + d*x]])/(a^3*d) - (((3*I)/2)*b*f*PolyLog[2, (-I)*E^(
c + d*x)])/(a^2*d^2) + (I*b^5*f*PolyLog[2, (-I)*E^(c + d*x)])/(a^2*(a^2 + b
^2)^2*d^2) + ((I/2)*b^3*f*PolyLog[2, (-I)*E^(c + d*x)])/(a^2*(a^2 + b^2)*d^
2) + (((3*I)/2)*b*f*PolyLog[2, I*E^(c + d*x)])/(a^2*d^2) - (I*b^5*f*PolyLog
[2, I*E^(c + d*x)])/(a^2*(a^2 + b^2)^2*d^2) - ((I/2)*b^3*f*PolyLog[2, I*E^(
c + d*x)])/(a^2*(a^2 + b^2)*d^2) - (b^6*f*PolyLog[2, -((b*E^(c + d*x))/(a -
 Sqrt[a^2 + b^2]))])/(a^3*(a^2 + b^2)^2*d^2) - (b^6*f*PolyLog[2, -((b*E^(c
+ d*x))/(a + Sqrt[a^2 + b^2]))])/(a^3*(a^2 + b^2)^2*d^2) + (b^6*f*PolyLog[2
, -E^(2*(c + d*x))])/(2*a^3*(a^2 + b^2)^2*d^2) + (f*PolyLog[2, -E^(2*c + 2*
d*x)])/(a*d^2) - (b^2*f*PolyLog[2, -E^(2*c + 2*d*x)])/(2*a^3*d^2) - (f*Poly
Log[2, E^(2*c + 2*d*x)])/(a*d^2) + (b^2*f*PolyLog[2, E^(2*c + 2*d*x)])/(2*a
^3*d^2) + (b*f*Sech[c + d*x])/(2*a^2*d^2) - (b^3*f*Sech[c + d*x])/(2*a^2*(a
^2 + b^2)*d^2) - (b^4*(e + f*x)*Sech[c + d*x]^2)/(2*a^3*(a^2 + b^2)*d) - (b
*(e + f*x)*Csch[c + d*x]*Sech[c + d*x]^2)/(2*a^2*d) - (b^2*f*Tanh[c + d*x])
/(2*a^3*d^2) + (b^4*f*Tanh[c + d*x])/(2*a^3*(a^2 + b^2)*d^2) - (b^3*(e + f*
x)*Sech[c + d*x]*Tanh[c + d*x])/(2*a^2*(a^2 + b^2)*d) - (b^2*(e + f*x)*Tanh
[c + d*x]^2)/(2*a^3*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2548

```
Int[Log[u_], x_Symbol] :> Simp[x*Log[u], x] - Int[SimplifyIntegrand[(x*D[u,
 x])/u, x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 2622

```
Int[csc[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_), x_S
ymbol] :> Dist[1/(f*a^n), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n + 1)/2
), x], x, a*Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)
/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3718

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (Complex[0, fz_])*(f_.)*(x_)], x
_Symbol] :> -Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] + Dist[2*I, Int[((c
 + d*x)^m*E^(2*(-(I*e) + f*fz*x)))/(1 + E^(2*(-(I*e) + f*fz*x))), x], x] /;
 FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4182

```
Int[csc[(e_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x
_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)])/(f*fz*I), x]
 + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 - E^(-(I*e) + f*fz*x)
], x], x] + Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1 + E^(-(I*e) +
f*fz*x)], x], x]) /; FreeQ[{c, d, e, f, fz}, x] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 5203

```
Int[ArcTan[u_], x_Symbol] :> Simp[x*ArcTan[u], x] - Int[SimplifyIntegrand[(
x*D[u, x])/(1 + u^2), x], x] /; InverseFunctionFreeQ[u, x]
```

Rule 5451

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) + (b_.)*(x_)]^(n_.)*Tanh[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> -Simp[((c + d*x)^m*Sech[a + b*x]^n)/(b*n),
x] + Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sech[a + b*x]^n, x], x] /; Fre
eQ[{a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 5461

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csch[2*a + 2*b*x]
^n, x], x] /; FreeQ[{a, b, c, d}, x] && RationalQ[m] && IntegerQ[n]
```

Rule 5462

```
Int[Csch[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sech[(a_.) +
(b_.)*(x_)]^(p_.), x_Symbol] :> With[{u = IntHide[Csch[a + b*x]^n*Sech[a +
b*x]^p, x]}, Dist[(c + d*x)^m, u, x] - Dist[d*m, Int[(c + d*x)^(m - 1)*u, x
], x]] /; FreeQ[{a, b, c, d}, x] && IntegersQ[n, p] && GtQ[m, 0] && NeQ[n,
p]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 5573

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_
.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[b^2/(a^2 + b^2), Int[((e +
f*x)^m*Sech[c + d*x]^(n - 2))/(a + b*Sinh[c + d*x]), x], x] + Dist[1/(a^2 +
 b^2), Int[(e + f*x)^m*Sech[c + d*x]^n*(a - b*Sinh[c + d*x]), x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0] && IGtQ[n, 0]
```

Rule 5589

```
Int[(Csch[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.)*Sech[(c_.) +
 (d_.)*(x_)]^(p_.))/((a_) + (b_.)*Sinh[(c_.) + (d_.)*(x_)]), x_Symbol] :> D
ist[1/a, Int[(e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^n, x], x] - Dist[b/a
, Int[((e + f*x)^m*Sech[c + d*x]^p*Csch[c + d*x]^(n - 1))/(a + b*Sinh[c + d
*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] &&
 IGtQ[p, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\operatorname{csch}^3(c+dx)\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{\int (e+fx)\operatorname{csch}^3(c+dx)\operatorname{sech}^3(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\operatorname{csch}^2(c+dx)\operatorname{sech}^3}{a+b\sinh(c+dx)}}{a}$$

$$= \frac{8\int (e+fx)\operatorname{csch}^3(2c+2dx)\,dx}{a} - \frac{b\int (e+fx)\operatorname{csch}^2(c+dx)\operatorname{sech}^3(c}{a^2}$$

$$= \frac{3b(e+fx)\tan^{-1}(\sinh(c+dx))}{2a^2d} + \frac{3b(e+fx)\operatorname{csch}(c+dx)}{2a^2d} - \frac{f\operatorname{csch}}{}$$

$$= \frac{3b(e+fx)\tan^{-1}(\sinh(c+dx))}{2a^2d} + \frac{4(e+fx)\tanh^{-1}\left(e^{2c+2dx}\right)}{ad} + \frac{3b(}{}$$

$$= -\frac{3bfx\tan^{-1}(\sinh(c+dx))}{2a^2d} + \frac{3b(e+fx)\tan^{-1}(\sinh(c+dx))}{2a^2d} + \frac{4(}{}$$

$$= \frac{b^6(e+fx)^2}{2a^3\left(a^2+b^2\right)^2 f} - \frac{3bfx\tan^{-1}(\sinh(c+dx))}{2a^2d} + \frac{3b(e+fx)\tan^{-1}(s}{2a^2d}$$

$$= \frac{b^2fx}{2a^3d} + \frac{b^6(e+fx)^2}{2a^3\left(a^2+b^2\right)^2 f} + \frac{3bfx\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{3bfx\tan^{-1}(\sinh(}{2a^2d}$$

$$= \frac{b^2fx}{2a^3d} + \frac{3bfx\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^5(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)^2 d} - \frac{b^3(e+f}{a^2(}$$

$$= \frac{b^2fx}{2a^3d} + \frac{3bfx\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^5(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)^2 d} - \frac{b^3(e+f}{a^2(}$$

$$= \frac{b^2fx}{2a^3d} + \frac{3bfx\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^5(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)^2 d} - \frac{b^3(e+f}{a^2(}$$

$$= \frac{b^2fx}{2a^3d} + \frac{3bfx\tan^{-1}\left(e^{c+dx}\right)}{a^2d} - \frac{2b^5(e+fx)\tan^{-1}\left(e^{c+dx}\right)}{a^2\left(a^2+b^2\right)^2 d} - \frac{b^3(e+f}{a^2(}$$

Mathematica [B] time = 10.10, size = 2870, normalized size = 2.56

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Csch[c + d*x]^3*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x])
,x]
```

```
[Out] 8*(((I/16)*(2*a^6 + 3*a^4*b^2 + b^6)*(d*e - c*f)*(c + d*x))/(a^3*(a^2 + b^2
)^2*d^2) + ((I/32)*(2*a^6 + 3*a^4*b^2 + b^6)*f*(c + d*x)^2)/(a^3*(a^2 + b^2
)^2*d^2) + (a^3*e*ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]])/(2*(a^2 + b^2)^2*d)
 + (3*a*b^2*e*ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]])/(4*(a^2 + b^2)^2*d) - (
b^6*e*ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]])/(4*a^3*(a^2 + b^2)^2*d) - (a^3*
c*f*ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]])/(2*(a^2 + b^2)^2*d^2) - (3*a*b^2*
c*f*ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]])/(4*(a^2 + b^2)^2*d^2) + (b^6*c*f*
ArcTanh[1 - (2*I)*Tanh[(c + d*x)/2]])/(4*a^3*(a^2 + b^2)^2*d^2) - (e*Log[Co
sh[(c + d*x)/2]])/(4*a*d) + (b^2*e*Log[Cosh[(c + d*x)/2]])/(8*a^3*d) + (c*f
*Log[Cosh[(c + d*x)/2]])/(4*a*d^2) - (b^2*c*f*Log[Cosh[(c + d*x)/2]])/(8*a^
3*d^2) + (a^3*e*((-1/2*I)*(c + d*x) + Log[Cosh[(c + d*x)/2] + I*Sinh[(c + d
*x)/2]]))/(4*(a^2 + b^2)^2*d) + (3*a*b^2*e*((-1/2*I)*(c + d*x) + Log[Cosh[(
c + d*x)/2] + I*Sinh[(c + d*x)/2]]))/(8*(a^2 + b^2)^2*d) - (a^3*c*f*((-1/2*
I)*(c + d*x) + Log[Cosh[(c + d*x)/2] + I*Sinh[(c + d*x)/2]]))/(4*(a^2 + b^2
)^2*d^2) - (3*a*b^2*c*f*((-1/2*I)*(c + d*x) + Log[Cosh[(c + d*x)/2] + I*Sin
h[(c + d*x)/2]]))/(8*(a^2 + b^2)^2*d^2) + (b^6*e*((-I)*(c + d*x) + 2*ArcTan
h[1 - (2*I)*Tanh[(c + d*x)/2]] + Log[-1 + Cosh[c + d*x] + I*Sinh[c + d*x]])
)/(16*a^3*(a^2 + b^2)^2*d) - (b^6*c*f*((-I)*(c + d*x) + 2*ArcTanh[1 - (2*I)
*Tanh[(c + d*x)/2]] + Log[-1 + Cosh[c + d*x] + I*Sinh[c + d*x]]))/(16*a^3*(
a^2 + b^2)^2*d^2) - (b*f*Log[Tanh[(c + d*x)/2]])/(8*a^2*d^2) - ((I/2)*f*((-
1/8*I)*(c + d*x)^2 - (I/2)*(c + d*x)*Log[1 + E^(-c - d*x)] + (I/2)*PolyLog[
2, -E^(-c - d*x)]))/(a*d^2) + ((I/4)*b^2*f*((-1/8*I)*(c + d*x)^2 - (I/2)*(c
 + d*x)*Log[1 + E^(-c - d*x)] + (I/2)*PolyLog[2, -E^(-c - d*x)]))/(a^3*d^2)
 + (b^6*f*((-1/2*I)*(c + d*x)^2 + (I/4)*(3*Pi*(c + d*x) + (1 - I)*(c + d*x)
^2 + 2*(Pi - (2*I)*(c + d*x))*Log[1 + I*E^(-c - d*x)] - 4*Pi*Log[1 + E^(c +
 d*x)] - 2*Pi*Log[-Cos[(Pi + (2*I)*(c + d*x))/4]] + 4*Pi*Log[Cosh[(c + d*x)
/2]] + (4*I)*PolyLog[2, (-I)*E^(-c - d*x)])))/(8*a^3*(a^2 + b^2)^2*d^2) - (
(I/4)*a^3*f*((c + d*x)^2/4 + (-3*Pi*(c + d*x) - (1 - I)*(c + d*x)^2 - 2*(Pi
 - (2*I)*(c + d*x))*Log[1 + I*E^(-c - d*x)] + 4*Pi*Log[1 + E^(c + d*x)] + 2
*Pi*Log[-Cos[(Pi + (2*I)*(c + d*x))/4]] - 4*Pi*Log[Cosh[(c + d*x)/2]] - (4*
I)*PolyLog[2, (-I)*E^(-c - d*x)])/4 - (I/2)*(-1/2*(c + d*x)^2 + 2*(c + d*x)
*Log[1 - E^(c + d*x)] + 2*PolyLog[2, E^(c + d*x)])))/((a^2 + b^2)^2*d^2) -
(((3*I)/8)*a*b^2*f*((c + d*x)^2/4 + (-3*Pi*(c + d*x) - (1 - I)*(c + d*x)^2
- 2*(Pi - (2*I)*(c + d*x))*Log[1 + I*E^(-c - d*x)] + 4*Pi*Log[1 + E^(c + d*
x)] + 2*Pi*Log[-Cos[(Pi + (2*I)*(c + d*x))/4]] - 4*Pi*Log[Cosh[(c + d*x)/2]
] - (4*I)*PolyLog[2, (-I)*E^(-c - d*x)])/4 - (I/2)*(-1/2*(c + d*x)^2 + 2*(c
 + d*x)*Log[1 - E^(c + d*x)] + 2*PolyLog[2, E^(c + d*x)])))/((a^2 + b^2)^2*
d^2) + ((I/8)*b^6*f*((c + d*x)^2/4 + (-3*Pi*(c + d*x) - (1 - I)*(c + d*x)^2
 - 2*(Pi - (2*I)*(c + d*x))*Log[1 + I*E^(-c - d*x)] + 4*Pi*Log[1 + E^(c + d
*x)] + 2*Pi*Log[-Cos[(Pi + (2*I)*(c + d*x))/4]] - 4*Pi*Log[Cosh[(c + d*x)/2
```

```
]] - (4*I)*PolyLog[2, (-I)*E^(-c - d*x)])/4 - (I/2)*(-1/2*(c + d*x)^2 + 2*(
c + d*x)*Log[1 - E^(c + d*x)] + 2*PolyLog[2, E^(c + d*x)])))/(a^3*(a^2 + b^
2)^2*d^2) - (b^6*(-1/2*(f*(c + d*x)^2) + f*(c + d*x)*Log[1 + (b*E^(c + d*x)
)/(a - Sqrt[a^2 + b^2])] + f*(c + d*x)*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^
2 + b^2])] + d*e*Log[a + b*Sinh[c + d*x]] - c*f*Log[a + b*Sinh[c + d*x]] +
f*PolyLog[2, (b*E^(c + d*x))/(-a + Sqrt[a^2 + b^2])] + f*PolyLog[2, -((b*E^
(c + d*x))/(a + Sqrt[a^2 + b^2]))]))/(8*a^3*(a^2 + b^2)^2*d^2) - ((I/2)*a^3
*f*((E^((I/4)*Pi)*(c + d*x)^2)/4 - ((Pi*(c + d*x))/4 - Pi*Log[1 + E^(c + d*
x)] - 2*(Pi/4 + (I/2)*(c + d*x))*Log[1 - E^((2*I)*(Pi/4 + (I/2)*(c + d*x)))
] + Pi*Log[Cosh[(c + d*x)/2]] + (Pi*Log[Sin[Pi/4 + (I/2)*(c + d*x)]])/2 + I
*PolyLog[2, E^((2*I)*(Pi/4 + (I/2)*(c + d*x)))])/Sqrt[2]))/(Sqrt[2]*(a^2 +
b^2)^2*d^2) - (((3*I)/4)*a*b^2*f*((E^((I/4)*Pi)*(c + d*x)^2)/4 - ((Pi*(c +
d*x))/4 - Pi*Log[1 + E^(c + d*x)] - 2*(Pi/4 + (I/2)*(c + d*x))*Log[1 - E^((
2*I)*(Pi/4 + (I/2)*(c + d*x)))] + Pi*Log[Cosh[(c + d*x)/2]] + (Pi*Log[Sin[P
i/4 + (I/2)*(c + d*x)]])/2 + I*PolyLog[2, E^((2*I)*(Pi/4 + (I/2)*(c + d*x))
)])/Sqrt[2]))/(Sqrt[2]*(a^2 + b^2)^2*d^2) + (b*(3*a^2 + 5*b^2)*(2*(d*e - c*
f + f*(c + d*x))*ArcTan[Cosh[c + d*x] + Sinh[c + d*x]] - I*f*PolyLog[2, (-I
)*(Cosh[c + d*x] + Sinh[c + d*x])] + I*f*PolyLog[2, I*(Cosh[c + d*x] + Sinh
[c + d*x])]))/(16*(a^2 + b^2)^2*d^2) + (Csch[c + d*x]^2*Sech[c + d*x]^2*(-4
*a*b^2*d*e + 4*a*b^2*c*f - 4*a*b^2*f*(c + d*x) - 2*a^2*b*f*Cosh[c + d*x] -
8*a^3*d*e*Cosh[2*(c + d*x)] - 4*a*b^2*d*e*Cosh[2*(c + d*x)] + 8*a^3*c*f*Cos
h[2*(c + d*x)] + 4*a*b^2*c*f*Cosh[2*(c + d*x)] - 8*a^3*f*(c + d*x)*Cosh[2*(
c + d*x)] - 4*a*b^2*f*(c + d*x)*Cosh[2*(c + d*x)] + 2*a^2*b*f*Cosh[3*(c + d
*x)] - 2*a^2*b*d*e*Sinh[c + d*x] + 4*b^3*d*e*Sinh[c + d*x] + 2*a^2*b*c*f*Si
nh[c + d*x] - 4*b^3*c*f*Sinh[c + d*x] - 2*a^2*b*f*(c + d*x)*Sinh[c + d*x] +
 4*b^3*f*(c + d*x)*Sinh[c + d*x] - 4*a^3*f*Sinh[2*(c + d*x)] - 2*a*b^2*f*Si
nh[2*(c + d*x)] + 6*a^2*b*d*e*Sinh[3*(c + d*x)] + 4*b^3*d*e*Sinh[3*(c + d*x
)] - 6*a^2*b*c*f*Sinh[3*(c + d*x)] - 4*b^3*c*f*Sinh[3*(c + d*x)] + 6*a^2*b*
f*(c + d*x)*Sinh[3*(c + d*x)] + 4*b^3*f*(c + d*x)*Sinh[3*(c + d*x)] - a*b^2
*f*Sinh[4*(c + d*x)]))/(128*a^2*(a^2 + b^2)*d^2))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.43, size = 3563, normalized size = 3.18

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csch(d*x+c)^3*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] 1/(a^2+b^2)^(5/2)/d^2*a^2*b^2*f*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^
(1/2))+10*I/(a^2+b^2)/d*b^3*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*x-10*I/(a^2+
b^2)/d^2*b^3*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*c+10*I/(a^2+b^2)/d^2*b^3*f/
(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*c-6*I/(a^2+b^2)/d^2*a^2*f/(4*a^2+4*b^2)*di
log(1+I*exp(d*x+c))*b+6*I/(a^2+b^2)/d^2*a^2*f/(4*a^2+4*b^2)*dilog(1-I*exp(d
*x+c))*b-10*I/(a^2+b^2)/d*b^3*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*x-1/(a^2+b
^2)^2/d^2/a^3*b^6*f*dilog((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/
2)))-1/(a^2+b^2)^2/d^2/a^3*b^6*f*dilog((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-
a+(a^2+b^2)^(1/2)))+1/d^2/(a^2+b^2)*b*f*ln(exp(d*x+c)+1)-1/d^2/(a^2+b^2)*b*
f*ln(exp(d*x+c)-1)-1/d^2*b^2*f/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b*exp(d*x+c)+
2*a)/(a^2+b^2)^(1/2))-12/d^2/(a^2+b^2)*b^2*f*c/(4*a^2+4*b^2)*a*ln(1+exp(2*d
*x+2*c))-12/d^2/(a^2+b^2)*a^2*f*c/(4*a^2+4*b^2)*b*arctan(exp(d*x+c))+12/d/(
a^2+b^2)*b^2*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*a*x+12/d^2/(a^2+b^2)*b^2*f/
(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*a*c+12/d/(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*ln(
1-I*exp(d*x+c))*a*x+12/d^2/(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))
*a*c+1/2/d^2/(a^2+b^2)^(5/2)*a^2*b^2*f*c*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(
a^2+b^2)^(1/2))-2/d^2/(a^2+b^2)*a*f*dilog(exp(d*x+c)+1)+2/d^2/(a^2+b^2)*a*f
*dilog(exp(d*x+c))-2/d/(a^2+b^2)*a*e*ln(exp(d*x+c)+1)-2/d/(a^2+b^2)*a*e*ln(
exp(d*x+c)-1)+8/d/(a^2+b^2)*a^3*e/(4*a^2+4*b^2)*ln(1+exp(2*d*x+2*c))+8/d^2/
(a^2+b^2)*a^3*f/(4*a^2+4*b^2)*dilog(1+I*exp(d*x+c))+8/d^2/(a^2+b^2)*a^3*f/(
4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))+1/2/d/(a^2+b^2)^(3/2)*b^2*e*arctanh(1/2*
(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/2/d/(a^2+b^2)^(5/2)*b^4*e*arctanh(1
/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+20/d/(a^2+b^2)*b^3*e/(4*a^2+4*b^2)
*arctan(exp(d*x+c))-(-3*a^2*b*d*f*x*exp(7*d*x+7*c)+2*a*b^2*d*f*x*exp(6*d*x+
6*c)+a^2*b*d*f*x*exp(5*d*x+5*c)-2*b^3*d*e*exp(7*d*x+7*c)+4*a^3*d*e*exp(6*d*
x+6*c)-a^2*b*f*exp(7*d*x+7*c)+a*b^2*f*exp(6*d*x+6*c)-2*b^3*d*e*exp(5*d*x+5*
c)+a^2*b*f*exp(5*d*x+5*c)+a*b^2*f*exp(4*d*x+4*c)+2*a*b^2*d*f*x*exp(2*d*x+2*
c)-2*a^3*f*exp(2*d*x+2*c)+2*a^3*f*exp(6*d*x+6*c)+3*a^2*b*d*f*x*exp(d*x+c)-a
^2*b*d*f*x*exp(3*d*x+3*c)-2*b^3*d*f*x*exp(7*d*x+7*c)+4*a^3*d*f*x*exp(6*d*x+
6*c)-a*b^2*f*exp(2*d*x+2*c)+2*b^3*d*e*exp(3*d*x+3*c)+4*a^3*d*e*exp(2*d*x+2*
c)+a^2*b*f*exp(3*d*x+3*c)-3*a^2*b*d*e*exp(7*d*x+7*c)+2*a*b^2*d*e*exp(6*d*x+
6*c)-2*b^3*d*f*x*exp(5*d*x+5*c)+a^2*b*d*e*exp(5*d*x+5*c)+4*a*b^2*d*e*exp(4*
d*x+4*c)+2*b^3*d*e*exp(d*x+c)-a^2*b*f*exp(d*x+c)-a*b^2*f+2*b^3*d*f*x*exp(3*
```

```
d*x+3*c)+4*a^3*d*f*x*exp(2*d*x+2*c)-a^2*b*d*e*exp(3*d*x+3*c)+2*a*b^2*d*e*ex
p(2*d*x+2*c)+4*a*b^2*d*f*x*exp(4*d*x+4*c)+2*b^3*d*f*x*exp(d*x+c)+3*a^2*b*d*
e*exp(d*x+c))/d^2/(a^2+b^2)/(1+exp(2*d*x+2*c))^2/a^2/(exp(2*d*x+2*c)-1)^2-1
/d^2/a^2*f*b^4/(a^2+b^2)^(3/2)*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(
1/2))-6*I/(a^2+b^2)/d*a^2*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*b*x+6*I/(a^2+b
^2)/d*a^2*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*b*x-6*I/(a^2+b^2)/d^2*a^2*f/(4
*a^2+4*b^2)*ln(1+I*exp(d*x+c))*b*c+6*I/(a^2+b^2)/d^2*a^2*f/(4*a^2+4*b^2)*ln
(1-I*exp(d*x+c))*b*c+2/(a^2+b^2)^(5/2)/d^2*b^4*f*arctanh(1/2*(2*b*exp(d*x+c
)+2*a)/(a^2+b^2)^(1/2))+1/d^2/(a^2+b^2)/a^2*b^3*f*ln(exp(d*x+c)+1)-1/d^2/(a
^2+b^2)/a^2*b^3*f*ln(exp(d*x+c)-1)+1/d/(a^2+b^2)/a^3*b^4*e*ln(exp(d*x+c)+1)
+1/d/(a^2+b^2)/a^3*b^4*e*ln(exp(d*x+c)-1)+1/d^2/(a^2+b^2)/a^3*b^4*f*dilog(e
xp(d*x+c)+1)-1/d^2/(a^2+b^2)/a^3*b^4*f*dilog(exp(d*x+c))-1/(a^2+b^2)^2/d/a^
3*b^6*e*ln(b*exp(2*d*x+2*c)+2*a*exp(d*x+c)-b)+1/d/(a^2+b^2)/a^3*b^4*f*ln(ex
p(d*x+c)+1)*x+10*I/(a^2+b^2)/d^2*b^3*f/(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))-
10*I/(a^2+b^2)/d^2*b^3*f/(4*a^2+4*b^2)*dilog(1+I*exp(d*x+c))-1/(a^2+b^2)^2/
d/a^3*b^6*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+(a^2+b^2)^(1/2)))*x-1/(a
^2+b^2)^2/d/a^3*b^6*f*ln((-b*exp(d*x+c)+(a^2+b^2)^(1/2)-a)/(-a+(a^2+b^2)^(1
/2)))*x-1/(a^2+b^2)^2/d^2/a^3*b^6*f*ln((b*exp(d*x+c)+(a^2+b^2)^(1/2)+a)/(a+
(a^2+b^2)^(1/2)))*c-1/(a^2+b^2)^2/d^2/a^3*b^6*f*ln((-b*exp(d*x+c)+(a^2+b^2)
^(1/2)-a)/(-a+(a^2+b^2)^(1/2)))*c+1/(a^2+b^2)^2/d^2/a^3*b^6*f*c*ln(b*exp(2*
d*x+2*c)+2*a*exp(d*x+c)-b)+1/(a^2+b^2)^(5/2)/d^2/a^2*b^6*f*arctanh(1/2*(2*b
*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-1/2/d^2/(a^2+b^2)^(3/2)*b^2*f*c*arctanh(1
/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+1/2/d^2/(a^2+b^2)^(5/2)*b^4*f*c*ar
ctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))-20/d^2/(a^2+b^2)*b^3*f*c/(4
*a^2+4*b^2)*arctan(exp(d*x+c))+12/d^2/(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*dilog(1
+I*exp(d*x+c))*a+12/d^2/(a^2+b^2)*b^2*f/(4*a^2+4*b^2)*dilog(1-I*exp(d*x+c))
*a-8/d^2/(a^2+b^2)*a^3*f*c/(4*a^2+4*b^2)*ln(1+exp(2*d*x+2*c))+12/d/(a^2+b^2
)*b^2*e/(4*a^2+4*b^2)*a*ln(1+exp(2*d*x+2*c))-1/2/d/(a^2+b^2)^(5/2)*a^2*b^2*
e*arctanh(1/2*(2*b*exp(d*x+c)+2*a)/(a^2+b^2)^(1/2))+12/d/(a^2+b^2)*a^2*e/(4
*a^2+4*b^2)*b*arctan(exp(d*x+c))+8/d/(a^2+b^2)*a^3*f/(4*a^2+4*b^2)*ln(1+I*e
xp(d*x+c))*x+8/d^2/(a^2+b^2)*a^3*f/(4*a^2+4*b^2)*ln(1+I*exp(d*x+c))*c+8/d/(
a^2+b^2)*a^3*f/(4*a^2+4*b^2)*ln(1-I*exp(d*x+c))*x+8/d^2/(a^2+b^2)*a^3*f/(4*
a^2+4*b^2)*ln(1-I*exp(d*x+c))*c+1/d^2/(a^2+b^2)*b^2*f*c/a*ln(exp(d*x+c)-1)-
1/d/(a^2+b^2)*b^2*f/a*ln(exp(d*x+c)+1)*x-1/d^2/(a^2+b^2)/a^3*b^4*f*c*ln(exp
(d*x+c)-1)-1/d/(a^2+b^2)*b^2*e/a*ln(exp(d*x+c)+1)-1/d/(a^2+b^2)*b^2*e/a*ln(
exp(d*x+c)-1)-1/d^2/(a^2+b^2)*b^2*f/a*dilog(exp(d*x+c)+1)+1/d^2/(a^2+b^2)*b
^2*f*dilog(exp(d*x+c))/a+2/d^2/(a^2+b^2)*a*f*c*ln(exp(d*x+c)-1)-2/d/(a^2+b^
2)*ln(exp(d*x+c)+1)*a*f*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)^3*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorith
```

```
m="maxima")
```

```
[Out] -(b^6*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^7 + 2*a^5*b^2 + a
^3*b^4)*d) + (3*a^2*b + 5*b^3)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4
)*d) - (2*a^3 + 3*a*b^2)*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)
*d) + (4*a*b^2*e^(-4*d*x - 4*c) - (3*a^2*b + 2*b^3)*e^(-d*x - c) + 2*(2*a^3
 + a*b^2)*e^(-2*d*x - 2*c) + (a^2*b - 2*b^3)*e^(-3*d*x - 3*c) - (a^2*b - 2*
b^3)*e^(-5*d*x - 5*c) + 2*(2*a^3 + a*b^2)*e^(-6*d*x - 6*c) + (3*a^2*b + 2*b
^3)*e^(-7*d*x - 7*c))/((a^4 + a^2*b^2 - 2*(a^4 + a^2*b^2)*e^(-4*d*x - 4*c)
+ (a^4 + a^2*b^2)*e^(-8*d*x - 8*c))*d) + (2*a^2 - b^2)*log(e^(-d*x - c) + 1
)/(a^3*d) + (2*a^2 - b^2)*log(e^(-d*x - c) - 1)/(a^3*d))*e + (128*a^2*d*int
egrate(1/64*x/(a^3*d*e^(d*x + c) + a^3*d), x) - 64*b^2*d*integrate(1/64*x/(
a^3*d*e^(d*x + c) + a^3*d), x) - 128*a^2*d*integrate(1/64*x/(a^3*d*e^(d*x +
 c) - a^3*d), x) + 64*b^2*d*integrate(1/64*x/(a^3*d*e^(d*x + c) - a^3*d), x
) - a*b*((d*x + c)/(a^3*d^2) - log(e^(d*x + c) + 1)/(a^3*d^2)) + a*b*((d*x
+ c)/(a^3*d^2) - log(e^(d*x + c) - 1)/(a^3*d^2)) + (a*b^2 + (a^2*b*e^(7*c)
+ (3*a^2*b*d*e^(7*c) + 2*b^3*d*e^(7*c))*x)*e^(7*d*x) - (2*a^3*e^(6*c) + a*b
^2*e^(6*c) + 2*(2*a^3*d*e^(6*c) + a*b^2*d*e^(6*c))*x)*e^(6*d*x) - (a^2*b*e^
(5*c) + (a^2*b*d*e^(5*c) - 2*b^3*d*e^(5*c))*x)*e^(5*d*x) - (4*a*b^2*d*x*e^(
4*c) + a*b^2*e^(4*c))*e^(4*d*x) - (a^2*b*e^(3*c) - (a^2*b*d*e^(3*c) - 2*b^3
*d*e^(3*c))*x)*e^(3*d*x) + (2*a^3*e^(2*c) + a*b^2*e^(2*c) - 2*(2*a^3*d*e^(2
*c) + a*b^2*d*e^(2*c))*x)*e^(2*d*x) + (a^2*b*e^c - (3*a^2*b*d*e^c + 2*b^3*d
*e^c)*x)*e^(d*x))/(a^4*d^2 + a^2*b^2*d^2 + (a^4*d^2*e^(8*c) + a^2*b^2*d^2*e
^(8*c))*e^(8*d*x) - 2*(a^4*d^2*e^(4*c) + a^2*b^2*d^2*e^(4*c))*e^(4*d*x)) +
64*integrate(-1/32*(a*b^6*x*e^(d*x + c) - b^7*x)/(a^7*b + 2*a^5*b^3 + a^3*b
^5 - (a^7*b*e^(2*c) + 2*a^5*b^3*e^(2*c) + a^3*b^5*e^(2*c))*e^(2*d*x) - 2*(a
^8*e^c + 2*a^6*b^2*e^c + a^4*b^4*e^c)*e^(d*x)), x) + 64*integrate(1/64*((3*
a^2*b*e^c + 5*b^3*e^c)*x*e^(d*x) - 2*(2*a^3 + 3*a*b^2)*x)/(a^4 + 2*a^2*b^2
+ b^4 + (a^4*e^(2*c) + 2*a^2*b^2*e^(2*c) + b^4*e^(2*c))*e^(2*d*x)), x))*f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e+f\,x}{\cosh\left(c+d\,x\right)^3\,\sinh\left(c+d\,x\right)^3\,\left(a+b\,\sinh\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cosh(c + d*x)^3*sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
```

```
[Out] int((e + f*x)/(cosh(c + d*x)^3*sinh(c + d*x)^3*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csch(d*x+c)**3*sech(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.501 $\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx$

Optimal. Leaf size=211

$$\frac{b\left(a^2+2b^2\right)\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{b\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)}+\frac{a\left(2a^2+3b^2\right)\log(\cosh(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{\operatorname{sech}^2(c+dx)(a-b\sinh(c+dx))}{2d\left(a^2+b^2\right)}$$

```
[Out] 1/2*b*arctan(sinh(d*x+c))/(a^2+b^2)/d+b*(a^2+2*b^2)*arctan(sinh(d*x+c))/(a^
2+b^2)^2/d+b*csch(d*x+c)/a^2/d-1/2*csch(d*x+c)^2/a/d+a*(2*a^2+3*b^2)*ln(cos
h(d*x+c))/(a^2+b^2)^2/d-(2*a^2-b^2)*ln(sinh(d*x+c))/a^3/d-b^6*ln(a+b*sinh(d
*x+c))/a^3/(a^2+b^2)^2/d-1/2*sech(d*x+c)^2*(a-b*sinh(d*x+c))/(a^2+b^2)/d
```

Rubi [A] time = 0.37, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {2837, 12, 894, 639, 203, 635, 260}

$$-\frac{b^6\log(a+b\sinh(c+dx))}{a^3d\left(a^2+b^2\right)^2}-\frac{\left(2a^2-b^2\right)\log(\sinh(c+dx))}{a^3d}+\frac{b\left(a^2+2b^2\right)\tan^{-1}(\sinh(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{b\tan^{-1}(\sinh(c+dx))}{2d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Csch[c + d*x]^3*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] (b*ArcTan[Sinh[c + d*x]])/(2*(a^2 + b^2)*d) + (b*(a^2 + 2*b^2)*ArcTan[Sinh[
c + d*x]])/((a^2 + b^2)^2*d) + (b*Csch[c + d*x])/(a^2*d) - Csch[c + d*x]^2/
(2*a*d) + (a*(2*a^2 + 3*b^2)*Log[Cosh[c + d*x]])/((a^2 + b^2)^2*d) - ((2*a^
2 - b^2)*Log[Sinh[c + d*x]])/(a^3*d) - (b^6*Log[a + b*Sinh[c + d*x]])/(a^3*
(a^2 + b^2)^2*d) - (Sech[c + d*x]^2*(a - b*Sinh[c + d*x]))/(2*(a^2 + b^2)*d
)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\operatorname{csch}^3(c+dx)\operatorname{sech}^3(c+dx)}{a+b\sinh(c+dx)}\,dx = \frac{b^3\operatorname{Subst}\left(\int \frac{b^3}{x^3(a+x)\left(-b^2-x^2\right)^2}\,dx,x,b\sinh(c+dx)\right)}{d}$$

$$= \frac{b^6\operatorname{Subst}\left(\int \frac{1}{x^3(a+x)\left(-b^2-x^2\right)^2}\,dx,x,b\sinh(c+dx)\right)}{d}$$

$$= \frac{b^6\operatorname{Subst}\left(\int\left(\frac{1}{ab^4x^3}-\frac{1}{a^2b^4x^2}+\frac{-2a^2+b^2}{a^3b^6x}-\frac{1}{a^3\left(a^2+b^2\right)^2(a+x)}+\frac{b^2+ax}{b^4\left(a^2+b^2\right)\left(b^2+x^2\right)^2}+\frac{b^2(a}{b}\right.\right.}{d}$$

$$= \frac{b\operatorname{csch}(c+dx)}{a^2d}-\frac{\operatorname{csch}^2(c+dx)}{2ad}-\frac{\left(2a^2-b^2\right)\log(\sinh(c+dx))}{a^3d}-\frac{b^6\log(a+}{a^3\left(a\right.}$$

$$= \frac{b\operatorname{csch}(c+dx)}{a^2d}-\frac{\operatorname{csch}^2(c+dx)}{2ad}-\frac{\left(2a^2-b^2\right)\log(\sinh(c+dx))}{a^3d}-\frac{b^6\log(a+}{a^3\left(a\right.}$$

$$= \frac{b\tan^{-1}(\sinh(c+dx))}{2\left(a^2+b^2\right)d}+\frac{b\left(a^2+2b^2\right)\tan^{-1}(\sinh(c+dx))}{\left(a^2+b^2\right)^2d}+\frac{b\operatorname{csch}(c+dx)}{a^2d}$$

Mathematica [C] time = 0.79, size = 237, normalized size = 1.12

$$\frac{-\frac{a\operatorname{sech}^2(c+dx)}{a^2+b^2}+\frac{(a-ib)\left(2a^2+iab+2b^2\right)\log(-\sinh(c+dx)+i)}{\left(a^2+b^2\right)^2}+\frac{(a+ib)\left(2a^2-iab+2b^2\right)\log(\sinh(c+dx)+i)}{\left(a^2+b^2\right)^2}+\frac{b\tan^{-1}(\sinh(c+dx))}{a^2+b^2}+\frac{b\tanh(c+dx)\operatorname{se}}{a^2+b^2}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Csch[c + d*x]^3*Sech[c + d*x]^3)/(a + b*Sinh[c + d*x]),x]
```

```
[Out] ((b*ArcTan[Sinh[c + d*x]])/(a^2 + b^2) + (2*b*Csch[c + d*x])/a^2 - Csch[c +
 d*x]^2/a + ((a - I*b)*(2*a^2 + I*a*b + 2*b^2)*Log[I - Sinh[c + d*x]])/(a^2
 + b^2)^2 - (2*(2*a^2 - b^2)*Log[Sinh[c + d*x]])/a^3 + ((a + I*b)*(2*a^2 -
I*a*b + 2*b^2)*Log[I + Sinh[c + d*x]])/(a^2 + b^2)^2 - (2*b^6*Log[a + b*Sin
h[c + d*x]])/(a^3*(a^2 + b^2)^2) - (a*Sech[c + d*x]^2)/(a^2 + b^2) + (b*Sec
h[c + d*x]*Tanh[c + d*x])/(a^2 + b^2))/(2*d)
```

fricas [B] time = 3.11, size = 3148, normalized size = 14.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="frica
s")
```

```
[Out] ((3*a^5*b + 5*a^3*b^3 + 2*a*b^5)*cosh(d*x + c)^7 + (3*a^5*b + 5*a^3*b^3 + 2
*a*b^5)*sinh(d*x + c)^7 - 2*(2*a^6 + 3*a^4*b^2 + a^2*b^4)*cosh(d*x + c)^6 -
 (4*a^6 + 6*a^4*b^2 + 2*a^2*b^4 - 7*(3*a^5*b + 5*a^3*b^3 + 2*a*b^5)*cosh(d*
x + c))*sinh(d*x + c)^6 - (a^5*b - a^3*b^3 - 2*a*b^5)*cosh(d*x + c)^5 - (a^
5*b - a^3*b^3 - 2*a*b^5 - 21*(3*a^5*b + 5*a^3*b^3 + 2*a*b^5)*cosh(d*x + c)^
2 + 12*(2*a^6 + 3*a^4*b^2 + a^2*b^4)*cosh(d*x + c))*sinh(d*x + c)^5 - 4*(a^
4*b^2 + a^2*b^4)*cosh(d*x + c)^4 - (4*a^4*b^2 + 4*a^2*b^4 - 35*(3*a^5*b + 5
*a^3*b^3 + 2*a*b^5)*cosh(d*x + c)^3 + 30*(2*a^6 + 3*a^4*b^2 + a^2*b^4)*cosh
(d*x + c)^2 + 5*(a^5*b - a^3*b^3 - 2*a*b^5)*cosh(d*x + c))*sinh(d*x + c)^4
+ (a^5*b - a^3*b^3 - 2*a*b^5)*cosh(d*x + c)^3 + (a^5*b - a^3*b^3 - 2*a*b^5
+ 35*(3*a^5*b + 5*a^3*b^3 + 2*a*b^5)*cosh(d*x + c)^4 - 40*(2*a^6 + 3*a^4*b^
2 + a^2*b^4)*cosh(d*x + c)^3 - 10*(a^5*b - a^3*b^3 - 2*a*b^5)*cosh(d*x + c)
^2 - 16*(a^4*b^2 + a^2*b^4)*cosh(d*x + c))*sinh(d*x + c)^3 - 2*(2*a^6 + 3*a
^4*b^2 + a^2*b^4)*cosh(d*x + c)^2 - (4*a^6 + 6*a^4*b^2 + 2*a^2*b^4 - 21*(3*
a^5*b + 5*a^3*b^3 + 2*a*b^5)*cosh(d*x + c)^5 + 30*(2*a^6 + 3*a^4*b^2 + a^2*
b^4)*cosh(d*x + c)^4 + 10*(a^5*b - a^3*b^3 - 2*a*b^5)*cosh(d*x + c)^3 + 24*
(a^4*b^2 + a^2*b^4)*cosh(d*x + c)^2 - 3*(a^5*b - a^3*b^3 - 2*a*b^5)*cosh(d*
x + c))*sinh(d*x + c)^2 + ((3*a^5*b + 5*a^3*b^3)*cosh(d*x + c)^8 + 56*(3*a^
5*b + 5*a^3*b^3)*cosh(d*x + c)^3*sinh(d*x + c)^5 + 28*(3*a^5*b + 5*a^3*b^3)
*cosh(d*x + c)^2*sinh(d*x + c)^6 + 8*(3*a^5*b + 5*a^3*b^3)*cosh(d*x + c)*si
nh(d*x + c)^7 + (3*a^5*b + 5*a^3*b^3)*sinh(d*x + c)^8 + 3*a^5*b + 5*a^3*b^3
 - 2*(3*a^5*b + 5*a^3*b^3)*cosh(d*x + c)^4 - 2*(3*a^5*b + 5*a^3*b^3 - 35*(3
*a^5*b + 5*a^3*b^3)*cosh(d*x + c)^4)*sinh(d*x + c)^4 + 8*(7*(3*a^5*b + 5*a^
3*b^3)*cosh(d*x + c)^5 - (3*a^5*b + 5*a^3*b^3)*cosh(d*x + c))*sinh(d*x + c)
^3 + 4*(7*(3*a^5*b + 5*a^3*b^3)*cosh(d*x + c)^6 - 3*(3*a^5*b + 5*a^3*b^3)*c
osh(d*x + c)^2)*sinh(d*x + c)^2 + 8*((3*a^5*b + 5*a^3*b^3)*cosh(d*x + c)^7
- (3*a^5*b + 5*a^3*b^3)*cosh(d*x + c)^3)*sinh(d*x + c))*arctan(cosh(d*x + c
) + sinh(d*x + c)) - (3*a^5*b + 5*a^3*b^3 + 2*a*b^5)*cosh(d*x + c) - (b^6*c
osh(d*x + c)^8 + 56*b^6*cosh(d*x + c)^3*sinh(d*x + c)^5 + 28*b^6*cosh(d*x +
 c)^2*sinh(d*x + c)^6 + 8*b^6*cosh(d*x + c)*sinh(d*x + c)^7 + b^6*sinh(d*x
+ c)^8 - 2*b^6*cosh(d*x + c)^4 + b^6 + 2*(35*b^6*cosh(d*x + c)^4 - b^6)*sin
h(d*x + c)^4 + 8*(7*b^6*cosh(d*x + c)^5 - b^6*cosh(d*x + c))*sinh(d*x + c)^
3 + 4*(7*b^6*cosh(d*x + c)^6 - 3*b^6*cosh(d*x + c)^2)*sinh(d*x + c)^2 + 8*(
b^6*cosh(d*x + c)^7 - b^6*cosh(d*x + c)^3)*sinh(d*x + c))*log(2*(b*sinh(d*x
 + c) + a)/(cosh(d*x + c) - sinh(d*x + c))) + ((2*a^6 + 3*a^4*b^2)*cosh(d*x
 + c)^8 + 56*(2*a^6 + 3*a^4*b^2)*cosh(d*x + c)^3*sinh(d*x + c)^5 + 28*(2*a^
6 + 3*a^4*b^2)*cosh(d*x + c)^2*sinh(d*x + c)^6 + 8*(2*a^6 + 3*a^4*b^2)*cosh
(d*x + c)*sinh(d*x + c)^7 + (2*a^6 + 3*a^4*b^2)*sinh(d*x + c)^8 + 2*a^6 + 3
*a^4*b^2 - 2*(2*a^6 + 3*a^4*b^2)*cosh(d*x + c)^4 - 2*(2*a^6 + 3*a^4*b^2 - 3
5*(2*a^6 + 3*a^4*b^2)*cosh(d*x + c)^4)*sinh(d*x + c)^4 + 8*(7*(2*a^6 + 3*a^
```

```
4*b^2)*cosh(d*x + c)^5 - (2*a^6 + 3*a^4*b^2)*cosh(d*x + c))*sinh(d*x + c)^3
 + 4*(7*(2*a^6 + 3*a^4*b^2)*cosh(d*x + c)^6 - 3*(2*a^6 + 3*a^4*b^2)*cosh(d*
x + c)^2)*sinh(d*x + c)^2 + 8*((2*a^6 + 3*a^4*b^2)*cosh(d*x + c)^7 - (2*a^6
 + 3*a^4*b^2)*cosh(d*x + c)^3)*sinh(d*x + c))*log(2*cosh(d*x + c)/(cosh(d*x
 + c) - sinh(d*x + c))) - ((2*a^6 + 3*a^4*b^2 - b^6)*cosh(d*x + c)^8 + 56*(
2*a^6 + 3*a^4*b^2 - b^6)*cosh(d*x + c)^3*sinh(d*x + c)^5 + 28*(2*a^6 + 3*a^
4*b^2 - b^6)*cosh(d*x + c)^2*sinh(d*x + c)^6 + 8*(2*a^6 + 3*a^4*b^2 - b^6)*
cosh(d*x + c)*sinh(d*x + c)^7 + (2*a^6 + 3*a^4*b^2 - b^6)*sinh(d*x + c)^8 +
 2*a^6 + 3*a^4*b^2 - b^6 - 2*(2*a^6 + 3*a^4*b^2 - b^6)*cosh(d*x + c)^4 - 2*
(2*a^6 + 3*a^4*b^2 - b^6 - 35*(2*a^6 + 3*a^4*b^2 - b^6)*cosh(d*x + c)^4)*si
nh(d*x + c)^4 + 8*(7*(2*a^6 + 3*a^4*b^2 - b^6)*cosh(d*x + c)^5 - (2*a^6 + 3
*a^4*b^2 - b^6)*cosh(d*x + c))*sinh(d*x + c)^3 + 4*(7*(2*a^6 + 3*a^4*b^2 -
b^6)*cosh(d*x + c)^6 - 3*(2*a^6 + 3*a^4*b^2 - b^6)*cosh(d*x + c)^2)*sinh(d*
x + c)^2 + 8*((2*a^6 + 3*a^4*b^2 - b^6)*cosh(d*x + c)^7 - (2*a^6 + 3*a^4*b^
2 - b^6)*cosh(d*x + c)^3)*sinh(d*x + c))*log(2*sinh(d*x + c)/(cosh(d*x + c)
 - sinh(d*x + c))) + (7*(3*a^5*b + 5*a^3*b^3 + 2*a*b^5)*cosh(d*x + c)^6 - 3
*a^5*b - 5*a^3*b^3 - 2*a*b^5 - 12*(2*a^6 + 3*a^4*b^2 + a^2*b^4)*cosh(d*x +
c)^5 - 5*(a^5*b - a^3*b^3 - 2*a*b^5)*cosh(d*x + c)^4 - 16*(a^4*b^2 + a^2*b^
4)*cosh(d*x + c)^3 + 3*(a^5*b - a^3*b^3 - 2*a*b^5)*cosh(d*x + c)^2 - 4*(2*a
^6 + 3*a^4*b^2 + a^2*b^4)*cosh(d*x + c))*sinh(d*x + c))/((a^7 + 2*a^5*b^2 +
 a^3*b^4)*d*cosh(d*x + c)^8 + 56*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c
)^3*sinh(d*x + c)^5 + 28*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)^2*sinh
(d*x + c)^6 + 8*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)*sinh(d*x + c)^7
 + (a^7 + 2*a^5*b^2 + a^3*b^4)*d*sinh(d*x + c)^8 - 2*(a^7 + 2*a^5*b^2 + a^3
*b^4)*d*cosh(d*x + c)^4 + 2*(35*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)
^4 - (a^7 + 2*a^5*b^2 + a^3*b^4)*d)*sinh(d*x + c)^4 + 8*(7*(a^7 + 2*a^5*b^2
 + a^3*b^4)*d*cosh(d*x + c)^5 - (a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)
)*sinh(d*x + c)^3 + 4*(7*(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)^6 - 3*
(a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)^2)*sinh(d*x + c)^2 + (a^7 + 2*a
^5*b^2 + a^3*b^4)*d + 8*((a^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)^7 - (a
^7 + 2*a^5*b^2 + a^3*b^4)*d*cosh(d*x + c)^3)*sinh(d*x + c))
```

giac [B] time = 1.58, size = 464, normalized size = 2.20

$$-\frac{\frac{4\,b^7\log\left(\left|b\left(e^{(dx+c)}-e^{(-dx-c)}\right)+2\,a\right|\right)}{a^7b+2\,a^5b^3+a^3b^5}-\frac{\left(\pi+2\,\arctan\left(\frac{1}{2}\left(e^{(2\,dx+2\,c)}-1\right)e^{(-dx-c)}\right)\right)\left(3\,a^2b+5\,b^3\right)}{a^4+2\,a^2b^2+b^4}-\frac{2\left(2\,a^3+3\,ab^2\right)\log\left(\left(e^{(dx+c)}-e^{(-dx-c)}\right)^2+4\right)}{a^4+2\,a^2b^2+b^4}+\frac{2\left(2\,a^3(\cdots}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="giac"
)
```

```
[Out] -1/4*(4*b^7*log(abs(b*(e^(d*x + c) - e^(-d*x - c)) + 2*a))/(a^7*b + 2*a^5*b
^3 + a^3*b^5) - (pi + 2*arctan(1/2*(e^(2*d*x + 2*c) - 1)*e^(-d*x - c)))*(3*
```

```
a^2*b + 5*b^3)/(a^4 + 2*a^2*b^2 + b^4) - 2*(2*a^3 + 3*a*b^2)*log((e^(d*x +
c) - e^(-d*x - c))^2 + 4)/(a^4 + 2*a^2*b^2 + b^4) + 2*(2*a^3*(e^(d*x + c) -
 e^(-d*x - c))^2 + 3*a*b^2*(e^(d*x + c) - e^(-d*x - c))^2 - 2*a^2*b*(e^(d*x
 + c) - e^(-d*x - c)) - 2*b^3*(e^(d*x + c) - e^(-d*x - c)) + 12*a^3 + 16*a*
b^2)/((a^4 + 2*a^2*b^2 + b^4)*((e^(d*x + c) - e^(-d*x - c))^2 + 4)) + 4*(2*
a^2 - b^2)*log(abs(e^(d*x + c) - e^(-d*x - c)))/a^3 - 2*(6*a^2*(e^(d*x + c)
 - e^(-d*x - c))^2 - 3*b^2*(e^(d*x + c) - e^(-d*x - c))^2 + 4*a*b*(e^(d*x +
 c) - e^(-d*x - c)) - 4*a^2)/(a^3*(e^(d*x + c) - e^(-d*x - c))^2))/d
```

maple [B] time = 0.00, size = 539, normalized size = 2.55

$$-\frac{\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)}{8da}-\frac{\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b}{2d\,a^2}-\frac{b^6\ln\left(\left(\tanh^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a-2\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)b-a\right)}{d\left(a^2+b^2\right)^2a^3}-\frac{1}{8da\tanh\left(\frac{dx}{2}+\frac{c}{2}\right)^2}-\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x)
```

```
[Out] -1/8/d/a*tanh(1/2*d*x+1/2*c)^2-1/2/d/a^2*tanh(1/2*d*x+1/2*c)*b-1/d*b^6/(a^2
+b^2)^2/a^3*ln(tanh(1/2*d*x+1/2*c)^2*a-2*tanh(1/2*d*x+1/2*c)*b-a)-1/8/d/a/t
anh(1/2*d*x+1/2*c)^2-2/d/a*ln(tanh(1/2*d*x+1/2*c))+1/d/a^3*ln(tanh(1/2*d*x+
1/2*c))*b^2+1/2/d*b/a^2/tanh(1/2*d*x+1/2*c)-1/d/(a^2+b^2)^2/(tanh(1/2*d*x+1
/2*c)^2+1)^2*tanh(1/2*d*x+1/2*c)^3*a^2*b-1/d/(a^2+b^2)^2/(tanh(1/2*d*x+1/2*
c)^2+1)^2*tanh(1/2*d*x+1/2*c)^3*b^3+2/d/(a^2+b^2)^2/(tanh(1/2*d*x+1/2*c)^2+
1)^2*tanh(1/2*d*x+1/2*c)^2*a^3+2/d/(a^2+b^2)^2/(tanh(1/2*d*x+1/2*c)^2+1)^2*
tanh(1/2*d*x+1/2*c)^2*a*b^2+1/d/(a^2+b^2)^2/(tanh(1/2*d*x+1/2*c)^2+1)^2*tan
h(1/2*d*x+1/2*c)*a^2*b+1/d/(a^2+b^2)^2/(tanh(1/2*d*x+1/2*c)^2+1)^2*tanh(1/2
*d*x+1/2*c)*b^3+2/d/(a^2+b^2)^2*ln(tanh(1/2*d*x+1/2*c)^2+1)*a^3+3/d/(a^2+b^
2)^2*ln(tanh(1/2*d*x+1/2*c)^2+1)*a*b^2+3/d/(a^2+b^2)^2*arctan(tanh(1/2*d*x+
1/2*c))*a^2*b+5/d/(a^2+b^2)^2*arctan(tanh(1/2*d*x+1/2*c))*b^3
```

maxima [B] time = 0.42, size = 418, normalized size = 1.98

$$-\frac{b^6\log\left(-2\,ae^{(-dx-c)}+be^{(-2\,dx-2\,c)}-b\right)}{\left(a^7+2\,a^5b^2+a^3b^4\right)d}-\frac{\left(3\,a^2b+5\,b^3\right)\arctan\left(e^{(-dx-c)}\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}+\frac{\left(2\,a^3+3\,ab^2\right)\log\left(e^{(-2\,dx-2\,c)}+1\right)}{\left(a^4+2\,a^2b^2+b^4\right)d}-\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^3/(a+b*sinh(d*x+c)),x, algorithm="maxim
a")
```

```
[Out] -b^6*log(-2*a*e^(-d*x - c) + b*e^(-2*d*x - 2*c) - b)/((a^7 + 2*a^5*b^2 + a^
3*b^4)*d) - (3*a^2*b + 5*b^3)*arctan(e^(-d*x - c))/((a^4 + 2*a^2*b^2 + b^4)
*d) + (2*a^3 + 3*a*b^2)*log(e^(-2*d*x - 2*c) + 1)/((a^4 + 2*a^2*b^2 + b^4)*
```

```
d) - (4*a*b^2*e^(-4*d*x - 4*c) - (3*a^2*b + 2*b^3)*e^(-d*x - c) + 2*(2*a^3
+ a*b^2)*e^(-2*d*x - 2*c) + (a^2*b - 2*b^3)*e^(-3*d*x - 3*c) - (a^2*b - 2*b
^3)*e^(-5*d*x - 5*c) + 2*(2*a^3 + a*b^2)*e^(-6*d*x - 6*c) + (3*a^2*b + 2*b^
3)*e^(-7*d*x - 7*c))/((a^4 + a^2*b^2 - 2*(a^4 + a^2*b^2)*e^(-4*d*x - 4*c) +
 (a^4 + a^2*b^2)*e^(-8*d*x - 8*c))*d) - (2*a^2 - b^2)*log(e^(-d*x - c) + 1)
/(a^3*d) - (2*a^2 - b^2)*log(e^(-d*x - c) - 1)/(a^3*d)
```

mupad [B] time = 6.91, size = 554, normalized size = 2.63

$$-\frac{\frac{4\,b^5}{a\,d\,\left(a^2\,b^3+b^5\right)}-\frac{4\,b^4\,e^{3\,c+3\,d\,x}}{d\,\left(a^2\,b^3+b^5\right)}+\frac{4\,b^4\,e^{c+d\,x}}{d\,\left(a^2\,b^3+b^5\right)}+\frac{4\,b^3\,e^{2\,c+2\,d\,x}\,\left(2\,a^2+b^2\right)}{a\,d\,\left(a^2\,b^3+b^5\right)}}{e^{8\,c+8\,d\,x}-2\,e^{4\,c+4\,d\,x}+1}-\frac{\frac{4\,\left(a^2\,b^5+b^7\right)}{a\,d\,\left(a^2\,b^3+b^5\right)\,\left(a^2+b^2\right)}+\frac{2\,e^{2\,c+2\,d\,x}\,\left(2\,a^4\,b^3+3\,a^2\,b^5+b^7\right)}{a\,d\,\left(a^2\,b^3+b^5\right)\,\left(a^2+b^2\right)}-\frac{e^{3\,c+3\,d\,x}}{a^2\,d\,(}}{e^{4\,c+4\,d\,x}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*sinh(c + d*x)^3*(a + b*sinh(c + d*x))),x)
```

```
[Out] (log(exp(c + d*x)*1i + 1)*(4*a + b*5i))/(2*(a^2*d - b^2*d + a*b*d*2i)) - ((
4*(b^7 + a^2*b^5))/(a*d*(b^5 + a^2*b^3)*(a^2 + b^2)) + (2*exp(2*c + 2*d*x)*
(b^7 + 3*a^2*b^5 + 2*a^4*b^3))/(a*d*(b^5 + a^2*b^3)*(a^2 + b^2)) - (exp(3*c
 + 3*d*x)*(2*b^8 + 5*a^2*b^6 + 3*a^4*b^4))/(a^2*d*(b^5 + a^2*b^3)*(a^2 + b^
2)) - (b^4*exp(c + d*x)*(2*b^4 - a^4 + a^2*b^2))/(a^2*d*(b^5 + a^2*b^3)*(a^
2 + b^2)))/(exp(4*c + 4*d*x) - 1) - ((4*b^5)/(a*d*(b^5 + a^2*b^3)) - (4*b^4
*exp(3*c + 3*d*x))/(d*(b^5 + a^2*b^3)) + (4*b^4*exp(c + d*x))/(d*(b^5 + a^2
*b^3)) + (4*b^3*exp(2*c + 2*d*x)*(2*a^2 + b^2))/(a*d*(b^5 + a^2*b^3)))/(exp
(8*c + 8*d*x) - 2*exp(4*c + 4*d*x) + 1) - (b^6*log(2*a*exp(c + d*x) - b + b
*exp(2*c + 2*d*x)))/(a^7*d + a^3*b^4*d + 2*a^5*b^2*d) + (log(exp(c + d*x) +
 1i)*(a*4i + 5*b))/(2*(a^2*d*1i - b^2*d*1i + 2*a*b*d)) - (log(exp(2*c + 2*d
*x) - 1)*(2*a^2 - b^2))/(a^3*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3*sech(d*x+c)**3/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

3.502 $\int \frac{\text{csch}^3(c+dx)\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx$

Optimal. Leaf size=39

$$\text{Int}\left(\frac{\text{csch}^3(c+dx)\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))},x\right)$$

```
[Out] Unintegrable(csch(d*x+c)^3*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\text{csch}^3(c+dx)\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx$$

Verification is Not applicable to the result.

```
[In] Int[(Csch[c + d*x]^3*Sech[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x])),x]
```

```
[Out] Defer[Int][(Csch[c + d*x]^3*Sech[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x
])), x]
```

Rubi steps

$$\int \frac{\text{csch}^3(c+dx)\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx = \int \frac{\text{csch}^3(c+dx)\text{sech}^3(c+dx)}{(e+fx)(a+b\sinh(c+dx))} dx$$

Mathematica [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Csch[c + d*x]^3*Sech[c + d*x]^3)/((e + f*x)*(a + b*Sinh[c + d*x]
)),x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="giac")
```

```
[Out] Timed out
```

maple [A] time = 4.63, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{csch}(dx+c)^3 \operatorname{sech}(dx+c)^3}{(fx+e)(a+b\sinh(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csch(d*x+c)^3*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] int(csch(d*x+c)^3*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)^3*sech(d*x+c)^3/(f*x+e)/(a+b*sinh(d*x+c)),x, algorith
m="maxima")
```

```
[Out] -(a*b^2*f - (2*b^3*d*e*e^(7*c) + (3*d*e - f)*a^2*b*e^(7*c) + (3*a^2*b*d*f*e
^(7*c) + 2*b^3*d*f*e^(7*c))*x)*e^(7*d*x) + (2*(2*d*e - f)*a^3*e^(6*c) + (2*
d*e - f)*a*b^2*e^(6*c) + 2*(2*a^3*d*f*e^(6*c) + a*b^2*d*f*e^(6*c))*x)*e^(6*
d*x) - (2*b^3*d*e*e^(5*c) - (d*e - f)*a^2*b*e^(5*c) - (a^2*b*d*f*e^(5*c) -
2*b^3*d*f*e^(5*c))*x)*e^(5*d*x) + (4*a*b^2*d*f*x*e^(4*c) + (4*d*e - f)*a*b^
2*e^(4*c))*e^(4*d*x) + (2*b^3*d*e*e^(3*c) - (d*e + f)*a^2*b*e^(3*c) - (a^2*
b*d*f*e^(3*c) - 2*b^3*d*f*e^(3*c))*x)*e^(3*d*x) + (2*(2*d*e + f)*a^3*e^(2*c
) + (2*d*e + f)*a*b^2*e^(2*c) + 2*(2*a^3*d*f*e^(2*c) + a*b^2*d*f*e^(2*c))*x
)*e^(2*d*x) + (2*b^3*d*e*e^c + (3*d*e + f)*a^2*b*e^c + (3*a^2*b*d*f*e^c + 2
*b^3*d*f*e^c)*x)*e^(d*x))/(a^4*d^2*e^2 + a^2*b^2*d^2*e^2 + (a^4*d^2*f^2 + a
^2*b^2*d^2*f^2)*x^2 + 2*(a^4*d^2*e*f + a^2*b^2*d^2*e*f)*x + (a^4*d^2*e^2*e^
```

```
(8*c) + a^2*b^2*d^2*e^2*e^(8*c) + (a^4*d^2*f^2*e^(8*c) + a^2*b^2*d^2*f^2*e^
(8*c))*x^2 + 2*(a^4*d^2*e*f*e^(8*c) + a^2*b^2*d^2*e*f*e^(8*c))*x)*e^(8*d*x)
 - 2*(a^4*d^2*e^2*e^(4*c) + a^2*b^2*d^2*e^2*e^(4*c) + (a^4*d^2*f^2*e^(4*c)
+ a^2*b^2*d^2*f^2*e^(4*c))*x^2 + 2*(a^4*d^2*e*f*e^(4*c) + a^2*b^2*d^2*e*f*e
^(4*c))*x)*e^(4*d*x)) + 64*integrate(-1/32*(a*b^6*e^(d*x + c) - b^7)/(a^7*b
*e + 2*a^5*b^3*e + a^3*b^5*e + (a^7*b*f + 2*a^5*b^3*f + a^3*b^5*f)*x - (a^7
*b*e*e^(2*c) + 2*a^5*b^3*e*e^(2*c) + a^3*b^5*e*e^(2*c) + (a^7*b*f*e^(2*c) +
 2*a^5*b^3*f*e^(2*c) + a^3*b^5*f*e^(2*c))*x)*e^(2*d*x) - 2*(a^8*e*e^c + 2*a
^6*b^2*e*e^c + a^4*b^4*e*e^c + (a^8*f*e^c + 2*a^6*b^2*f*e^c + a^4*b^4*f*e^c
)*x)*e^(d*x)), x) - 64*integrate(1/64*(b^2*d^2*e^2 + a*b*d*e*f - (2*d^2*e^2
 - f^2)*a^2 - (2*a^2*d^2*f^2 - b^2*d^2*f^2)*x^2 - (4*a^2*d^2*e*f - 2*b^2*d^
2*e*f - a*b*d*f^2)*x)/(a^3*d^2*f^3*x^3 + 3*a^3*d^2*e*f^2*x^2 + 3*a^3*d^2*e^
2*f*x + a^3*d^2*e^3 - (a^3*d^2*f^3*x^3*e^c + 3*a^3*d^2*e*f^2*x^2*e^c + 3*a^
3*d^2*e^2*f*x*e^c + a^3*d^2*e^3*e^c)*e^(d*x)), x) + 64*integrate(-1/64*(b^2
*d^2*e^2 - a*b*d*e*f - (2*d^2*e^2 - f^2)*a^2 - (2*a^2*d^2*f^2 - b^2*d^2*f^2
)*x^2 - (4*a^2*d^2*e*f - 2*b^2*d^2*e*f + a*b*d*f^2)*x)/(a^3*d^2*f^3*x^3 + 3
*a^3*d^2*e*f^2*x^2 + 3*a^3*d^2*e^2*f*x + a^3*d^2*e^3 + (a^3*d^2*f^3*x^3*e^c
 + 3*a^3*d^2*e*f^2*x^2*e^c + 3*a^3*d^2*e^2*f*x*e^c + a^3*d^2*e^3*e^c)*e^(d*
x)), x) + 64*integrate(-1/64*(2*(2*d^2*e^2 - f^2)*a^3 + 2*(3*d^2*e^2 - f^2)
*a*b^2 + 2*(2*a^3*d^2*f^2 + 3*a*b^2*d^2*f^2)*x^2 + 4*(2*a^3*d^2*e*f + 3*a*b
^2*d^2*e*f)*x - ((3*d^2*e^2 - 2*f^2)*a^2*b*e^c + (5*d^2*e^2 - 2*f^2)*b^3*e^
c + (3*a^2*b*d^2*f^2*e^c + 5*b^3*d^2*f^2*e^c)*x^2 + 2*(3*a^2*b*d^2*e*f*e^c
+ 5*b^3*d^2*e*f*e^c)*x)*e^(d*x))/(a^4*d^2*e^3 + 2*a^2*b^2*d^2*e^3 + b^4*d^2
*e^3 + (a^4*d^2*f^3 + 2*a^2*b^2*d^2*f^3 + b^4*d^2*f^3)*x^3 + 3*(a^4*d^2*e*f
^2 + 2*a^2*b^2*d^2*e*f^2 + b^4*d^2*e*f^2)*x^2 + 3*(a^4*d^2*e^2*f + 2*a^2*b^
2*d^2*e^2*f + b^4*d^2*e^2*f)*x + (a^4*d^2*e^3*e^(2*c) + 2*a^2*b^2*d^2*e^3*e
^(2*c) + b^4*d^2*e^3*e^(2*c) + (a^4*d^2*f^3*e^(2*c) + 2*a^2*b^2*d^2*f^3*e^(
2*c) + b^4*d^2*f^3*e^(2*c))*x^3 + 3*(a^4*d^2*e*f^2*e^(2*c) + 2*a^2*b^2*d^2*
e*f^2*e^(2*c) + b^4*d^2*e*f^2*e^(2*c))*x^2 + 3*(a^4*d^2*e^2*f*e^(2*c) + 2*a
^2*b^2*d^2*e^2*f*e^(2*c) + b^4*d^2*e^2*f*e^(2*c))*x)*e^(2*d*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cosh(c+dx)^3\sinh(c+dx)^3\left(e+fx\right)\left(a+b\sinh(c+dx)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cosh(c + d*x)^3*sinh(c + d*x)^3*(e + f*x)*(a + b*sinh(c + d*x))),x)
[Out] int(1/(cosh(c + d*x)^3*sinh(c + d*x)^3*(e + f*x)*(a + b*sinh(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csch(d*x+c)**3*sech(d*x+c)**3/(f*x+e)/(a+b*sinh(d*x+c)),x)
```

```
[Out] Timed out
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*         GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
```

```
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
```

```
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]


AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
```

```
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
   debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
   ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
           print("ExpnType_result<=ExpnType_optimal");
      fi;
```

```
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do not
    as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
```

```
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
```

```
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:

AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:
```

```
#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]
```

```
def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)
   ))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
   ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or type
   (expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
```

```
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
   expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType,
   Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
   well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
```

```
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug=False
    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
    sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','hypergeometric_U
    ']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in
    sagemath

def is_atom(expn):

    debug=False
    if debug: print ("Enter is_atom")


    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
    sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
```

```
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens"):
            return expn in expn.parent().base_ring() or expn in expn.parent().
    gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
    Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer)
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
    Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
    Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
    [1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
    isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
```

```
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn.
    func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(
    expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #
    is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "
    leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",
    expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
```

```
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
        else: #result contains complex but optimal is not
            return "C"
    else: # result do not contain complex, this assumes optimal do not as
well
        if leaf_count_result <= 2*leaf_count_optimal:
            return "A"
        else:
            return "B"
else:
    return "C"
```